

ABOUT APFP-SEAPEAT PROJECTS

The ASEAN Peatland Forests Project (APFP), funded by the Global Environment Facility (GEF) and the International Fund for Agricultural Development (IFAD), is led by the Association of Southeast Asian Nations (ASEAN) Secretariat and selected ASEAN Member States. It aims to demonstrate, implement and scale up the integrated management of peatlands in Southeast Asia. The related SEApeat project, funded by the European Union (EU) through the Global Environment Centre (GEC), seeks to reduce deforestation and GHG emissions caused by the degradation of peatland forests in Southeast Asia. The combined projects involve all ten ASEAN Member States in regional activities and/or pilot site activities. The projects aim to promote and support the implementation of the ASEAN Peatland Management Strategy (2006-2020) especially related to capacity building, fire prevention and sustainable management of peatlands in the region. The ASEAN Secretariat is the Executing Agency of the APFP while the GEC is the Regional Project Executing Agency of the APFP and the SEApeat project.

DEVELOPMENT OF FINANCING AND INCENTIVE OPTIONS FOR SUSTAINABLE MANAGEMENT OF PEATLAND FORESTS IN SOUTHEAST ASIA

A REPORT FOR POLICYMAKERS

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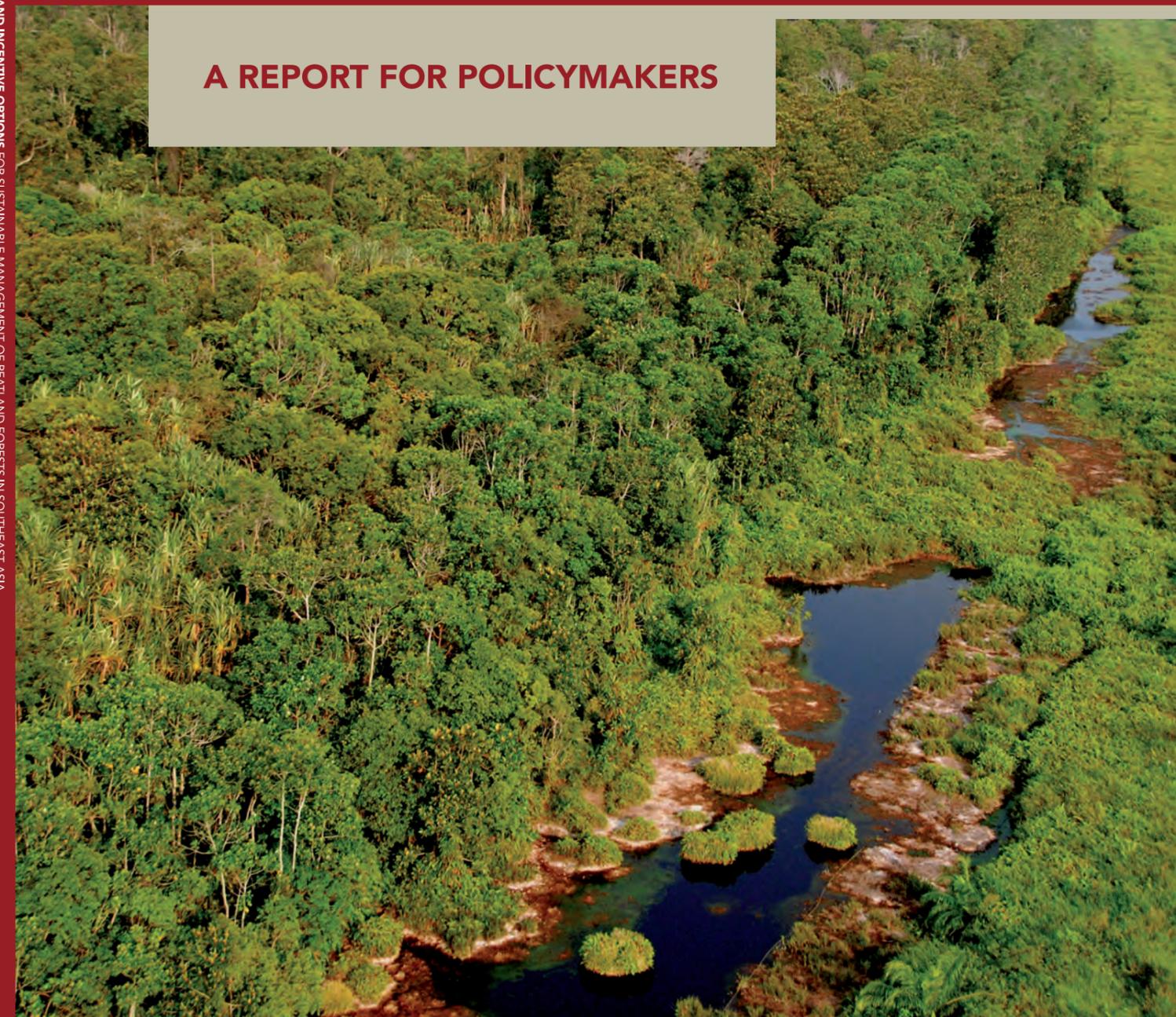
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Apfp-SEApeat

ASEAN Peatland Forests Project - Sustainable Management of Peatland Forests in Southeast Asia

DEVELOPMENT OF FINANCING AND INCENTIVE OPTIONS FOR SUSTAINABLE MANAGEMENT OF PEATLAND FORESTS IN SOUTHEAST ASIA

BY PROF. DOUGLAS C. MACMILLAN

A REPORT FOR POLICYMAKERS

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This publication has been produced with the assistance of Global Environment Facility (GEF), the International Fund for Agricultural Development (IFAD) and the European Union (EU). The contents of this publication does not necessarily reflect the views of the project funders or stakeholders. As every effort has been taken to ensure the accuracy of this publication, the publisher shall not be held accountable if there are errors or omissions.

FOREWORD

This Report on Financing and Incentive Options for Sustainable Management of Peatland Forests in Southeast Asia has been prepared under the framework of the GEF/IFAD — ASEAN Peatland Forests Project (APFP) and the European Union — Sustainable Management of Peatland Forests in Southeast Asia (SEApeat) Project.

Peatland ecosystems cover about 25 million hectares in Southeast Asia and are the most extensive wetland ecosystems in the region. Peatlands play a key role for carbon storage, biodiversity conservation and the management and provision of water resources. The value of peatlands to local livelihood and national economy is very high. Nevertheless, peatlands in the region are facing serious degradation with more than 4 million hectares having been burned in the past 15 years, being the main source of transboundary smoke haze. The economic, environmental and social impacts of the smoke haze are immense — with the 97-98 fires and haze alone estimated to have cost more than US\$10 billion in damages.

The ASEAN Member States have adopted the ASEAN Peatland Management Strategy 2006-2020 (APMS) as the regional framework to support the integrated management of peatlands and prevent peatland degradation and associated transboundary haze. One of the important actions agreed under the APMS is to explore the use of polluter-pay and user-pay schemes, tax incentives or other options to generate sustaining resources to support the implementation of the Strategy.

This study is an initial contribution towards meeting this action. It was prepared through a participative process starting with a Working Group Discussion on Incentive Options for Peatland Management, followed by visits to peatland sites and agencies in Indonesia, Malaysia, the Philippines and Viet Nam. In this respect, the Report is well founded on site-level and community-based financing needs, apart from the available global financing mechanisms.

We hope that this Report will stimulate consideration, particularly by policy makers, for the development of innovative incentive and financing options to support sustainable peatland management in Southeast Asia. It is critical that financial options and incentives measures are established in each ASEAN Member State to help ensure the sustainable management of this key resource and ecosystem.

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Faizal Parish

Director Global Environment Centre
Regional Project Executing Agency
APFP and SEApeat Project

ABBREVIATIONS AND ACRONYMS

AATHP	ASEAN Agreement on Transboundary Haze Pollution
APFP	ASEAN Peatland Forest Project
APMS	ASEAN Peatland Management Strategy
ASEAN	The Association of Southeast Asian Nations
CAP	Common Agricultural Policy
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CRP	Conservation Reserve Program
CSR	Corporate Social Responsibility
EIA	Environment Impact Assessment
ETS	Emission Trading Scheme
EU	European Union
FSC	Forest Stewardship Council
HCVF	High Conservation Value Forest
IET	International Emissions Trading
IHPHP	Forest Concession License Fee
KGBR	Kien Giang Biosphere Reserve
NAP	National Action Plan
OECD	Organisation for Economic Co-operation and Development
PES	Payment of Ecosystem Services
PPP	Polluter Pays Principle
R&D	Research and Development
REDD+	Reducing Emissions from Deforestation and Forest Degradation includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
RSPB	Royal Society for the Protection of Birds
RSPO	Roundtable on Sustainable Palm Oil
RUPES	Rewarding Upland Poor for Environmental Services
SEA	Strategic Environmental Assessment
SEApeat	Sustainable Management of Peatland Forests in Southeast Asia
SIA	Social Impact Analysis
UMHNP	U Minh Ha National Park
UMTNP	U Minh Thung National Park
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wide Fund for Nature

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EXECUTIVE SUMMARY

Peatlands are the largest carbon store in the terrestrial biosphere containing twice as much carbon as all the world's forests combined. There is an estimated 25 million hectares of peatland in the Southeast Asian region, making it the most dominant wetland forest type. Sustainable peatland management can provide climate benefits on a global level as well as direct benefits at country and regional level. However, the resource faces significant threats from extensive fires and the rapid development of large-scale agriculture and forest plantations, which have the potential to reduce the role of peatlands as a carbon sink and disrupt valuable natural functions.

The objectives of this report are to review and develop potential financing and economic incentive options at the regional or country level to support the protection and sustainable management of peatlands. The report covers three main areas:

1. Assessment of the financial and environmental effectiveness and viability of the incentive systems in combating peatland forest degradation and climate change.
2. A comparative study, on the most suitable incentive schemes based on country priorities to support forest protection and sustainable management of peatlands.
3. Development of the most suitable financing and incentive schemes into simple guidelines for use in ASEAN countries.

Markets are an efficient way of allocating resources and determining prices and quantities of consumer goods, but markets often fail when it comes to protecting public goods such as the environment. This is known as “market failure” and results from the fact that there is no cost associated with resource destruction and pollution hence sustainable management of natural resources generates lower profits than pure exploitation. Lacking this economic reward, businesses have no incentive to be stewards of natural capital, and the protection of the environment is normally left to the State.

Governments can mitigate market failure through a range of policy instruments such as information provision: capacity building, regulations, direct state control and economic incentive systems such as taxes and subsidies. The latter are increasingly being used in developed economies because they can be the most cost-effective option to deliver environmental benefits.

Many different economic incentives exist but they all share the same purpose - to influence decision-making or individuals such as farmers or organisations such as businesses and co-operatives by altering ‘the bottom-line’ in favour of a more positive environmental outcome. The report reviews three broad categories of economic incentives: voluntary action, fiscal incentives, and market mechanisms.

Economic incentives are typically incorporated through a policy process that encompasses five stages:

1. Awareness of the resource/issues among policy makers and major stakeholders;
2. Piloting to test incentive schemes and associated practices;
3. Evolution of distinct policy objectives and instruments;
4. Initiation of a funded regional or national programmes; and
5. Review, the results to feedback into a new cycle.

The introduction of a successful incentive-based systems represents a considerable challenge to policy makers in the ASEAN region, and this is especially true for tropical peatlands, where policy and governance mechanisms are not well defined or developed, nor is there any great experience with the deployment of economic instruments for environmental goals. Some key considerations that influenced this assessment:

- The need to adopt **incentives that improve profitability of activities that sustain peatlands** and to reduce the profitability of unsustainable activities.
- **Financial sustainability** – funding must come from a sustainable source to ensure the long term conservation of peatlands.
- Economic incentives that can be introduced with only **simple modification to existing administrative systems** or jurisdictional realignment are easier and quicker to implement.
- Incentive systems need to **reflect the political, social and economic reality of the country**. In most ASEAN nations, civil society is relatively weak and environmental concerns are not strongly articulated through the political process. Significantly, poor farmers constitute a higher proportion of the population, and many depend on peatland exploitation for their livelihood. Other key stakeholders are powerful investors and multi-national corporations who have considerable influence within government circles. Given this stark contrast, it is likely that different incentive systems will need to be adopted to achieve peatland conservation.

Taking account of these considerations and specific national circumstances with respect to existing land-use policy and capacity the main recommendations for the adoption of financing and economic incentives are as follows:

VIET NAM AND THE PHILIPPINES

The extent and quality of peat are not well recorded and there is no specific agency responsible for managing peatlands in either country. In the short term, with funding from development agencies, international NGOs and eco-tourism ventures, user incentives for alternative livelihoods that avoid fire and further drainage of peatlands should be developed and implemented in pilot project sites at high value peatland sites. In Viet Nam, payments to households to protect peatland resources in U Minh Thung National Park (UMTNP) and U Minh Ha National Park (UMHNP) should be made under the Green and Red Book system.

In the Philippines, the opportunity to redirect existing agricultural and forestry subsidy payments to promote the wise use of peatlands should also be explored. In the medium term, Payment of Ecosystem Services (PES) schemes supported potentially by REDD+ finance, may be deployed to protect the national peatland resource. Reforestation of degraded peatlands that are marginal for agriculture may be possible under climate finance mechanism of Clean Development Mechanism (CDM). In the long term, peatland needs to be integrated in land-use planning for agriculture and forestry in both countries.

MALAYSIA

Malaysia has extensive peatland areas, much of which has been exploited for agriculture and forestry. Positive efforts have been made by the Malaysian government to promote sustainable peatland management and additional fiscal measures such as a hypothecated user tax or 'CESS tax' could be introduced to finance peatland conservation efforts. This approach would lead to increase taxation on highly profitable and environmentally demanding peatland-uses for commodity plantation and crops, in order to fund financial incentives to support activities which improve the performance of the environmental functions and services of peatlands. Given the strong support for the deployment of green taxation and other incentives by the government in Malaysia such an approach may be implementable in the short term (within 5 years). Reforestation of degraded peatlands that become marginal for agriculture may also be possible under the climate finance mechanism of CDM. In the medium term, additional funding for peatland conservation may be sourced from REDD+.

INDONESIA

Indonesia has the most extensive peatland resource in Southeast Asia. Although much of it has been exploited for agriculture and forestry, there remain extensive areas of undeveloped peatland in Sumatra, Kalimantan and Papua. Similar to the Malaysia's case, an ambitious provincial and national programme of peatland conservation is therefore required. The most cost-effective approach is likely to be the introduction of an hypothecated user tax. This approach would tax less sustainable agricultural practices on peatland and reinvest the income from tax revenue to create financial incentives to support wise use activities on peatland. This could be achieved through the redesign of existing fiscal policy for these land-use activities. Given the particular institutional problems and complex governance processes determining land-use policy in Indonesia, adoption of this approach is likely to be in the medium term (5-10 years). Reforestation of degraded peatland which becomes marginal for agriculture may also be possible under the climate finance mechanism of CDM. In the medium term, additional funding for peatland conservation may also be possible from REDD+.

BRUNEI DARUSSALAM

Brunei Darussalam has extensive peatland areas of which 80% of the total area is estimated to be in good condition such as the peatland forests in Belait District. Major threats are improper infrastructural development such as urban and road construction, man-made drainage, subsequent risk of fires and other unsustainable land-uses. Most peatland areas come under the state land and therefore, under the control and administration of the Land Department. However, a few have been gazetted under the Forestry Department and are legally protected or managed sustainability by that Department. In the case of peatland forests not on state land, only the harvesting of forest resources are within the government's legal jurisdiction. However, under the Brunei Heart of Borneo (HoB) initiative, peatland areas within the designated area should be subject to a sustainable management regime, guided by the principles of sustainable development of the HoB National Council.

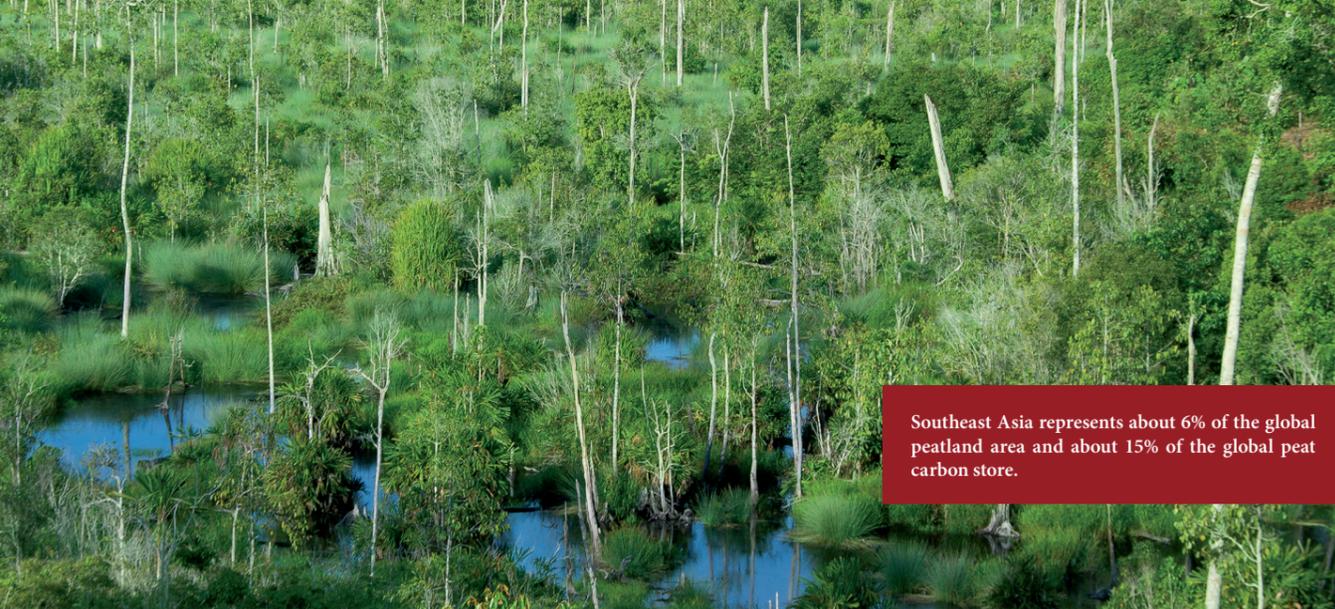
Brunei Darussalam has recently ratified the United Nations Framework Convention on Climate Change (UNFCCC) and in the medium to long-term funding from REDD+ or other carbon payments may provide a sustainable source of income for peatland forest protection and management. The rich diversity of birds, orchids, insects and amphibians on peatland areas, together with good transport links and stable government should attract a steady stream of eco-tourists which may also provide income for local communities and additional revenue for the government. In view of its economic potential for conservation, it is important that efforts are made now to raise awareness of the value of peatland areas in relevant land-use and climate change policies.

NEXT STEPS

Economic incentive schemes cannot operate in isolation and successful policy approaches rarely comprise a single instrument. To ensure peatlands are protected and managed sustainably, a wider range of measures will need to be taken in the next 5-10 years that promote awareness and build capacity such as education and outreach, successful piloting of more sustainable land-use practices and, where necessary, new regulations.

It has not been possible within the scope of this study to identify all potential policy-tools or sources of funding, and further, more detailed work will be required at the country level prior to implementation. Carried out at national level, this analysis should focus on assessing the cost-effectiveness of the proposed approaches by exploring key issues such as displacement effects, additionality, and impact on employment and the regional economy.

SECTION 1: INTRODUCTION AND OBJECTIVES



Southeast Asia represents about 6% of the global peatland area and about 15% of the global peat carbon store.

© Md Khairulamin / Brunei Darussalam



The main drivers of deforestation and forest degradation in tropical peatland are agriculture and forestry sectors. Incentive options to promote sustainable management of peatland forests are needed urgently.

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Ecotourism and alternative livelihoods are some of the community level incentives for peatland and forest conservation.

© Hilariu Bistok / Indonesia

Peatlands are the largest carbon store in the terrestrial biosphere containing twice as much carbon as all the world's forests combined. There is an estimated 25 million hectares of peatland in the SE Asian region, making it the most dominant wetland forest type (APMI, 2005; APMS, 2007).

Peatlands are also increasingly being developed for agriculture and forestry and play an important role in the economic development of the region, providing jobs and livelihoods in areas where alternative activities and livelihood options are limited. Development for agriculture, especially for large scale commodity plantation and crops that are intolerant of waterlogged conditions, has resulted in significant damage to the peatland resource in the region and increased the risk of fire as a result of intensive drainage.

Although some governments, such as that of Malaysia and Indonesia, have been making various efforts to enhance and promote sustainable peatland management, for example, through regulations, awareness raising schemes and Research and Development (R&D), it is recognised that there is a need to develop financial incentives to support further conservation measures.

In order to advance the preparation of the National Action Plan (NAP) under the framework of the ASEAN Peatland Management Strategy (APMS) 2006-2020, which was endorsed at Ministerial Level by the 10 ASEAN countries in November 2006, the ASEAN Peatland Forest Project (APFP) and Sustainable Management of Peatland Forest in Southeast Asia (SEApeat) Project have highlighted the need to provide guidance to help develop incentive options to support the implementation of regional and national strategies for sustainable management of peatland forests in five participating countries with large coverage of peatlands: Brunei Darussalam, Indonesia, Malaysia, the Philippines and Viet Nam.

The specific objective of this report is to review and develop potential financing and incentive options at the regional or country level to support the protection and sustainable management of peatlands. The report covers three main areas:

1. Assessment of the financial and environmental effectiveness and viability of the incentive systems in combating peatland forest degradation and climate change.
2. A comparative study, on the most suitable incentive schemes based on country priorities to support peatland forest protection and sustainable management of peatlands.
3. Development of the most suitable financing and incentive schemes into simple guidelines for use in ASEAN countries.

SECTION 2: TROPICAL PEATLANDS AND THEIR CONSERVATION

Tropical peatlands are, typically, waterlogged forests growing on a layer of peat or organic soil formed from dead plant material that can reach up to 20 metres thick. They comprise a unique ecosystem characterised by water-logging, with low nutrients and dissolved oxygen levels in acidic water regimes. Their existence depends on a naturally high water level that prevents the soil from drying out to expose combustible peat matter.

The harsh waterlogged environment has led to the evolution of many species of flora and fauna uniquely adapted to these conditions. Peat swamps are also an important component of the world's wetlands – the dynamic link between land and water, a transition zone where the flow of water, the cycling of nutrients and the energy of the sun combine to produce a unique ecosystem of hydrology, soils and vegetation.

Indonesia and Malaysia have the largest area of peatlands, but significant resources also occur in Brunei Darussalam, the Philippines, Thailand and Viet Nam (Table 1). The peatland area in Myanmar is still under assessment and verification. With a total land areas of only 576,500 hectares, Brunei has the highest concentration of peatland in the ASEAN region (17%).

Table 1: Best Estimated Total Peatland Area in ASEAN Region

COUNTRY	AREA (HECTARES)
Indonesia	20,695,000
Malaysia	2,588,900
Myanmar	122,800
Brunei Darussalam	90,900
Philippines	64,500
Thailand	63,800
Viet Nam	53,300
Lao PDR	19,100*
Cambodia	4,580**
Singapore	50***

Source: Page, et al. (2011); *Joosten, H. (2009); **Quoi, L. P. (2012); ***National Environment Agency (2011)

Tropical peatlands provide a variety of goods and services (see Table 2). Commodities are goods that can be traded in the market to generate revenue flows. Functions are indirect uses that provide services which are difficult to value, but may have high replacement costs. Attributes are benefits that cannot be easily marketed, but may have very high value including cultural/spiritual values and historical values.

Table 2: Benefits Generated by Tropical Peatlands

CATEGORY	BENEFIT
Commodities	Timber NTFP (bushmeat, plants etc.) Agricultural crops Water supply Tourism Fish
Functions	Flood mitigation Prevention of saline intrusion Sediment removal Nutrient removal Toxicant removal Groundwater recharge Groundwater discharge Carbon storage
Attributes Biodiversity	Cultural/Spiritual value Historic value Aesthetic value Wilderness value Research and Education

The natural services and functions of tropical peatland resources, such as carbon sequestration, have gradually been degraded and lost over the last 100 years due to deforestation for timber, drainage for agriculture, infrastructure development and deliberate fire raising that may, or may not be, associated with these other activities. Degradation and peat swamp forest conversion rates have accelerated recently in response to the expansion of agricultural and plantation crops (Miettinen *et al.*, 2012; Miettinen *et al.*, 2012a)

Timber harvesting is the main initial motivation for clearance and the damage done by deforestation is exacerbated by the use of canals to remove the timber. Drainage dries out the peatlands quickly and makes them vulnerable to burning. An estimated 13 million hectares of tropical peatlands have been affected by both legal and illegal logging activities and the over-exploitation of forest resources. A further 5-7 million hectares of peatland have been cleared and drained for large-scale agriculture and other plantation projects – mainly oil palm, pulpwood, rice and various small-scale crops (Butler *et al.*, 2009; APMS, 2007).

Different crops have different impacts on peatland. Some shallow rooting crops have lower impact because they do not require intensive and deep draining (e.g. pineapple and cassava), but others, such as oil palm and Acacia plantations are more harmful as deep draining, required to provide suitable rooting depth for the plants, leads to carbon emissions due to the peatland drying out.

Peatlands are also under pressure because alternative uses such as plantation forestry and agricultural crops such as oil palm (*Elaeis guineensis*) are very profitable, especially if timber revenues from deforestation are included. Over the past few decades oil palm has become a major driver of deforestation in the tropics (Fitzherbert *et al.*, 2008; Koh and Ghazoul, 2008) and the total global land area under oil palm cultivation has more than tripled since 1961 to over 13 million hectares (FAO, 2008).

The crop is most extensively planted in Indonesia and Malaysia, which are currently the world's largest producers of palm oil – exporting a combined total of 28.6 million tons of crude palm oil (CPO) in 2007–2008 (FAO, 2008). In these two countries, more than half of oil palm expansion since 1990 has come at the expense of forests, especially on peatland (Butler *et al.*, 2009).

Peatlands, which generally form in flat low lying areas can also be drained and used for various infrastructure developments, such as airports, roads and housing developments. However, many of these infrastructure developments have encountered problems due to subsidence. Roads and buildings constructed on peatland during the West Johor Development Project in Peninsular Malaysia, for example, have suffered subsidence of up to 4 metres. Infra-structure development is one of the primary threat to peatlands in the Philippines (APMS, 2007).

Peatland destruction or degradation also gives rise to serious air pollution due to burning. Fire, which is the cheapest and quickest way to clear and prepare land for agriculture and plantation development, generates large amounts of smoke and particulate matter which enters the atmosphere and, depending on meteorological conditions, can impose significant economic costs to human health, tourism and general well-being in parts of the ASEAN region.

Deforestation and associated degradation and destruction of peatlands also releases significant quantities of carbon dioxide into the atmosphere. *Table 3* provides estimates of the amount of CO₂ emitted from forests and peatlands relative to other sectors for six of the world's major economies.

Table 3: GHG Emission Summary in Million Tonnes of CO₂

EMISSION SOURCES	USA	CHINA	INDONESIA	BRAZIL	RUSSIA	INDIA
Energy	5,752	3,720	275	303	1,527	1,051
Agriculture	442	1,171	141	598	118	442
Forestry & Peatland	-403	-47	2,563	1,372	54	-40
Waste	213	174	35	43	46	124

Source: Noordwijk et al., 2008

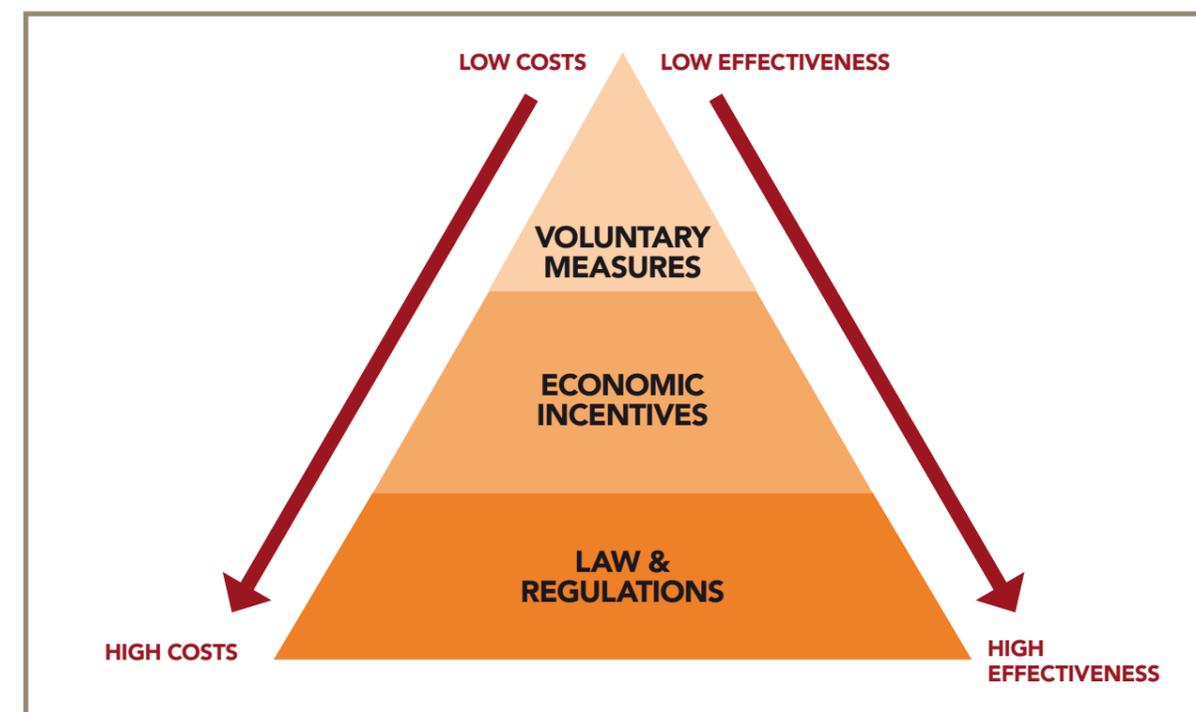
Preventing the destruction or degradation of the peatland resource is challenging. A number of institutional, political and socio-economic factors have been identified as root causes (APMS, 2007), including weak institutional capacity and institutional frameworks, low awareness of peatland values among key decision-makers, absence of clear national policies and institutional leadership for peatlands, unclear tenure and access rights, and poverty among communities most dependent on peatland resources. This, together with the diverse range of stakeholders that directly use and benefit from peatlands (and their destruction) ranging from relatively poor small-holders to large multi-national companies, creates a difficult policy arena in which to consider the introduction of economic incentives.

SECTION 3: INCENTIVE SYSTEMS IN PRINCIPLE AND PRACTICE

Markets are an efficient way of allocating resources and determining prices and quantities of consumer goods. However, markets often fail when it comes to protecting public goods such as the environment because of problems with property rights which means that environmental resources have no 'value' in the market place. As a consequence, environmental resources can be used for 'free' as there is no costs associated with resource destruction and pollution. Highly destructive environmental practices can therefore be more profitable than sustainable management of natural resources as businesses have no incentive to be stewards of the Earth's natural capital.

Governments normally have the responsibility to protect the environment from market forces and a wide range of policy instruments have been developed to ensure that natural resources, such as peatland, are managed sustainably. These include information provision; capacity building; regulations (e.g. prohibition and permits); direct state control (i.e. state owned land) and economic incentive systems (financial instruments such as taxes and subsidies and new markets such as for water or carbon). Typically, the costs and effectiveness of policy instruments are highest for direct regulation and lowest for voluntary action, although this can depend on design, implementation and monitoring (*Figure 1*). Economic instruments can vary considerable with respect to costs and effectiveness but usually impose lower costs on the economy than regulation.

Figure 1: Cost and Effectiveness of Different Intervention Options for Environmental Policy



Financial incentives are typically constituent components of national and international laws or regulations, and can be defined as instruments that provide financial rewards to individuals or companies for protecting the environment. In other words they impact directly on the bottom line, typically operating by imposing penalties for pollution and other harmful activities or by providing payments to protect valuable resources from exploitation or inappropriate use.

Economic incentives are innovative mechanisms for motivating environmental protection because they do what traditional command-and-control regulations fail to do - they attach a cost or revenue to environmental protection and hence encourage owners or managers of the resource to act responsibly in the pursuit of profit. While still requiring strict adherence to environmental standards, economic incentives tend to be more goal-oriented and are more flexible regarding the methods used to achieve those goals. Businesses can choose to meet a goal or limit any way they believe is appropriate rather than being required to install a specific technology. For example, a business can choose to reduce its pollution through energy conservation, product or process reformulation, end-of-pipe pollution control, or any other means. In this way incentives have been shown to provide cost savings relative to traditional regulatory approaches and are therefore recognised to have great potential for achieving beneficial outcomes for local communities, companies and the planet.

Economic incentives, if performance based, have several key advantages over regulations. First, economic incentives, exhibit dynamic efficiency, that is, the polluter/provider has an incentive to continually improve their performance because they can gain more profit (e.g. pay less tax) by doing so. That is, the same motivation that forces businesses to be as efficient as possible in order to be competitive can be harnessed to protect the environment. Other advantages associated with economic incentives are flexibility, encouragement of technological innovation, improved relationships between the private and public sector, substantial cost savings, and better management of non-point emission sources.

The foundational basis behind market-based approaches or economic incentives, is the “polluter pays principle (PPP)”, an idea first introduced 80 years ago by the economist Arthur Pigou. The PPP states that when people act in ways that degrade the environment, they should be held accountable for the damage they do. The most direct way for governments to enforce “polluter pays” is to tax activities that hurt the environment. More recently, the complimentary principle that landowners and businesses that take measures to improve the environment should be paid has been recognised (the ‘provider gets paid principle’).

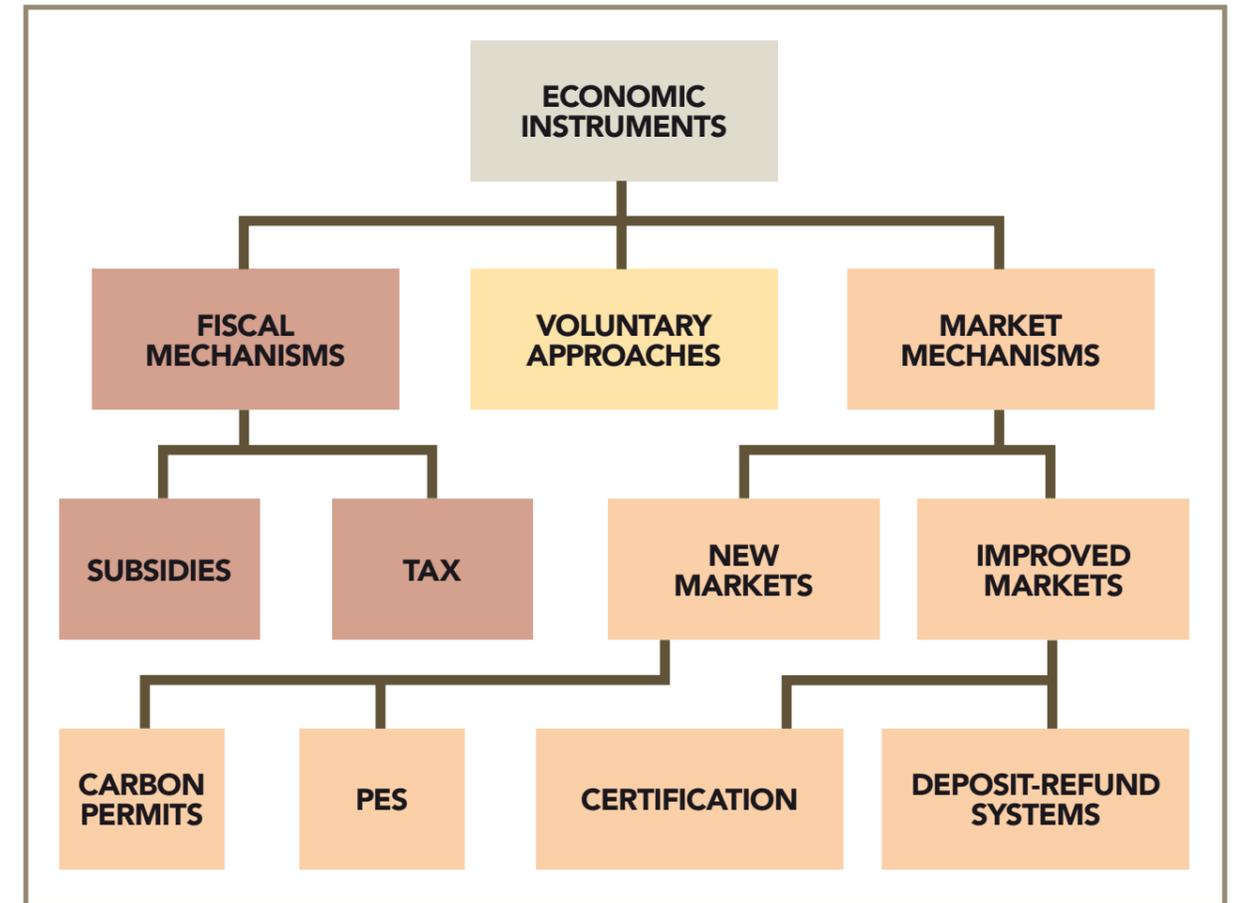
In this section we describe the range of incentive systems that have been developed for environmental conservation and how they are being used to conserve valuable natural resources such as peatlands throughout the world. In *Section 4*, we consider their application to tropical peatland conservation.

3.1 DIFFERENT INCENTIVE SYSTEMS

Economic incentives operate in many different ways, and the selection of the most appropriate or cost-effective approach will depend on a wide range of factors such as security of tenure, property rights, policy objectives and regulatory framework. In this section the main forms of incentives are described using typical examples of how they have been applied around the world. While they all differ in design they all share the same purpose — to influence decision-making or individuals such as farmers or organisations such as businesses and co-operatives by altering the bottom-line in favour of a more positive environmental outcome.

For the purpose of this review, the mechanism have been grouped into three broad categories: voluntary action, fiscal incentives, and market mechanisms (*Figure 2*).

Figure 2: Typology of Economic Instruments for Environmental Policy



3.1.1 VOLUNTARY APPROACHES

Under this approach firms or individuals such as farmers decide to take voluntary action to protect the environment. The decision, which may often lead to increased costs, is not based purely on altruism, but is typically taken because the firm perceives that a more positive environmental outcome will benefit the firm in the long run. For example, stronger codes of practice and associated measures to reduce pesticide pollution have been taken in the UK by farmers in order to avert or prepare for the introduction of a pesticide tax or stronger regulations by the government¹.

Another factor which might precipitate voluntary action is higher market share arising from adoption of greener methods due to favourable publicity. Cost savings (e.g. through reduced pesticide use) and loss of market share then encourages other producers to adopt similar methods. Certification is an attempt to capture this ‘green dividend’.

Another reason companies choose to participate in a voluntary recognition program is they may benefit from free technical assistance from the sponsoring regulatory agency. Such assistance is often made available by governments who have a vested interest in not having to introduce potentially expensive and legislation that may be difficult to enforce.

¹ <http://www.pan-uk.org/pestnews/Issue/pn51/pn51p9a.htm>

The voluntary approach tends to work best where the industry is well organised, with relatively few large firms or producer groups with the necessary resources and existing market share to afford the adoption of such measures. The approach has been relatively successfully deployed in the conservation of peatlands in the UK and Ireland where they are under threat from exploitation for horticultural and gardening use (Box 1).

3.1.2 FISCAL INCENTIVES

Fiscal incentives refer to economic incentives that rely on direct government action to alter the financial performance of specified activities of targeted economic agents. These can be individuals, companies and other institutions that are part of the fiscal regime for that country and can take the form of a subsidy payment or taxation. A typical approach would be where charges and taxes are levied on businesses for environmental reasons. Green taxes can be effective if they increase the cost of pollution to the point where an industry alters its production process to avoid the charge. Sometimes fiscal incentives require new legislation, but often they are introduced by adapting existing policy instruments through for example, altering taxation rates and allowances for activities that benefit the environment or adding environmental conditions into existing subsidy payments.

3.1.2.1 TAXATION

The Polluter Pays Principle (PPP) ensures that the economic agent responsible for producing pollution pays for the damage done to the environment. In essence it seeks to shift the responsibility dealing with waste from the state (and thus, the taxpayer and society at large) to the entities producing it. In effect, it internalises the cost of pollution and waste disposal into the cost of the product, theoretically meaning that the producers will improve the waste profile of their products, thus decreasing waste and increasing possibilities for reuse and recycling.

PPP is widely recognised internationally and is promoted by the Organisation for Economic Cooperation and Development (OECD) and member nations of the European Union (EU) and it specifically mentioned in Principle 16 of the Rio Declaration on Environment and Development. Often referred to as a green tax or an eco-tax, PPP underpins environmental policy in many countries, for example, with regard to fuel consumption. Other examples include the U.S. Superfund law that requires polluters to pay for clean up of hazardous waste sites, when the polluters can be identified.

Typically, charges or taxes are prices paid for discharges of pollutants to the environment, based on the quantity and/or quality of the pollutant(s) are the most effective, with the charges levied directly on the quantity of pollution in the form of an emissions tax or charge. Product charges can occur at different usage points, either as they are manufactured, consumed, or disposed of.

An input tax refers to a tax that is applied for inputs to processes that lead to environmental damage. There has to be a clear identifiable scientific link between the input and the damage. For example, a tax on fertilisers used in farming has been suggested where its use have been shown to lead to pollution through eutrophication (Pearce and Koundouri, 2003). Faced with such a tax the farmer would have an incentive to reduce their use of fertilisers to improve their profitability (but this would depend on the level of tax applied and the effect on crop production). To avoid severe financial pressure on farm income, revenues raised could be returned to the farmer to maintain overall profitability, for example, through subsidies for providing additional environmental benefits (e.g. wildlife habitat) or for non-polluting fertiliser regimes.

Box 1: Deployment of Voluntary Approach to Conserve Peatlands in UK and Ireland



Peat bogs are increasingly recognised as valuable habitats for wildlife and important stores of carbon.

The UK has lost 94% of its lowland raised peat bogs since the beginning of the 19th century due to drainage, colonisation by scrub, forestry plantations, conversion to agriculture, development and peat extraction.

The greatest current threat is peat extraction for use in horticulture. Current demand is 3.4 million cubic meters per year, and two thirds of this is used by amateur gardeners sourced from bogs in the UK and Republic of Ireland.

Environmentalists, government and horticultural businesses in the UK now recognise the environmental consequences of using peat in horticulture, and the industry is being encouraged to turn to more sustainable raw materials. Initially, the campaign encountered deeply-ingrained practices so that the shift in behaviour was slow.

To encourage adoption the UK Government introduced targets for peat replacement which have helped stimulate the industry to develop suitable alternatives. The major gardening retailers have included peat replacement targets in their environmental codes of practice, and these are being met through incremental peat dilution with alternative materials such as green compost, coir dust, and processed timber by-products.

Some organisations, such as the National Trust, have made a commitment to phase out the use of peat entirely as this is consistent with their pro-environmental profile. A number of garden suppliers now market peat which is not harvested from protected areas.

However, some peat comes from non-protected sites, and it is anticipated that stronger legislation will be introduced to protect the peatland resource throughout the Europe Community in light of their increasing value for biodiversity conservation sites and for carbon.

Source: *Mires and Peat*, Volume 3 (2008), Article 08, <http://www.mires-and-peat.net/>, ISSN 1819-754X

Preliminary experience with market-oriented environmental taxes offers some hope. Countries from Canada to China have levied thousands of environmental taxes, on everything from petrol and pesticides to sulphur and carbon emissions to grocery bags. In the UK, for example, excise duties have been adjusted so that the price of leaded petrol has risen increasingly, relative to the price of unleaded. Partly as a result, lead emissions from the exhausts of British cars fell by 70% in a decade ending in 1990. When Sweden introduced a charge of US\$6,000 per ton on nitrous oxide emissions from power stations in 1992, average emissions fell 35% within two years. A Swedish tax on the sulphur content of diesel fuel resulted within 18 months to a ten-fold increase in the share of “clean” diesel in total diesel consumption.

Designed to curb the consumption of 1.2 billion plastic grocery bags a year, the Republic of Ireland levied a plastic bag tax or “PlasTax” in 2002. The PlasTax resulted in a 90% drop in consumption and approximately 1 billion fewer bags consumed annually. Further, approximately US\$9.6 million was raised from the tax in the first year and was earmarked or “hypothecated” for a “green fund” established to benefit the environment.

Input taxes have one important advantage over output taxes with respect to diffuse pollution as inputs can be more easily measured for taxation purposes than pollution. For example, a tax on fuel is easier to estimate than a tax on air quality.

There are a number of issues with regard to the introduction of green taxes. These include:

1. **Setting the tax rate:** The government cannot be sure what tax rate to set in order to reduce pollution to a specified amount as it does not have complete knowledge of the production costs of private firms. Pollution targets can therefore be missed.
2. The impact of a tax also depends on the **elasticity of supply and demand**. For example, demand for fuel for cars and other road vehicles is quite inelastic, hence motorists end up paying more, but not reducing their mileage significantly.
3. Taxes are **unpopular with both consumers and producers** as they increase product prices and hence are a **risky option for politicians**. For this reason, politicians often seek to introduce green taxes that target highly profitable activities.

3.1.2.2 SUBSIDIES

Subsidies or payments are a commonly used tool in environmental management. Some examples, used at all levels of government are grants, low-interest loans, favourable tax treatment, and environmentally preferable procurement policies. Subsidies are used to promote pollution prevention, the cleanup of contaminated industrial sites, sustainable farming and land preservation, sustainable/green energy, environmentally friendly fuels and vehicles, and municipal wastewater treatment.

These subsidies are sometimes criticised because the government is helping to bear the costs that should be the responsibility of the polluter. However, this can depend on who holds the property rights and what the status quo level of environmental quality is accepted to be. For example, should a farmer be paid not to de-forest her/his land or should she/he be charged if she/he does? If she/he has the right to do so then a subsidy is more appropriate than a tax. If the farmer is very poor it may be politically fairer or expedient to provide a subsidy.

Agricultural subsidies in the EU and USA are now increasingly focused on incentivising the provision of environmental benefits from farm land. For example, the old system of subsidy payments under the EU’s Common Agricultural Policy (CAP) led to more intensive production and significant environmental damage. As the budgetary costs increased due to surplus food production and concerns about the environmental damage to the countryside were articulated by civic society, the EU embarked on a radical ‘greening of the CAP’ which has resulted in farmers being paid to provide environmental goods (Box 2). Similarly, in the US the Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners who receive annual rental payments and cost-share assistance to establish long-term, resource conserving vegetation on eligible farmland.

Factors that played a key role in CAP reform include budgetary concerns over the increasing cost of subsidies for food production, strong lobbying by environmental NGOs such as the Royal Society for the Protection of Birds (RSPB), and concern over food quality from consumer groups. It is difficult to envisage a similar scenario unfolding in southeast Asia in the near future because the policy arena is focused on commodity production and resource exploitation and not environmental conservation (Figures 3a and 3b).

Subsidy systems for environmental services may not be sustainable in the long term as they are vulnerable to changes in policy and the financial situation of government. In the case of farmers or small holders, any reduction in the green subsidy would be viewed quite negatively and there is therefore the risk that many of the environmental benefits gained would be lost if green payments became a smaller part total income.

A more sustainable fiscal system is where taxation and subsidy are combined to create a ‘Virtuous Circle’, in which the revenues generated by the taxing of unsustainable activities, such as the drainage of deep peatlands, are reinvested into more sustainable land-uses (Figures 4a and 4b). Adopting this approach thus encompasses two powerful positive economic forces to support peatland conservation. First, the profitability of damaging land-use activities are reduced by the levy of an environmental tax, which in turn should reduce the demand for land for those activities and encourage landowners to avoid the tax by adopting ‘low tax’ cropping systems and management practices that are not detrimental to peatland conservation. Second, the subsidy payments will directly enhance the profitability of sustainable alternatives and encourage their adoption.

In Malaysia, there are some examples of earmarked or hypothecated taxation for environmental benefit such as the 1% tariff on electricity revenues which is channelled into a Feed In Tarrif (FIT) to support alternative energy technologies (KETTHA, 2011) and the CESS tax on rubber production. This system of hypothecated tax revenue and spending is vulnerable to political pressures and there is always the risk that only a small proportion of the revenues may actually be used to support the environmentally friendly option.

Box 2: Greening of the EU Common Agriculture Policy (CAP) Ireland



The EU CAP has been providing support to European farmers for around 50 years. Originally the policy was aimed at increasing food supply in Europe and to stabilise farming income, especially for small farms. The subsidy payments were directly linked to production so farmers were encouraged to maximise production at the expense of the environment.



Over time, it became apparent that the original CAP was too expensive to maintain, using up around 50% of the total budget of the European Union (EU). Furthermore scientific research, with strong support from many Environmental NGOs, highlighted the huge environmental damage done by intensive production methods using fertilisers, pesticides, drainage and woodland clearance.



In the 1980's the EU decided to break the link between food production and subsidy payments and created a new scheme called the Environmentally Sensitive Areas (ESA) Scheme which paid farmers to farm less intensively and take measures, such as building ponds to improve habitats for wildlife and protection for ancient sites and monuments.



Initially a small number of areas were chosen as pilot sites around the EU covering less than 10% of the farming area, but representing different farming landscapes and conditions. Lessons were learned and as positive environmental and social outcomes were validated, the policy attracted increased support from politicians, farmers, civic society (NGOs), and the general public.

Remarkably within a 20 year period the tide was turned, with virtually all agricultural support conditional upon or targeted at environmental benefit delivery. The ESA scheme has now been replaced by a national scheme called the Rural Stewardship Scheme which is competitive, and only the best farm plans are accepted for funding.

Figure 3a: Greening of the Common Agricultural Policy (CAP) in Europe – illustrating how the alignment of a number of concerns and stakeholders tipped the balance to favour radical reform of CAP payments to farmers.

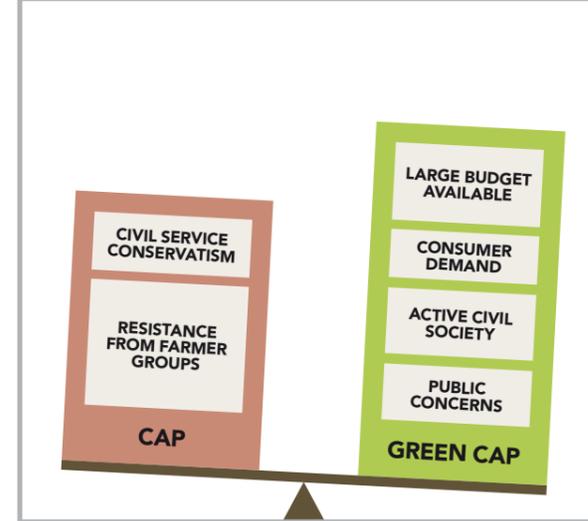


Figure 3b: In ASEAN region, there is insufficient leverage to tip the balance in favour of economic incentives to promote the wise use of peatlands.

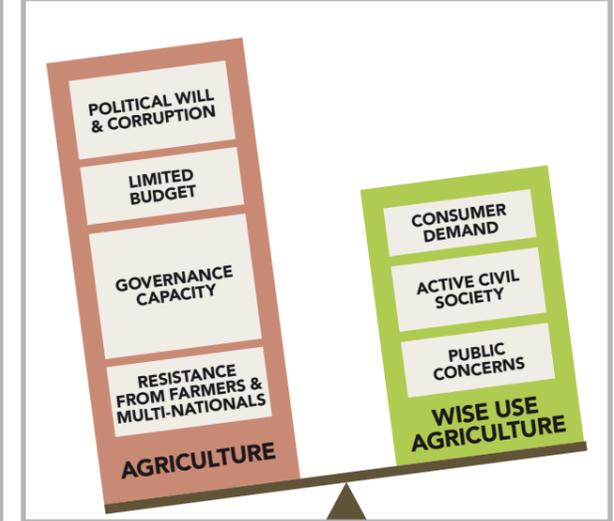


Figure 4a: The Vicious Cycle: Lacking fiscal incentives, high profits from crops such as oil palm lead to excessive environmental costs on the peatland resource (as noted by the size of the arrow). Wise use production is less profitable but more sustainable crops are grown less extensively.

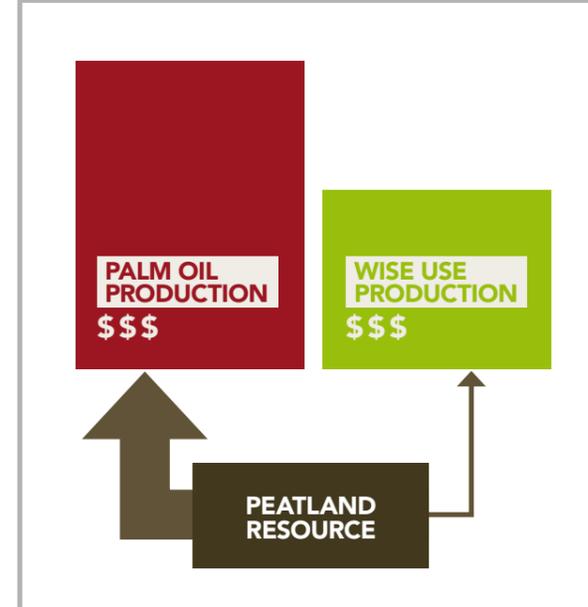
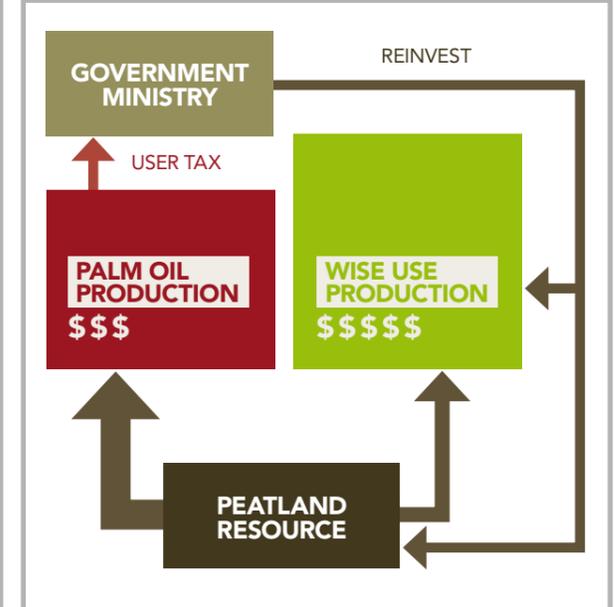


Figure 4b: The Virtuous Cycle: If funds from a 'User Tax' are reinvested in more sustainable crops and directly into conservation of the peatland resource. These funds are normally channelled through an appropriate government Ministry.



3.1.3 MARKET APPROACHES

3.1.3.1 IMPROVED MARKETS

The rapid rise of ‘environmental consumerism’ has been supported and to a certain extent led, by eco-labelling, a self-regulatory environmental policy instrument. Eco-labels are directed at consumers, with the intention of making it easier for them to accommodate environmental concerns when shopping. Some labels quantify pollution or energy consumption by way of index scores or units of measurement while others assert compliance with a set of practices or minimum requirements for sustainability, or reduction of harm to the environment.

The benefit to the producers are potentially higher revenues due to higher market share and price, but this has to be offset against higher production costs due to tougher environmental standards, and the greater time and effort due to the associated paperwork. Costs are also imposed on government and all the other companies involved in the supply chain (importers, exporters, distributors and merchants) that also have to comply. The more complicated the system, the greater the burden for all involved.

Originally developed by NGOs, eco-labelling schemes are now supported through legislation in the European Union and in recent years there has been a rapid increase in eco-labeling programs across the world and across business sectors, with many schemes encompassing social, ethical and safety issues as well as conservation and the environment. Most popular and successful food eco-labels include Rainforest Alliance Certified Coffee, GreenPalm, Marine Stewardship Council, and the Soil Association’s organic food labelling scheme. All are aimed at sustainable food production coupled to good social and environmental performance.

An important emerging trend is the rise in the uptake of voluntary eco-labels and sustainability standards by the business-to-business sector. Global firms want global standards that are well documented, transparent and trustworthy to secure their supply chain from production to consumption. This has led to the growth of a few “super standards” which have become major global brands and are likely to edge out some of the smaller standards and labels in place. Examples include the Forest Stewardship Council for the forestry sector and the Marine Stewardship Council for fish products. All have become well known consumer brands as well as key supplier filters for global buyers. It is possible in the future that a similar industry standard eco-label might be developed for carbon traded under REDD+.

Reservations about eco-labelling schemes remain as the costs are real, but the additional sustained additional revenues cannot be guaranteed. Trust in the label is an issue for consumers, as there are examples of manufacturers or manufacturing associations that set up “rubber stamp” labels to ‘greenwash’ their products. Labelling can also cause confusion and fatigue amongst consumers and brand awareness of some labels (such as the EU Eco-labels) remains low. Finally, as supply of eco-labelled products increases, there is the risk that the eco-premium may dissipate.

Deposit-refund systems require a monetary deposit at the point of sale of a product, with the deposit given back when the item is returned at the end of its useful life. In the U.S., deposit-refund schemes have been applied most commonly to help manage the disposal of lead-acid batteries, but are also being successfully applied in some states to beverage containers, pesticide containers, and tyres.

3.1.3.2 NEW MARKETS

Payment for Environmental Services (PES) refers to a scheme which offers financial incentives to farmers or landowners in exchange for managing their land to provide some sort of ecological service. These programmes promote the conservation of biodiversity and other environmental resources that are valuable, but for which no market exists. PES mimics a real market contractual relationship between the producer and the consumer. The market is not perfect as not all beneficiaries will be required to pay, due to the public good nature of some of these services.

Twenty-four specific ecosystem services were identified and assessed by the Millennium Ecosystem Assessment, a 2005 UN-sponsored report designed to assess the state of the world’s ecosystems. The report defined the broad categories of ecosystem services as food production, fibre, genetic resources, fresh water, air quality regulation, climate and water regulation, erosion control, water purification and waste treatment, disease regulation, pest regulation, pollination, natural hazard regulation and cultural services.

Under PES the party supplying the environmental services should hold the appropriate property rights over the ecosystem service and will provide the service to the customer if payments exceed their opportunity costs. The beneficiaries, on the other hand, are willing to pay a price that is lower than the benefits they gain from these services. The providers of the ecosystem services will supply those services providing the beneficiaries’ payments are greater than the cost of providing the services.

In practice, there are few genuine markets for ecosystem services as there tends to be only one purchaser and one provider and to all intents and purposes, current PES systems operate in a very similar way to agri-environment subsidies, where the provider is paid through a government agency to manage the resource. Governments have a key role to play in PES approaches unless property rights for the services are clearly allocated to appropriate stakeholders.

Arguably, in this context the world’s largest and longest running PES program is the United States’ Conservation Reserve Program, which currently pays about US\$1.8 billion a year under 766,000 individual contracts with farmers and landowners to “rent” a total 34,700,000 acres (140,000 km²) of what it considers “environmentally-sensitive land.” This program has existed in some form or another since the wake of the American Dust Bowl, when the federal government began paying farmers to avoid farming on poor quality, erodible land.

A similar scheme exists in China, where since 2000, the central government is spending US\$43 billion on the ‘Grains for Green’ programme, by which it offers farmers grains in exchange for not clearing forested slopes for farming, thereby reducing erosion and saving the streams and rivers below from sedimentation. There is a clear crossover between environmental subsidies discussed above and PES – they operate on the principle that the provider should be paid but the key difference is that under PES, at least in principle, the beneficiaries should pay (e.g. hydropower plants) and not the tax payer, as in the CAP and the CRP.

In Viet Nam the government has issued a set of laws and policies to protect and generate forest resources, for example, the Law on Forest Protection and Development (1992, 2004), Land Law (1993, 2003), Environmental Protection Law (1993), and supplemental decrees (Decree 02/CP, 1994 and Decree 163/ND-CP, 1999) on forestland allocation. This set of laws and decrees, along with other development programs (327, 661, etc.) has created a legal framework for forest and forestland-use rights and provides a legal basis and budgetary resources for forest to pay householders to protect the forest: The Green and Red Book systems. Under the Red Book system, land can be allocated to households for long term use (of 50 years) and under the Green Book system householders can be paid under contract to protect forests belonging to the state-owned enterprises or within nature reserves areas for 20 year period. In both cases, the government retains ownership and the land is returned to the government enterprise at the end of the contractual period (Sunderlin and Ba, 2005).

Payments under the Green and Red Book system provide an important opportunity to develop PES schemes in Viet Nam in Hydropower watersheds (Box 3).

Another market-oriented environmental policy is marketable or tradable permits, referred to as the “cap-and-trade” system. The rationale is based on setting an absolute quantity of pollution to be allowed, and then giving or selling polluters rights or “permits”, to pollute up to that given cap. A central authority (usually a government body) then sets a limit or cap on the amount of a pollutant that can be emitted. The limit or cap is allocated or sold to firms in the form of emissions permits which represent the right to emit or discharge a specific volume of the specified pollutant. Firms are required to hold a number of permits equivalent to their emissions.

The total number of permits cannot exceed the cap, limiting total emissions to that level. Firms that need to increase their emission permits must buy permits from those who require fewer permits, thus, in theory, those who can reduce emissions most cheaply will do so, achieving the pollution reduction at the lowest cost to society. The key point is that tradable permits allow governments to set the precise amount of pollution that they are prepared to accept. This is something they could do with regulation, but not with a green tax. Environmental organisations could also, in theory, buy up permits and thus reduce the amount of pollution allowed.

The most successful example of tradable permits has been the US Clean Air Act amendments in 1990, where a tradable permit system was created under which more than 100 large coal-fired power plants were given initial emissions reduction targets. The goal was to reduce emissions of sulphur dioxide by 50% in the eastern half of the United States. These facilities were given the ability to purchase excess emissions reductions generated by other plants that found it easy to reduce their sulphur dioxide, or the choice of meeting their emissions reductions targets themselves. This cap-and-trade approach resulted in sulphur dioxide reductions that have been both larger and faster than required by legal binding regulations.

There are also active trading programs in greenhouse gases. The largest is the EU Emission Trading Scheme (ETS). The first phase of this scheme was created to operate apart from international climate change treaties such as the United Nations Framework Convention on Climate Change (UNFCCC, 1992) and the Kyoto Protocol (1997), but has continued under these auspices subsequently. Under the EU ETS, the governments of the EU Member States agree national emissions caps that are approved by the EU commission. Those countries then allocate allowances to their industrial operators, and track and validate the actual emissions in accordance with the relevant assigned amount. They require the allowances to be retired after the end of each year.

Box 3: The Development of the Lam Dong PES Scheme, Viet Nam (Nguyen et al., 2010)



The history of PES in Viet Nam can be traced back to the late 1980s when the Hoa Binh Hydropower Plant began operating.

The issue of payment for forest conservation was raised in the mid 2000s when natural calamities resulting from deforestation and degradation in the watershed resulted in loss of human lives and loss of assets of the local people.

In early 2007, the decision was taken to implement a PES pilot scheme to explore the potential to provide additional income for forest dependent communities through conservation of forest resources.

Covering a watershed of almost 400 000 hectares the Lam Dong PES scheme involves payments from 4 hydropower companies and 9 eco-tourism companies. Fees are estimated at around 47.3 billion VND (US\$2.5 million).

In early 2009, the provincial Forest Protection and Development Fund (FPDF) was set up as the mechanism for the distribution of the fees. The Fund was placed under the overall management of Lam Dong Department of Agriculture and Rural Development (DARD), who collect and distribute the funds.

The income that each household receives depends on the area of forest contracted/allocated to them. On average, each household having an annual income per household of around 250,000 VND. The payment only covers 112,000 hectares of forest contracted to 3,342 households.

Under this payment regime land holders are only required not to do any harm. The scheme does not have a performance element, whereby landholders can be paid more if services are improved. This would require more comprehensive monitoring and measurement.

Like any other economic instrument, trading matches buyers with sellers in a mutually beneficial exchange. Like financial stock markets, companies and private individuals can trade through brokers who are listed on the exchange. Allowance can be traded through several means:

- privately, moving allowances between operators within a company and across national borders,
- over the counter, using a broker to privately match buyers and sellers, and
- trading on the spot market of one of Europe's climate exchanges.

When the Kyoto Protocol came into force on 16 February 2005, the EU agreed to incorporate flexible mechanism certificates as compliance tools within the EU ETS.

The Kyoto flexible mechanisms are:

- Joint Implementation projects (JI) defined by Article 6 of the Kyoto Protocol, which produce Emission Reduction Units (ERUs). One ERU represents the successful emissions reduction equivalent to one tonne of carbon dioxide equivalent (tCO₂e). Under Article 6, any Annex I country can invest in emission reduction projects (referred to as "Joint Implementation Projects") in any other Annex I country as an alternative to reducing emissions domestically. In this way countries can lower the costs of complying with their Kyoto targets by investing in greenhouse gas reductions in an Annex I country where reductions are cheaper, and then applying the credit for those reductions towards their commitment goal. A JI project might involve, for example, replacing a coal-fired power plant with a more efficient combined heat and power plant. Most JI projects are expected to take place in so-called "economies in transition," noted in Annex B of the Kyoto Protocol.
- Clean Development Mechanism (CDM) defined by Article 12, which produces Certified Emission Reductions (CERs). One CER represents the successful emissions reduction equivalent to one tonne of carbon dioxide equivalent (tCO₂e). These CERs can be obtained by implementing emission reduction projects in developing countries, outside the EU, that have ratified (or acceded to) the Kyoto Protocol and allows industrialised countries to invest in emission reductions wherever it is cheapest globally. Most of these reductions are through renewable energy, energy efficiency, and fuel switching.
- International Emissions Trading (IET) defined by Article 17.

3.2 PERVERSE ECONOMIC INCENTIVES

A perverse incentive is an incentive that has an unintended and undesirable result of an incentive which has unforeseen negative impact on the achievement of another policy objective. Perverse incentives are therefore a type of 'unintended consequence' and are one of the main risks of economic incentives compared to regulation and other direct forms of government intervention because of the freedom incentives give individuals and companies to achieve the policy objective.

In the UK, for example, the government offered tax breaks to rich individuals to invest in forest establishment. Although very successful in terms of achieving the government's afforestation target, they resulted in 'blanket peat' sites in northern Scotland being planted even though site conditions were unsuited to commercial afforestation in economic and environmental terms (Box 4). Another example, which has had direct ramifications for tropical peatlands, is the EU policy target for the transportation sector to achieve 10% use of bio-fuels by 2015. This policy measures significantly bolstered demand for palm oil production in southeast Asia. In Indonesia, there are local policies that require land to be cleared every 3 years otherwise small holders risk losing land tenure but this practice has led to an increase in burning (Parish and Silvius, 2009).

Box 4: Perverse Economic Incentives: The Flow Country of Northern Scotland



The Flow Country is the largest expanse of blanket bog in Europe, covering about 4,000 km². The area is home to a rich variety of wildlife, and is used as a breeding ground for many different species of birds, including greenshank, dunlin, merlin and golden plover.

The Flow Country was badly damaged between 1979 and 1987 through deep ploughing and the cutting of thousands of miles of drains, and application of large amounts of fertiliser to allow trees to grow. The trees dried out the peat, changing the habitat and destroying its value for birds and other wildlife.

The trees were mostly planted on land bought by wealthy investors who could claim planting grants and tax relief against all their other income, at a time of high personal taxation.

In 1988 the UK government removed the tax break due to pressure from environmental groups. This immediately halted further planting and the UK Forestry Commission was encouraged to adopt a much broader approach to conservation on peatland.

In an effort to restore the damage, the Royal Society for the Protection of Birds (RSPB) have bought a large area in the centre of the Flow Country and more than 20 km² and the young trees felled and allowed to rot in the plough furrow in the hope and expectation that, in 30–100 years, the land will revert to peat bog.

The Flow Country is on the 2010 UK "Tentative List" as a possible UNESCO World Heritage Site.

3.3 BROADER PERSPECTIVES

Economic incentives are now routinely deployed to achieve conservation objectives in many countries of the world, especially in Western Europe, North America and Australia. Some general points regarding their deployment are:

1. Research suggests that economic incentives are more efficient than alternative approaches under specific circumstances.
2. The choice of instrument often is highly dependent on particular socio-economic, cultural, legal, and political conditions.
3. A single economic instrument operating in isolation is unlikely to deliver the environmental outcome desired. Economic instruments should be viewed as part of coherent programme that might include education and training, voluntary action, and government intervention through regulation.
4. Many economic instruments can be introduced together as they can be highly complementary. For example, a PES scheme could operate in tandem with a product certification scheme to protect forested catchments from degradation.
5. Interventions should be introduced in sequence as part of a planned 'Road Map' to achieve policy targets cost-effectively, beginning with low level and inexpensive interventions such as public awareness raising and education and training, with economic instruments introduced if conservation targets are not being met or progress is slow. Finally, if policy targets look like being missed, the government may be forced into introducing new laws and regulations which, while the most effective, can be expensive in economic and political terms.
6. The decision to reward good stewardship or to penalise agents for negative practices depends largely on a political process which must take account of de jure or de facto property rights and or the base line quality of the environment. For example, there will be a tendency to adopt the polluter pays principle if pollution leads to a serious decline in current environmental conditions and affects other people detrimentally, such as in the case of river contamination by toxic chemicals. Grants and other payments tend to be components of environmental programmes that aspire to protect and enhance the current level of environmental provision and where the right to manage is clearly vested in the landowner.
7. Sometimes political and socio-cultural factors override this principle. In environmental conservation, for example, a penalty system may be difficult to implement for agricultural pollution because farmers may be too poor, and lack the capacity, to adopt new technology or practices. In these circumstances financial support, through a subsidy may be the best option.

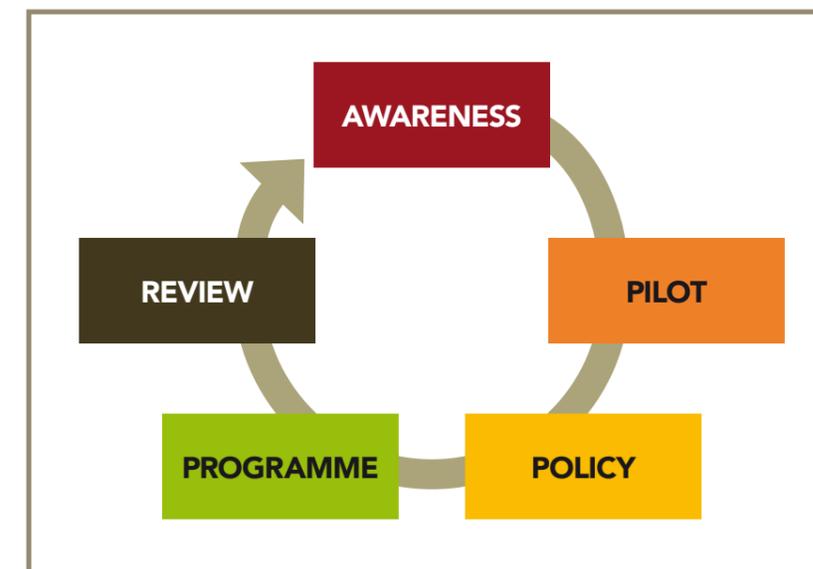
SECTION 4: APPLYING INCENTIVE SYSTEMS TO TROPICAL PEATLAND CONSERVATION

Although economic incentives are being increasingly deployed to achieve environmental objectives in western economies, they are not advancing quickly in Southeast Asia. In terms of tropical peatlands, economic incentives, with the exception of a few pilot project sites, have not been deployed. However, the potential to use economic instruments to protect peatlands in the future by encouraging 'wise use' is considerable. In this section we assess this potential and highlight some of the issues that might hamper or prevent their adoption in the ASEAN region.

4.1 POLICY CYCLE

The basic policy adoption model is outlined in *Figure 5*. Generally, policy develops and evolves through a process that encompasses five stages: Awareness of the resource/issues among policy makers and major stakeholders; piloting to test incentive schemes and associated practices; introduction of distinct policy objectives and instruments; initiation of a funded regional or national incentive programme, and then a review of progress and achievements that feeds back into a new cycle.

Figure 5: The Policy Cycle



4.1.1 AWARENESS

New incentive schemes are rarely introduced 'cold', but rather they require the establishment of a shared policy agenda among key stakeholders based on heightened awareness. The adoption of policies requires the support of all major stakeholders, but often certain groups take the lead – for example, environmental NGOs often play a crucial part in building this awareness and championing environmental policy reform and can harness public support for change at national level. However, in most Southeast Asian countries environmental NGOs have limited capacity to influence national policy, working typically on more local 'bottom-up' projects.

4.1.2 PILOTING

The Greening of the CAP began as series of pilot areas representing different farming landscapes and conditions across the EU (e.g. Known in the UK Environmentally Sensitive Areas). These pilot sites were crucial in terms of selling the new approach to farmers and environmental NGOs by demonstrating how positive environmental, economic and farming outcomes could be generated by a different approach. Piloting is often an essential first step in demonstrating the cost and effectiveness of economic incentives to deliver environmental benefits from land-use activities. Pilot sites are being set up under these peatland projects and, if suitably designed, with a focus on livelihoods could provide a showcase to encourage the support of all the key stakeholders. Evidence gathered from pilot sites through an Environmental Impact Assessment (EIA) and Social Impact Analysis (SIA) can also provide information on the quantification and valuation of ecosystem services and livelihood impacts which can reassure policy makers that the programme is cost-effective and can contribute to meeting other policy objectives such as poverty alleviation.

4.1.3 POLICY DEVELOPMENT

Positive performance in pilot schemes, complimented by coherent lobbying by stakeholders can lead to major policy innovation regarding the wise use of peatlands as set out in the respective Peatland National Action Plans (NAP) of Indonesia, Malaysia, the Philippines and Viet Nam. This can include economic incentives, but also other approaches such as voluntary actions, education and regulations. For peatlands the most realistic approach would be to focus on adapting existing policies to meet peatland objectives as has recently been achieved in Indonesia.

Prior to policy implementation some consideration should be given to carrying out a Strategic Environmental Assessment (SEA) which could provide an early recognition, quantification or valuation of ecosystem services; and to introduce ecosystem services as a means to translate environment into social values and stakeholders. This is especially important as only few of ecosystem services have financial values. Such an approach will provide an opportunity to identify and integrate opportunities for future livelihood enhancements and partnerships in a long term strategy. Another key aspect of policy is the development of appropriate institutional capacity to deliver the policy – this is often lacking in ASEAN countries and significantly hampers policy delivery.

4.1.4 PROGRAMME

A programme represents a coordinated series of actions that will lead to regional or national participation to meet regional / national policy aims and targets. Programme-level benefits do not necessarily always require an appropriate policy framework if these can be provided by market forces, for example, through direct purchase of land titles by conservation NGOs or under REDD+. However, in the ASEAN context, where tenurial issues can be complex, market approaches will be difficult without an explicit policy statement of national or provincial support for peatland conservation. For example, some of the difficulties of introducing REDD+ projects can be traced to the absence of a supporting policy framework and institutional capacity.

4.1.5 REVIEW

The review process completes one round of the policy cycle and can lead to further refinement or more radical overhaul of the previous policy objectives as awareness of difficulties and other issues are raised.

4.2 APPRAISAL OF ALTERNATIVE FINANCING AND INCENTIVE OPTIONS FOR SUSTAINABLE MANAGEMENT OF PEATLAND FORESTS IN SOUTHEAST ASIA

In this report the potential to support the implementation of regional and national strategies for sustainable management of peatland forests is examined for five countries: Brunei Darussalam, Indonesia, Malaysia, the Philippines and Viet Nam. Given the lack of experience with economic incentives in ASEAN region it is not possible to rigorously assess this potential, hence this approach takes as its starting point the experience of other countries in deploying economic instruments for environmental purposes from around the world, but re-interpreted in light of the distinctive political and socio-economic situation in the five countries.

The potential financing and incentive system options initially identified by the APFP and SEApeat Project Management Group were:

1. **Multi Donor Trust Fund / ASEAN Haze Fund/National funds**
Establishment of funds at national or regional level to receive funds from government, private sector, international donors and donations from the general public.
2. **Voluntary Carbon Credit / REDD+ mechanism (climate related funding)**
3. **Incentives at Site Level**
Such as access to land or use of resources or provision of incentives to local communities for forest protection or rehabilitation.
4. **Peatland User Pay Principle**
Funding would be generated by charges paid by the users of the peatland areas – peatland products, cultivation and plantation or eco-tourism providers.
5. **Haze Insurance**
Establishment of an insurance scheme to make payouts when there is heavy haze incidents. Part of the premium will be contributed for fire/haze reduction efforts.
6. **Peatland Polluter Pay Principle**
Fines and emission permits would serve as an incentive to decrease forest degradation.
7. **Payment for Ecosystem Services (PES)**
8. **Tax Incentives**
9. **Certification**
10. **Other Non-monetary Rewards**

Systems 1-4 have been identified at this stage as priority options to be explored in-depth.

4.2.1 MULTI DONOR TRUST FUND / ASEAN HAZE FUND / NATIONAL FUNDS

The ASEAN Transboundary Haze Pollution Control Fund was established for the implementation of the ASEAN Agreement on Transboundary Haze Pollution (AATHP). Under this agreement, the participating nations are invited to make voluntary contributions to the Fund, with an initial target total amount of US\$500,000. Contributions from other sources, such as ASEAN's Dialogue Partners, other governments, international organisations, funding agencies, and private sector are also to be sought.

The Fund was initially intended to be used only for operational costs for emergency uses (i.e. when there is an imminent threat of trans-boundary haze pollution that requires fire suppression or other emergency response costs) such as associated salaries and travel expenditure, equipment and supplies. The Fund cannot be used for capital costs, such as fixed asset acquisition and building costs, nor can it be used for fire prevention (e.g including expenditure on fire wardens or providing incentives for livelihood options that do not require burning). The current potential of the ASEAN Haze fund would therefore appear to be quite limited and one could even argue that in its current form of the HAZE fund actually provide some kind of incentive to start fires as expenditure on salaries, overtime payments, and new equipment, is only triggered if fires need to be extinguished. Reported instances of deliberate fire-raising by fire crews in order to gain financially from overtime and bonus payments have been reported in other regions. In *Box 5* we explore the potential for enhancing the Haze Fund to protect peatlands from fire. It should be noted that some recent changes have allowed resources in the fund to be used for regional capacity building activities.

Box 5: Enhancing the ASEAN Transboundary Haze Pollution Control Fund (ATHPCF)

The ATHPCF has considerable potential to promote effective peatland conservation in Southeast Asia. Current limitations are:

1. Current financial commitment totals much less than US\$500,000.
2. The fund would appear to be focused on fire fighting as opposed to fire prevention and incentive payments to prevent fire in peatland areas.
3. Political buy-in does not appear to be very strong.
4. The Haze fund and the funding mechanism is not widely known to the private sector, institutions, international donors or the general public.

None of these constraints would seem insurmountable if the HAZE fund was modified as a funding mechanism for peatland conservation. Key proposals for adjustment include:

1. Sanction use of funds to pay for incentives to encourage alternative livelihood activities to avoid burning and social marketing campaign about the need to avoid starting peatland fires.
2. Broaden the investor base to include funds from government and private organisations that would gain from a reduction in peatland fires. These might include commercial businesses and tourism agencies in countries badly affected by smog from peatland fires.
3. Delegating decision-making to the ASEAN Secretariat or a specially created independent organisation that can make operational decisions about fire prevention investments. This organisation would also be free to seek funding for its activities from other national and international sources.
4. Seek broader political support from affected countries by re-launching the modified Fund.

Other multi-donor funds may also provide a potential source of money to fund innovative incentive schemes in pilot areas. RUPES (discussed under PES below) have successfully targeted such funds to establish its programme of activities world-wide. With the western world in the middle of an economic downturn, such funds may be hard to secure, and are in any case, unlikely to prove to be sustainable sources of finance at the programme level. Targeted efforts to secure funding of pilot areas should however be encouraged and if sufficient funds can be mobilised, for example, through the Corporate Social Responsibility (CSR) route, there may be potential to deploy these funds to promote wise-use of peatlands on a wider scale by acquiring rights of ownership and management. Although selling 'peatlands' as a CSR investment to large companies may be difficult given the low current profile of peatlands as a flagship for conservation, it may be possible to attract businesses to invest in a Trust Fund if the funds can generate modest returns from an investment in sustainable cropping systems on peatland and/or for carbon credits in the future.

Government funds may also be available but given the low priority of peatlands in the policy arena currently, then it seems unlikely that new money will be found by national governments to fund the conservation of peatland at a programme level. Lower levels of funding for pilot activities, on the other hand, may be more forthcoming if the pilot scheme can also be shown to contribute to other government objectives such as poverty alleviation or international obligations or designations (e.g. Ramsar or UNESCO World Heritage Sites).

4.2.2 VOLUNTARY CARBON CREDIT / REDD+ MECHANISM

The United Nations Framework Convention on Climate Change (UNFCCC) was established to avoid negative impacts of climate change through prevention, mitigation and adaptation, but has, so far, not included a mechanism to provide incentives for reducing emissions from forests and peatlands. The omission of nearly one fifth of global emissions from deforestation and land-use change from the global 'rules of the game' has been widely criticised. For example, investments in afforestation and reforestation under the Clean Development Mechanism (CDM), deals with much smaller fractions of total net emissions than from deforestation of peatlands (Stern, 2006; Schlamadinger *et al.*, 2007; Kanninen *et al.*, 2007; UNFCCC, 2007).

Should REDD+ become accepted within mainstream policy mechanisms the long term anticipated value of the carbon market is thought to be in the range of US\$2-20 billion per year with expenditure of around approximately US\$200 million/year through the voluntary carbon market). However, REDD+ currently faces several political and technical challenges, including issues about national sovereignty and land rights of forest users (e.g. indigenous communities); system "leakages" (when conservation measures in one area displace deforestation or forest degradation to another); and the establishment of appropriate deforestation baselines (Myers, 2007; Miles & Kapos, 2008).

Owing in part to these unresolved issues, REDD+ is currently not sanctioned under the clean development mechanism (CDM), but REDD+ carbon is currently traded in the voluntary carbon market or paid for using designated carbon funds (e.g. Forest Carbon Partnership Facility). Currently the traded price for carbon credits on the voluntary market is only one-third of that for carbon secured under Joint Implementation, and one-tenth of that achievable under the Clean Development Mechanism under the European Union Emission Trading System (Butler *et al.*, 2009).

Demand for carbon under the voluntary market largely stems from:

- the widespread belief that REDD+ will be recognised post-2012 and carbon will be traded under one of the official channels with a much higher value (Noordwijk, 2008) and
- from CSR with many global companies keen to enhance their environmental and social credentials in a global market place, where ethical consumerism with a strong environmental bent is growing.

In this context voluntary carbon emission reductions from deforestation and forest degradation are increasingly in demand as a way to combat global warming, fund forest conservation, and deliver economic benefits to rural populations. National governments and global investment institutions such as the Asian Development Bank (ADB) are also investing heavily in REDD+ projects.

The Forest Carbon Partnership Facility (FCPF) currently has sixteen financial contributors including British Petroleum, The Nature Conservancy and national governments of Denmark, Norway, Spain, UK, USA, Finland, Germany, Italy, Japan and the European Union who have pledged about US\$447 million (US\$232 million to the Readiness Fund and US\$215 million to the Carbon Fund). The focus to date has been on REDD+ readiness, though it is expected that the Carbon Fund, which will provide payments for verified emission reductions from REDD+ programs in countries that have achieved, or made considerable progress towards, REDD+ readiness, will become operational in the course of 2011 as a public-private partnership.

The Forest Investment Programme (FIP) is a targeted program of the Strategic Climate Fund (SCF), which is one of two funds under the framework of the World Bank led Climate Investment Funds (CIF) and provides funds to development banks such as the Asian Development Bank to support developing countries fund REDD+ activities and strategies by providing scaled-up financing for readiness reforms and public and private investments. The FIP takes account of individual country priorities and strategies for REDD+ by building on existing initiatives in the forestry or related sector. Specifically it supports:

- Investments that build institutional capacity, forest governance and information.
- Investments outside the forest sector necessary to reduce the pressure on forests such as alternative livelihood and poverty reduction opportunities.
- Investments that mainstream resilience considerations and contribute to multiple co-benefits such as biodiversity conservation, protection of indigenous people rights.

The UN-REDD Programme was launched in September 2008 to assist developing countries prepare and implement national REDD+ strategies, and builds on the convening power and expertise of the Food and Agriculture Organisation of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The programme brings together technical teams from around the world to help develop analyses and guidelines on issues such as the measurement, reporting and verification (MRV) of carbon emissions and flows, ensuring that forests continue to provide multiple benefits and support of local people and civil society at all stages of the design and implementation of REDD+ strategies. It also seeks to build consensus and knowledge about REDD+, to ensure a REDD+ mechanism is included in a post-2012 climate change agreement.

Norway continues to be the UN-REDD Programme's largest donor. Since the Programme was launched in September 2008, Norway has committed US\$52.2 million for 2008-2009, US\$31 million for 2010, and at least US\$40 million for 2011-2012. Denmark became the second donor country to join, committing US\$2 million in June 2009 and another US\$6 million in November 2010. At the end of 2009, Spain announced its pledge of US\$20.2 million over a period of three years, and confirmed US\$1.4 million for 2010. In March 2011, Japan made its first funding commitment to the Programme of US\$3 million and the European Commission pledged approximately US\$14 million (€10 million). The UN-REDD Programme is now actively looking for more donors, to meet the increasing demand from countries seeking support.

The Programme currently has 36 partner countries spanning Africa, Asia-Pacific and Latin America, of which 13 receive support to National Programme activities. These 13 countries are: Bolivia, Cambodia, Democratic Republic of the Congo (DRC), Ecuador, Indonesia, Panama, Papua New Guinea, Paraguay, the Philippines, Solomon Islands, Tanzania, Viet Nam and Zambia. Funds are used to support the development and implementation of national REDD+ strategies. National Programmes in seven UN-REDD Programme countries are now in their implementation phase (<http://mdtf.undp.org/factsheet/fund/CCF00>), including Indonesia (US\$5.6 million) and Viet Nam (US\$4.4 million).

Countries not receiving direct support to national programmes engage with the Programme in a number of ways, including as observers to the Programme's Policy Board, and through participation in regional workshops and knowledge sharing, facilitated by the Programme's interactive online workspace. These countries are: Argentina, Bangladesh, Bhutan, Central African Republic, Colombia, Costa Rica, Ethiopia, Gabon, Guatemala, Guyana, Honduras, Ivory Coast, Kenya, Mexico, Mongolia, Nepal, Nigeria, Pakistan, Peru, Republic of Congo, Sri Lanka, South Sudan and Sudan. Projected expenditure 2010-2012 is given in *Table 4*. Most of the funds have been invested in projects to provide performance based incentive payments (28%) and to build capacity (27%), with the remainder spent on developing national strategies.

Table 4: Projected Expenditure for the Period 2010-2012 on International REDD+ Projects from Global Mechanisms

PROJECTED EXPENDITURE 2010-2012	MILLIONS USD
UN-REDD	49.5
FCPF Readiness Mechanism	101.8
FCPF Carbon Finance Mechanism	72.0
Forest Investment Programme	543.0
Total Expenditure	766.5

Source: FCPF Report 2010

REDD+ is a potentially important source of funding to deliver the key objectives of the ASEAN Peatland Management Strategy 2006-2020 and in the last several years there has been significant progress in the development of carbon finance mechanisms for peatlands. In 2010 the first approved Voluntary Carbon Standard (VCS) methodology specifically for peatlands was recognised and a number of peatland REDD+ projects are in the process of being finalised or under development. Partnerships are being formed involving international development banks, private investors government and conservation NGOs under the schemes described above. Details of individual schemes are difficult to find, largely because of their confidential nature and commercial sensitivities. A flagship programme for peatlands in Indonesia is between the Kalimantan Forests and Climate Partnership Australia and Indonesia (Box 6). Under the support of the ASEAN Peatland Forests Project and SEApeat Project, several pilot sites for testing of incentive scheme to promote sustainable management of peatlands have been identified which might also have potential for future REDD+ payments. These are Riau in Indonesia and Agusan Marsh in the Philippines, Raja Musa Forest Reserve in Malaysia and the U Minh region in Viet Nam.

New investment products involving private capital are also being developed and brought on to the market. The Global Peatland Fund is one example of a REDD+ Peatland Forest investment scheme. Developed by Wetlands International (WI), the geographical focus of the Global Peatland Fund will initially be in Kalimantan and Sumatra, where WI has carried out community-based peatland conservation and restoration projects in cooperation with local government (Box 7).

A strong feature of REDD+ projects and payments are that they should incentivise improved performance compared to reference scenarios of carbon through provision of adequate compensation to agents that suffer losses from changed practices. Key demands from international investors will be accountability, transparency, risk management, adequate benefits transfer and administration mechanisms.

Overall as a funding mechanism REDD+ has clear potential to contribute significantly to the conservation of tropical peatlands, but there are a number of challenges.

1. The current accreditation phase is time consuming and slow. The different funding mechanisms such as FIP and UN-REDD programmes require different processes and require to be harmonised.
2. The economic viability of REDD+ schemes depends on the profitability of alternative land-uses. Oil palm agriculture has become a major driver of tropical deforestation on tropical peatlands over the last few decades and it can generally outperform alternatives under REDD+ in terms of profitability. For example, Butler *et al.* (2009) show that converting a hectare of forest for palm oil production will be more profitable (yielding net present values of US\$3,835 - 9,630) to land owners than preserving it for carbon credits under REDD+ (US\$614 - 994), even assuming all of this is paid to the landowner. The study concludes that REDD+ will only be competitive if REDD+ credits price parity with carbon credits traded in compliance markets. While there is an expectation that REDD+ carbon will rise to this level once agreed, there is a risk that the price of carbon may fall due to changes in technology or more cost effective emission reduction strategies being developed.
3. Basic methodologies and approaches for assessing carbon stocks and emissions from peatland still need to be improved as it is more difficult to estimate below ground than above ground carbon stocks.

Box 6: The Kalimantan Forests and Climate Partnership



Australian government has committed US\$30 million to support the Kalimantan Forests and Climate Partnership, the first large-scale REDD+ demonstration activity of its kind in Indonesia.

The aim is to support and inform international negotiations on REDD+ under the UNFCCC by demonstrating how REDD+ can work in practice in Indonesia.

This demonstration activity is being implemented in an area of forested and degraded tropical peatlands in Central Kalimantan on the island of Borneo. The Kalimantan Forests and Climate Partnership aims to reduce greenhouse gas emissions and demonstrate an equitable and effective approach to REDD+ by developing:

- Measures to reduce emissions from deforestation and forest degradation;
- Approaches to forest carbon measurement, linked with Indonesia's national systems;
- Incentive based payments for forest-dependent communities in Central Kalimantan; and
- Institutional and governance arrangements for REDD+ activities.

Incentive based payments for local communities: Of the approximately 10,000 people who live in the project area, the majority earn a living from forest crops, rubber and annual crops, such as rice and cassava. Local livelihoods are directly dependent on the environment, so the processes of deforestation and degradation have severe consequences for the local economy. Since local people are directly affected by the consequences of environmental degradation, they must also be at the heart of the solution.

An innovative payment mechanism is being designed to provide performance-based incentives for REDD+ to forest-dependent communities in Central Kalimantan, encouraging sustainable land-use practices and the conservation of forests. It aims to have trial approaches to payments that could be used to support participation in a future REDD+ mechanism under the UNFCCC.

Incentives will initially be tied to performance indicators, such as a reduced incidence of fire, and later to measured reductions in greenhouse gas emissions.

However, problems with local community groups are emerging. In 2011, a Dayak community organisation from the area of the KFCP project, wrote a letter listing major concerns with the project, especially its failure to respect the rights of the Dayak communities in the area and to provide sufficient opportunities to benefit.

Box 7: The Global Peatland Fund (GPF)

GPF is intended to support projects that are able to avoid large quantities of carbon dioxide emissions by protecting and restoring peatlands and promoting sustainable development. These projects will guarantee Voluntary Emissions Reductions and emissions removals (VER's).

The Fund will invest in peatland restoration and conservation projects in Southeast Asia. More specifically, this will entail the following types of peatland projects:

- a. Re-flooding previously drained and deforested peatlands by building dams in the drainage canals;
- b. Reforesting deforested peatlands using native species;
- c. Protection of remaining peat forests from deforestation; and
- d. Fire management plans to prevent and control peat fires.

The Fund will not operate projects itself, but tender out peatland restoration and conservation projects to interested third parties. Sustainable socio-economic development projects involving local communities will form an integrated part of the peatland projects, and will be financed by the Fund through grants or micro-credits. Peatland projects will be selected on the basis of a number of eligibility and quality control criteria adopted by the Fund.

The emission reductions achieved will be monitored in accordance with independently verified methodologies, so that they can be classified as Voluntary Emission Reductions and Emission Removals ("VERs"). The Fund will purchase VERs from the peatland projects through Emission Reduction Purchase Agreements ("ERPA"). These will be entered into at an early stage of the project development and include advance payments for peatland project development and the provision of technical advice. 100% of the VERs generated by the peatland projects will be delivered to the Fund until the advance payments have been recovered, and the Fund may also purchase additional VERs generated by the projects.

The Fund will sell VERs on the international carbon markets, which will generate a good return for the investors in the Fund, capped at 15%. The remaining profits of the Fund's operations, in line with the broader goals of the Fund, will be invested into community development projects. The VERs generated by the Fund represent a high level of sustainability to investing companies: not only do these VERs guarantee greenhouse gas emission reduction, they also significantly contribute to socio-economic development in some of the poorest regions in the world, as well as the conservation of globally important biodiversity.

Wetlands International is currently detailing the organisational and operational aspects of the Fund, e.g. its legal structure, the methodologies for VER monitoring, and the management structure. It is envisaged that the Fund will be managed by a professional management team (i.e. the Fund Manager), comprising of experts from Wetlands International assisted by other experts. In order to ensure the credibility and broad acceptance, the Fund will be supported by an Advisory Committee made of reputable peatland experts, NGOs, UN Conventions and government. Lead investors will be part of the Participants' Committee.

It was expected that the Fund's first pilot project would be operational in the second half of 2011 but there have been delays.

Source: <http://www.ckpp.org/Portals/16/CKPP%20products/The%20Global%20Peatland%20Fund%20flyer.pdf>

4. In many countries with extensive peat resources there are problems with administration and governance with poor capacity among key stakeholders to engage with local communities.
5. Fragmented mandates and lack of clarity over tenure and security of payments also have to be overcome. As use of forest resources usually requires more than one type of permit, revoking forest use concessions may lead to claims for compensation. Land ownership does not necessarily coincide with the right to change the vegetation and hence terrestrial carbon stock. Separate regulation of 'rights to sell' (as the most functional dimension of 'ownership') of carbon storage and/or other environmental service (ES) is feasible, but in the implementation the various (and often conflicting) claims on land ownership need to be taken into account. Forest-dependent people have been under-represented in public decisions about forest futures and rules may increase poverty for these groups and reduce resource access rights.
6. REDD+ projects have met resistance because they require national governments and national development agencies to forgo opportunities for economic development and may run counter to institutional objectives in the short term. There may be problems of rivalry and responsibilities with regard to central and regional government structure in Federal states. In Indonesia, there are two options: (1) transaction with the central government and (2) transaction with provincial/lower government levels or directly with projects in accordance with the relative share of the location in the national baseline. Each of these options implies a different form of redistribution mechanism in Indonesia. Option 1 is more centralised and government funds would need to be redistributed from a central fund held at national level. Option 2 is more decentralised, but a tax or levy placed on REDD+ activities at sub-national level would need to be collected to pay for administrative functions such as national level monitoring and accounting. Funding mechanisms would still be required in this option in order to redistribute revenues accrued through the tax or levy.
7. Opportunities for shifting forest land-use (and associated loss of carbon stocks) to other areas, makes 'leakage' a serious issue at project scale. National scale accounting, based on a summation over all areas within the country, can reduce the 'leakage' issue to what is accepted between Annex-I countries in the Kyoto protocol.
8. In assessing the specific contributions of any activity or project, as basis for incentives or rewards, is highly complex and may be hard to establish.
9. Legality of current actors engaged in activities that lead to CO₂ emissions from forests and peatlands is not easily established. For example, major pulp and paper mills maintain that they have no engagement whatsoever in illegal logging, but nevertheless may have to close their business if strong enforcement action is taken to prevent illegal logging operations continuing.

There is no doubt that REDD+ funds provides a unique opportunity to secure tropical peatland for conservation on a significant scale in the medium to long term should REDD+ carbon acquire the value of mandatory carbon. However, a number of challenges remain and in the short term, the voluntary carbon market may offer greatest potential as a source of funding for pilot projects in the region. The potential to use CDM funds to finance reforestation projects on degraded peatlands that may have become marginal for agriculture should also be assessed.

4.2.3 INCENTIVES AT SITE LEVEL

The provision of incentives at site level is increasingly seen as essential to ensure that local people support and actively collaborate with conservation management objectives in, and around, protected areas. Incentives can range from providing micro-credit, access to land for livestock, agriculture or for the collection of fuel wood or fodder. Paid employment in conservation related activities such as rangering, fire protection and management, or in tourism as guides and catering staff, also feature prominently in coordinated approaches to incentives at site level to promote community support for conservation.

Such approaches are used in a number of tropical peatland sites within Protected Areas. Under the APFP, several sites have been chosen as pilots for incentives at site level. These are Agusan Marsh (The Philippines), Riau, Central and West Kalimantan (Indonesia), U Minh Thuong National Park (Viet Nam), and Raja Musa Forest Reserve (Malaysia). In the U Minh Thuong National Park (UMTNP) in Kien Giang Province, Viet Nam; 4 hectares of production forest have been allocated to each household in the buffer zone, of which 1 hectare will be planted with *Melaleuca* trees, the rest is used for crop and fishery development. In U Minh Ha National Park, Ca Mau province, 3 hectares of *Melaleuca* forest is allocated to each household in the buffer zone, of which 30-40% can be utilised for food production such as rice cultivation (Nguyen *et al.*, 2010).

Similar examples of eco-tourism and alternative livelihoods as community level incentives for peatland and forest conservation include the Tasek Bera in Malaysia, and the Sebangau National Park in Kalimantan, and the Giam Siak Kecil Biosphere Reserve, Riau, in Indonesia. Funding often comes from the tourism operators who provide training, equipment and salary. The negotiations with the community can be time-consuming and disputes can arise, but as the community are genuinely providing a service that contributes to the business, this approach can be regarded as a potentially sustainable option.

In peatland sites where fire is a major threat, employment can be offered as fire prevention wardens and as fire crews. Funding in this case usually comes from government and or from NGOs and potentially is therefore vulnerable to government expenditure cut backs or changes in political priorities. In some countries, where overtime payments are paid for fighting fires, there is a risk that some fires may be started deliberately.

More ambitious schemes, which encompass a wider range of local user benefits and beneficiaries typically require significant external funding. For example, Integrated Conservation and Development projects such as Kien Giang Biosphere Reserve (KGBR) in Viet Nam, funded from 2008-2010 with 1,630,000 Euros by the Australian Government and German Technical Cooperation, promoted the management of Protected Areas and the Coastal Protection Forests of Kien Giang province.

Incentives at site level are essential to ensure delivery of conservation benefits, but there are a number of challenges that need to be addressed:

- Where incentives require relocation and substantial capital investment in equipment, livestock and training this may only be a viable option if the community are willing to move. This may be easy with recent migrant communities, but more difficult with indigenous groups reluctant to leave their ancestral lands and possibly less interested in economic incentives.
- Another major potential problem is the so called 'honey-pot' effect where the scale of economic incentives available for communities living close to, or inside National Parks, can attract a significant number of poor migrants which can exacerbate environmental problems in the Park. For example, in the Ngorogoro Conservation Area (NCA), the population of Masai people living around the area has increased significantly due to the financial incentives from tourism and superior educational and health facilities available from the NCA Authority. Local groups can also be granted exclusive access rights to resources such as fishing and grazing with a protected area in exchange for managing their activities sustainably and helping to prevent fires and other acts such as poaching. There are problems with this approach especially where these rights are not legally enforceable and other people and business operations encroach or are allowed in. In Loagan Bunut National Park, Sarawak, for example, commercial mainstream tourism businesses that have been allowed to develop along the park boundaries has led to contamination of water supplies from waste water and threatens native fish species due to artificial stocking of rivers with game fish.
- Local people may continue to degrade the resource while taking advantage of the new opportunities being offered.
- Perceived as a local solution, local incentives can have high transaction costs and may be difficult to replicate over larger areas at a regional scale due to variability in socio-economic conditions and opportunities. Access to land or the provision of financial incentives to local communities for forest protection or rehabilitation and wise use of peatland has to be a central component of an incentive-based approach to peatland conservation in all five countries.

Incentives at site level must clearly play a part in peatland conservation strategy where a main threat is known to be poverty in local communities who need access to land for agriculture (e.g oil palm, paddy etc.) or other activities detrimental to peat to improve their livelihood. The approach works best where there is considerable support from a local government agency or NGO and where human population density is low and hence pressure on resources is not too high.

It is important that community aspirations and needs are recognised at an early stage to ensure incentives are cost-effective and to recognise the legitimacy to use peatland resources for livelihood purposes. Where indigenous rights have been recognised it may be possible to develop a community co-management strategy. Some caution should be exercised in relation to relying on eco-tourism as a mechanism for conservation as tourism tends to thrive in special locations where there is good access and an outstanding natural environment where charismatic species can be found and seen.

Funding requirements will vary depending on circumstances. Pilot projects will require only modest funding, typically from international project budgets. Larger programmes at a regional scale would require major funding from REDD+ and or user payments if existing budgets can be redirected towards wise use (see next section).

4.2.4 PEATLAND-USER-PAY PRINCIPLE

‘User pays principle’ is a pricing approach based on the idea that the most efficient allocation of resources occurs when consumers pay the full cost of the goods and services that they consume, including the natural environment. The tax is different therefore from a general sales tax in that it is targeted at specific land-uses or activities in order to obtain a specified policy objective. Paying for use implies or requires that the user does not have the right to degrade the resource or cause pollution – the rights are held by another party typically the government, on behalf of society. To promote conservation of peatlands, the charge or tax can be hypothecated to fund local conservation activities such as fire prevention measures or alternative livelihoods.

In principle, the costs of charging to use tropical peatlands for plantations, agriculture or for timber would require the full cost of this use including pollution costs and a charge for consuming natural capital – that is, for damaging or destroying the delicate peatland ecosystem, to be met by the developer. When environmental costs are fully internalised into the price of a product or activity, a reallocation of resources in the economy occurs because price signals for both producers and consumers will reflect the environmental costs of goods and services. Consumers will be encouraged to replace higher priced goods or services with of lower priced alternatives that are less environmentally damaging. Likewise, businesses are encouraged to move away from using environmentally damaging production methods and resources.

Using the tax system to address environmental externalities can also lead to an efficient level of pollution abatement, and can be an effective way of achieving behavioural change in a number of ways by creating dynamic incentives to reduce peatland degradation. Some issues for the user-pays approach include:

1. **Acceptance is key. The landowner or community needs to accept the principal of charging and be willing to pay.**
2. **The charge has to be set at an appropriate level to ensure that peatland conservation objectives are met. To work, the tax would have to be high enough to create a significant financial disincentive. However, the higher the tax, the more unpopular it becomes.**
3. **There is the risk that some investors would be willing to pay the tax due to high profits and peatlands will continue to be lost or degraded.**
4. **Low income households may not be able to pay and this may mean that charges are regarded as politically unacceptable.**

Charges could be levied on a range of users such as plantation owners, municipalities, or eco-tourism providers. Eco-tourism, may be a prospective for a user tax/conservation tax, but as previously mentioned, the occurrence of eco-tourism is very patchy and unlikely to raise significant sums without jeopardising the profitability of this highly competitive and fragile industry.

There are many examples of eco-tourism taxation around the world, with entry fees and other payments such as a ‘bed’ or a ‘boot’ tax can help finance management and user benefit schemes in protected areas. In Malacca, Malaysia, for example, a 5% surcharge called the ‘Heritage Tax’ is applied to guests on hotel room rates and the money is used to maintain historical sites. A tourism tax is only feasible where there is tourism and hence the site must be attractive and accessible to tourists. At U Minh Thuong, the opportunity for boats trips and to watch wildlife, especially roosting bats offers considerable potential but the site is very far from other tourism destinations in southern Viet Nam. Tourism taxes applied provincially or nationally may be a further possible source of funding but this will not be easy to introduce in the short term.

Land-use taxes have considerable more potential especially in Indonesia and Malaysia where large areas of land have already been given over to oil palm and other highly profitable crops and where existing fiscal instruments can be adapted to achieve peatland conservation objectives. Current charges/taxes on oil palm and other land-uses are too low relative to the profits currently being generated on peatlands to act as a disincentive, hence some lobbying would be required to increase the charge to make it effective, with the additional revenues generated by the new higher tax rate reinvested to subsidise more sustainable production systems on peat. There are few precedents for a hypothecated user tax in ASEAN region, but one or two have been introduced in Malaysia. For example, the Community Forest Cess Fund, Sabah, where funds collected from timber companies is channelled into community projects. Another example, would be the Rubber Cess, which is collected from the export of rubber, and is used mainly to subsidise rubber replanting (EPU, 2004).

Variable charge rates could be levied against the developer based on the value of the peatland and the level of degradation that might arise. However, the more sophisticated the tax, the more expensive it is to operate due to higher transaction costs. A simpler approach, but one which would perhaps be most cost-effective would be to apply the tax to the price of the commodity being produced. In this way, higher revenues would invoke higher tax charges and hence dampen demand at times of very high commodity prices. Prices of palm oil have more than doubled in real terms in the last 5 years and there is clear scope to raise taxes on this crop. This need to increase taxation when profits are high is already recognised. In the case of Malaysia, where a ‘windfall’ tax, operates when the price of palm oil exceed a certain threshold. In Sabah, for example, a tax of 7.5% on oil palm revenues is applied when the prices exceeds RM3,000 per metric tonne. Based on the current situation this threshold would have to be lowered to achieve significant gains for peatlands with high conservation and carbon values. A higher taxation rate would be cost-effective in terms of peatland conservation because it would tend to discourage investment from sites with higher costs and lower yields such as deep peat.

There are some examples in Indonesia that could be adapted for that purpose as forestry taxes are part of the prevailing fiscal regime system of forest management. While they have been essentially deployed as only a revenue-raising tool, the level and structure of forest charges and their possible effect on forest management has recently been the object of extensive examination and it is clear that they offer some potential to conserve peatlands if the taxes are redesigned and significantly increased (UNEP 2005). Examples of potentially relevant taxes include:

1. **Forest Concession License Fee (IHPHP):** paid at the issuance of the 20 year forest concession license. Its level reflects differences in the average quality of standing forest and local factors (US\$4/hectare in Irian Jaya and Nusa Tenggara, US\$7.50/hectare, in Sumatra and Sulawesi, US\$10/hectare in Kalimantan and Maluku). Since 1993, IHPHP became payable, at a somewhat lower rate, also on logged-over areas within the concessions coming up for renewal.
2. **Land and Building Tax (PBB):** Payable on the area of concession occupied by facilities and housing. Its application is similar to that prevailing outside the forestry sector.

3. **Reforestation Fund (Dana Reboisasi or DR):** Perhaps the most controversial component of the current forest taxation regime for two reasons. First: the stated purpose of the tax is either to induce environmentally desirable behaviour (reforestation) or to generate funds needed to deter any damage that concessionaries are believed to cause. Second, the principle of earmarking the tax is considered by many to be weak. The tariff paid at US\$10.50-16.00/m³ according to province of origin and species group on wood chips and sawn logs, and at US\$2/m³ for pulpwood. In 1993, DR was estimated to account for almost two thirds of the total forest taxation income. Its proceeds are to be used mainly to provide soft loan financing for industrial forestry plantations. However, the fund has proven a relatively easy target for 'raiding' by non-forestry interests and there has been a misuse of funds to finance activities such as establishment of banks and investment in manufacturing by the forestry plantation concessionaries. Complicated bureaucracy and fund administration leads to not all of the funds is used for correct allocation, which cause the rate of reforestation to be low.
4. **Royalty:** Levied at 6% of the reference price of logs, 11 differentiated by species and province of origin. Following a log export ban, the royalty is collected at factory exit based on predetermined conversion coefficients. In the early 1990s, it fluctuated between US\$2.50 and US\$8/m³ according to the species and grade. Royalty is theoretically payable also on charcoal and fuel wood.
5. **Scaling and Grading Fee:** A volume or weight-based fee that is in the nature of a payment for a service.
6. **Sawn Timber Export Tax:** Based on sawn timber export price.
7. **Other Forest or Forest-related Levies:** Several other minor taxes exist (training fund, timber estate license fees, etc.) that do not substantially affect the performance of forest users and their environmental impact. Depending on the source of estimates, the combined forest taxation (about US\$20-25/m³ in the early 1990s, yielding an annual total of more than US\$400 million, distributed among various tiers of Government) is reckoned to be well below the amount of short-term profit realised by concession holders, variously estimated to be up to US\$6,570/m³ (UNEP, 2005).

Oil palm, and to a lesser extent, other plantation crops are generating huge profits for multinational corporations. For example, MNREM (2011) estimates oil palm generates annual revenues in Malaysia of around RM 8,400 per hectare per year for 20 years yet the costs of establishment are only around RM 10,000 per hectare. Significant increases in the taxes paid by corporations investing in palm oil would generate significant funds that could be invested in peatland conservation measures at a programme level including alternative crops that do not degrade peatland and would raise the cost of exploiting existing peatland areas for oil palm in Malaysia and Indonesia especially. In Viet Nam and the Philippines, such a tax may be relevant in the medium to long term.

4.2.5 HAZE INSURANCE

This would refer to the establishment of an insurance scheme to make pay-outs when there are heavy haze incidents. Part of the premium would be ring-fenced as a contribution for fire/haze reduction efforts. Contributions could be sought from victims of haze (e.g. airlines, shipping, hotels, insurance, public, tourism industry) or from those that benefit (e.g. health industry, face-mask manufacturers etc.). Insurance to cover damages caused by haze is a recognised approach that can be arranged with an insurance company and the insurance company would have an incentive to prevent or stop fires to avoid serious damage and the premiums would reflect these costs and risks. This approach is not equitable in that the polluter is not being asked to pay.

4.2.6 PEATLAND POLLUTER PAY PRINCIPLE

This refers to fines for pollution or damage to peatland. This is essentially similar to the user pays approach which is discussed earlier in the report, but also includes pollution costs in any assessment of the tax to be levied. These would include all costs associated with haze pollution in ASEAN nations (health and aesthetic) and the cost of compensating people who depend on the peatland for their livelihood, or who value peatland for their environmental services and biodiversity.

4.2.7 PAYMENTS FOR ECOSYSTEM SERVICES (PES)

PES refers to offering financial incentives to farmers or community groups in exchange for managing their land to provide some sort of ecological service. These programmes promote the conservation of biodiversity and other environmental resources that are valuable but for which no market exists. PES mimics a real market contractual relationship between the producer and the consumer.

In practice, there are few genuine markets for ecosystem services as there tend to be only one purchaser and one provider and to all intents and purposes, current PES systems operate in a very similar way to agri-environment subsidies (see *Box 2*), where the provider is paid via a government agency or environmental NGO to manage the resource sustainably. Governments often have a key role to play in PES approaches by establishing clear property rights over the resources and services that are being provided.

There are a number of PES initiatives being taken in the ASEAN region involving NGOs and government agencies. A number of pilot projects are being coordinated under Rewarding Upland Poor for Environmental Services (RUPES), which is an international research program dedicated to developing practical environmental services schemes that can be adapted to work in different countries with different circumstances.

Over the period 2002-2007, the program's first stage, RUPES-I, built working models of best practices at six research action sites in Indonesia, the Philippines and Nepal, and studied experiences at another 12 'learning sites' across Asia. RUPES-I identified constraints such as the lack of political will, institutional capacity and a supportive legal framework; limited financial resources and even limited community interest and commitment. The establishment of independent national networks in Indonesia and the Philippines where opinion leaders from different backgrounds could meet and pave the way for inter-departmental cooperation proved to be effective in helping to break down those constraints.

The second phase (RUPES-II) is now underway and is targeting indigenous forest dwellers and small farmers in less productive environments that are vulnerable to environmental degradation and climate change. Objectives are to:

- Influence national policy frameworks, to be conducive to realistic, conditional, voluntary and pro-poor rewards for environmental services.
- Engage international and national buyers and investors, through increased recognition of the 'business case' for investment.
- Document good practices and support capacity building, so that intermediaries, such as interested local NGOs and local governments, can facilitate environmental services reward schemes without excessive transaction costs.
- Innovation in effective, efficient, and 'pro-poor' mechanisms.
- Integrate rewards for environmental services into rural poverty alleviation strategies and programs initiated by international development agencies.

RUPES is involved in Indonesia in Cidanau (Banten) and Brantas (East Java) in collaboration with an increasing number of collaborative programs and stakeholders including the national government (especially the Ministry of Forestry), local NGOs, national and international research and development agencies, UN Economic and Social Commission for Asia and the Pacific (UNESCAP), World Wide Fund for Nature (WWF), Lembaga Penelitian, Pendidikan dan Penerangan Ekonomi dan Sosial (LP3ES); Lembaga Swadaya Rekonvasi Bumi, Banten, Forum Komunikasi DAS Cidanau (FKDC), Banten, and KANOPI Kuningan. In Viet Nam the government has recognised the potential for PES in environmental conservation and there have been several schemes initiated including the Lam Dong PES Scheme (Box 3).

In the short term it is difficult to envisage PES developing into a programme level approach in any of the target countries for the following reasons:

- **High transaction costs:** A large number of intermediaries are often involved and play an essential role as service and information providers, mediators, arbitrators, equalisers, representatives, watchdogs, developers of standards and bridge builders (Thuy *et al.*, 2010). Managing these relationships is time consuming and delicate.
- PES schemes operate at a local level and there may be a lack of capacity to deliver a PES scheme that meets its primary objectives. Concerns have been raised about the quality of intermediaries' participatory work, political influence on intermediaries' activities and the neutral status of intermediaries.
- Difficult to establish protocols that can effectively measure performance in terms of ecosystem service provision and there is considerable scope for disagreements.
- Forest rights are not usually devolved to local communities. Over the short term, this has not posed any challenges, but in the long term, lack of tenure rights may lead to a sense of insecurity among the local people due to uncertainty over securing forest protection contracts each year.
- Many PES schemes, such as RUPES are essentially pilot projects, based around short term funding. The big challenge is to find a funding source that will allow regional or national participation – the approach has national potential.

Large environmental gains have been achieved from changes to agricultural practice in the EU, but this has only been possible because there was an existing and very significant agricultural subsidy budget which could be 'captured' for this purpose to change existing agricultural subsidies to promote wise use. Agricultural subsidies of various forms exist in all countries and one short to medium term approach would be to adapting these economic incentives to promote wise use of peatlands.

It is more difficult to source new funds for incentive programmes, although some are potentially available 'down the line' such as the ASEAN haze fund and REDD+ to generate programme level of activity. At best, PES can be considered a medium term possibility if the national government plays a direct role as in Costa Rica where the Government has created a world leading (PES) programme that rewards forest owners for four bundled environmental services (watershed protection, carbon sequestration, landscape beauty and biodiversity protection). This direct approach would appear to be most likely in Viet Nam where PES schemes typically involves payments from para-statal organisations and where there is already 'high-level' support for the PES approach at national and provincial levels. External funding could also come from REDD+ or multi-donor trust funds.

PES can make an important contribution to peatland conservation as it has the potential to introduce new income streams to supplement traditional sources of funding (such as from government) by bringing other stakeholders into partnership to ensure that beneficiaries of sustainable peatland management make a financial contribution to the additional costs on local landowners, farmers and businesses. SEA can be used at an early stage of policy and programme preparation by providing an early recognition of ecosystem benefits and integration of opportunities for future livelihood enhancements through long term partnerships.

4.2.8 TAX INCENTIVES

Tax Incentives have been effectively deployed to achieve environmental outcomes that are not delivered through the market forces where landowners are primarily concerned with sustainable yields and profits. An hypothecated fiscal policy has been discussed previously in *section 4.2.4* but there are some additional general issues:

- Tax is quite a blunt instrument which, at a national scale, may help conserve peatlands, but which might create some challenging situations locally. As discussed in *Section 2*, tax incentives to promote afforestation in the UK created a perverse economic incentive for peatland conservation.
- Tax incentives tend to work most effectively if there are organisations/individuals involved in peatland management that have high taxable income. It is therefore not particularly suited to situations where the threat to peatlands arises from poverty.

4.2.9 CERTIFICATION

Certification is a market-based approach to peatland conservation directed at consumers in expectation that sustainably sourced peatland products will generate a premium price. Certified products rely heavily on labelling to ensure their credentials are recognised by consumers and works outside direct state regulation normally. Although no one can be fined or imprisoned for failing to comply with certification conditions, independent verification usually by NGOs forms an important part of the process. There are two certification schemes that may have special relevance to peatland conservation: Roundtable on Sustainable Palm Oil (RSPO) and Forest Stewardship Council (FSC).

The RSPO is a global, multi-stakeholder initiative on sustainable palm oil production. Members and participants produce about 40% of the world's palm oil and come from many different backgrounds and include environmental NGOs, banks and investors, growers, processors, manufacturers and retailers of palm oil products and social NGOs. As of 2012, there were 520 RSPO members, 96 Affiliate members and 69 supply chain associates and the number is growing. The principal objective of the RSPO is "to promote the growth and use of sustainable palm oil through co-operation within the supply chain and open dialogue between its stakeholders" (RSPO, 2007). RSPO oil is traceable through the supply chain by certification of each facility along the supply chain that processes or uses the certified oil and certification can be withdrawn at any time on infringement of the rules and standards. There are three elements of RSPO certification scheme:

- **Standard:** Sets out the requirements which must be met and against which certification assessments are made. The RSPO Standard is the RSPO Principles and Criteria For Sustainable Palm Oil Production.
- **Accreditation:** Ensures that organisations which undertake certification assessment, the Certification Bodies – are competent to undertake credible, consistent audits.
- **Process requirements:** Establishes whether or not a set of requirements (i.e. the standard) has been met and is carried out by an accredited Certification Body. The RSPO systems are detailed in the RSPO Certification Systems and RSPO Supply Chain Certification Systems documents.

On 31 May 2011, the RSPO formally released its trademark for use in the market. From now on, RSPO members will be able to even more clearly show their commitment to sustainable palm oil and other sustainable palm-derived products. Members will be able to use the trademark in communication on or about products that contain palm-derived ingredients sourced in compliance with RSPO supply chain systems. The RSPO trademark is being registered in more than sixty countries worldwide, including all major palm oil markets and will play an important role in RSPO's active outreach to stakeholders.

Some environmental NGOs have expressed some concern about the capacity of RSPO to deliver sustainable peatland management and conservation. These include:

- The criteria are weak and there are many loopholes. For example, Criterion 5.5 states that the use of fire on peat soils should be avoided but national interpretation can be used to identify any specific situations where such use of fire may be acceptable. (However, criteria indicators will be revised in 2013).
- Enforcement standards are not high but the recent adoption of RSPO Best Management Practice Guidelines for oil palm cultivation on peatlands in 2012 provides clearer existing guidance for auditing processes.
- It is difficult and expensive for small holders and other small operators to participate.
- Supply chain compliance and verification is weak and it is suspected that significant volumes of non-RSPO oil is accepted into the certified supply.
- Western Europe and North America are driving demand for RSPO, but other major markets, such as India and China, are currently not particularly interested in certification which means that the price for RSPO products may not attract a sufficient premium.

The Forest Stewardship Council (FSC) is a global forestry certification system for forests and forest products. Many alternative national and regional forest certification bodies also exist around the globe, but the FSC is the largest. Supporters of FSC's internationally recognised standards believe it contributes to the delivery of forest environmental services to local and global communities, including amenity, landscape, recreation and the mitigation of climate change. It also has the potential to address issues such as illegal logging and deforestation through providing positive effects on economic development, environmental conservation, poverty alleviation and social and political empowerment. Principles of the FSC scheme are:

- Principle 1:** Compliance with all applicable laws and international treaties.
- Principle 2:** Demonstrated, uncontested, defined, long-term land tenure and use rights.
- Principle 3:** Recognition and respect of indigenous people's rights.
- Principle 4:** Maintenance or enhancement of long-term social and economic well-being of forest workers and local communities and respect of worker's rights in compliance with International Labour Organisation (ILO) conventions.
- Principle 5:** Equitable use and sharing of benefits derived from the forest.
- Principle 6:** Reduction of environmental impact of logging activities and maintenance of the ecological functions and integrity of the forest.
- Principle 7:** Appropriate and continuously updated management plan.
- Principle 8:** Appropriate monitoring and assessment activities to assess the condition of the forest, management activities and their social and environmental impacts.

Principle 9: Maintenance of High Conservation Value Forests (HCVFs) defined as forests containing environmental and social values that are considered to be of outstanding significance or critical importance.

Principle 10: In addition to compliance with all of the above, plantations must contribute to reduce the pressures on and promote the restoration and conservation of natural forests.

The FSC logo is intended to guarantee that the product comes from sources that respect these principles and includes timber and non-timber products from paper and furniture to medicine and jewellery. In total over 146 million hectares have been FSC-certified in 79 countries in 2011. However, Asian countries account for only 3.3% of total area, with 742,869 hectares in Malaysia, 567,294 hectares in Indonesia and 15,641 hectares in Viet Nam (<http://www.fsc.org/>).

Some governments have strengthened market-based incentives for timber certification by providing tax benefits to certified companies, referencing certified products as requirements in their procurement policies, and supporting projects linked to FSC through their international development agencies. However there are a number of concerns relating to the FSC and peatlands in particular:

- FSC is supported by some NGOs such as the World Wide Fund for Nature and Greenpeace. However, a growing number of environmental organisations, including FERN, Friends of the Earth UK, and the Swedish Society for Nature Conservation have resigned from FSC arguing it is little more than 'greenwashing'.
- The FSC label claims to manage and protect forests of High Conservation Value Forest (HCVF), but it is not clear how this can contribute to tropical peatland conservation in ASEAN countries as many peatland areas are not designated as HCVF. HCVF describes forests which:
 - i) contain globally, regionally or nationally significant concentrations of biodiversity;
 - ii) support viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
 - iii) contain threatened or endangered ecosystems;
 - iv) provide basic services of nature in critical situations (e.g. watershed protection, erosion control) and/or
 - v) are fundamental to meeting basic needs of local communities and/or critical to local communities' traditional cultural identity).
- FSC is strongest in Europe and North America and is less widely recognised in ASEAN nations and, as with the RSPO, significant demand from China and other markets may prevent a healthy premium emerging for FSC timber which is essential if the costs of certification (management, audit and other costs e.g. losses of timber revenues) are to be recovered.
- Information requirements are high. A forest management plan must be compiled, which requires a lot of data on tree species and other plants, age distribution, annual increment and many more. While this information is often easily available in European countries, where forests have been managed for many decades, equivalent data systems are not in place in all ASEAN countries.

4.2.10 NON-MONETARY INITIATIVES

Awards, prizes and other means of bestowing recognition and pride in peatland conservation are a tried and trusted approach to conservation. They help raise awareness and can be used in conjunction with promotional campaigns targeting international and national media and government. They can therefore form an integral part of a pilot scheme to help raise awareness among local communities regarding the wise use of peatlands and can be used effectively to engage the commercial by encouraging firms to gain PR and CSR benefits as a consequence of being awarded a high profile prize or other form of recognition. However, they are unlikely to drive programme level peatland conservation activities and actions as they have little tangible impact on the corporate bottom line!

SECTION 5: INDICATIVE COUNTRY STRATEGIES FOR ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION

The introduction of a successful incentive-based system represents a considerable challenge to policy makers, and this is especially true for tropical peatlands, where policy and governance mechanisms are not well defined or developed, nor is there any great experience with the deployment of economic instruments for environmental goals.

This section describes the potential to create a cost-effective incentive system in ASEAN countries, specifically Brunei Darussalam, Indonesia, Malaysia, the Philippines and Viet Nam. Each country possesses a distinctive policy regime for land-use regulation and management and there is considerable diversity in terms of capacity to deploy economic instruments effectively in terms of financial resources available and institutional capacity at different levels of government. At the same time there is considerable uncertainty about the availability of funds that might support any expenditure of new economic instruments. REDD+ funds, for example, are on the horizon but have yet been deployed beyond 'project level' investments. Also in Viet Nam and the Philippines there are many uncertainties about the extent and distribution of land that might be identified as peat for policy 'targeting' purposes, with many peatlands already developed for agriculture or forestry crops or otherwise degraded.

Against this background, the report sets out a pragmatic assessment of what can be achieved through economic instruments in the short, medium and long term. Unfortunately it has not been possible to identify a detailed strategy for each country as supporting documentation on land-use policies and policy mechanisms are not available. Instead the study has focused on identifying the most relevant economic instruments for peatland conservation for each country that takes into account of state policy, local regimes, corporate strategies and local dimensions. In essence we have tried to establish a 'Road Map' that will lead to the effective deployment of economic incentives in these countries for peatland conservation. More study will be required to explore these options in more detail before implementation at the appropriate level of government.

5.1 COMPARISON OF INCENTIVE OPTIONS

In this section we make a preliminary comparison of the comparative strengths and weaknesses of each of the four main options under a range of criteria. Many of these criteria are interconnected and it is worth noting that poor performance under several criteria may be acceptable in specific circumstances. For example, high transaction costs for a novel scheme may help build trust between the provider (administers the payments/charges) and the receiver (local communities, developers, landowners). If trust is absent due to corruption, weak governance mechanisms and unfair or non-representative decision-making systems) then this will create difficulties and threaten long term effectiveness.

The criteria selected to be used in the assessment are briefly described below. The scoring system associated with each criterion ranges from 1 to 3. In each case a low score (e.g. 1) reflects a poor potential performance under the criterion.

Table 5: Summary of Criteria for Comparison of Incentive Options

CRITERIA	RATING
<p>CONDITIONALITY</p> <p>Payment systems can be designed to be conditional on performance (i.e. benefits are only received once performance has been verified). For example, there is a conditionality requirement of REDD+ mechanisms and some PES schemes, but many others have low conditionality requirements, for example, alternative livelihoods are often based around gifting resources, capital and this cannot be easily revoked if performance is not satisfactory.</p>	<p>1 - Low conditionality 2 - Moderate conditionality 3 - High conditionality</p>
<p>PERVERSE INCENTIVES</p> <p>This specifically refers to the potential for an economic incentive to work in an unanticipated way, with negative consequences for peatland conservation (see discussion on perverse economic incentives).</p>	<p>1 - High risk 2 - Moderate risk 3 - Low risk</p>
<p>VALUE CHAIN</p> <p>Ideally markets work best if producers of conservation are paid directly by the consumers of conservation. Many economic incentive systems are not that simple, involving local and international NGOs, representative groups (communities, farmers) and government. A REDD+ value chain will include fund managers for receiving and redistributing funds; registries for tracking emissions reductions credits; legal institutions for adjusting existing laws, enforcing REDD+ related laws and resolving disputes; monitoring and verification entities for ensuring that emissions reductions are real and achieved in environmentally and socially acceptable ways; implementing and administrative organisations for handling contracts and logistics; and the sellers of carbon themselves who may need to organise internal redistribution mechanisms. Long value chains are often associated with a lack of transparency and corruption and are therefore to be avoided.</p>	<p>1 - Long 2 - Moderate 3 - Short</p>
<p>TRANSACTION COSTS</p> <p>These are costs associated with negotiations and legal actions necessary to conclude a deal. Transaction costs tend to increase as the number and diversity of stakeholders increase, or the proposed economic instrument is novel and/or untested. For example, payments made to individuals will generate much larger transaction costs than those made to a group or an organisation. In the case of palm oil for example, there are 6 million people directly employed, of which half are in Indonesia. Typically, there is a trade-off between transaction costs and the risk of rent seeking behaviour.</p>	<p>1 - High costs 2 - Moderate costs 3 - Low costs</p>
<p>RENT SEEKING</p> <p>This can lead to 'Elite capture' of benefits and/or in-migration into protected areas where incentives are offered.</p>	<p>1 - High Potential 2 - Moderate potential 3 - Low potential</p>
<p>GOVERNMENT SOVEREIGNTY</p> <p>Some countries do not desire foreign influence on the way they manage their lands and are more averse to international agreements than others. Similarly there may be issues between national and regional governments, especially in nations that operate under a federal constitution.</p>	<p>1 - High concern 2 - Moderate concern 3 - Low concern</p>

CRITERIA	RATING
<p>GOVERNMENT INVOLVEMENT</p> <p>Government agencies can be heavily involved in economic incentive systems. In the case of carbon, for example, the national government can act as a seller of carbon to international buyers, a buyer of carbon from sub-national entities, an intermediary and a regulator of the system. In addition, the government can play a role in monitoring, accounting for emissions reductions and technical support. From an accountability perspective it may be preferable for the government not to be too directly involved in financial transactions as buyer and/or seller (i.e. transactions should occur at lower levels).</p>	<p>1 - High involvement 2 - Moderate involvement 3 - Low involvement</p>
<p>MONITORING COSTS</p> <p>Monitoring the costs of compliance or performance under various economic incentive systems can be significant. Fires are easier to monitor than changes to carbon stocks. In general performance based approaches such as REDD+ and certification are more costly to monitor, although in the latter case these costs are met by the producer and consumer.</p>	<p>1 - High costs 2 - Moderate costs 3 - Low costs</p>
<p>LEAKAGE</p> <p>The introduction of economic incentives alters the status quo by creating new economic opportunities for people and companies. A major concern about REDD+ for example, is the potential for shifting forest clearance to other areas. This is a less serious issue if national level conservation objectives are paramount.</p>	<p>1 - High leakage potential 2 - Moderate leakage potential 3 - Low leakage potential</p>
<p>ADDITIONALITY</p> <p>In assessing the specific contributions of a particular activity as a basis for incentives or rewards, a complex network of causes may have to be understood and additionality may be hard to unravel. In a simple, worst case scenario, economic incentives provided to stakeholders may not alter behaviour or environmental outcomes.</p>	<p>1 - Low additionality 2 - Moderate additionality 3 - High additionality</p>
<p>CO-BENEFITS</p> <p>Some economic incentives can deliver other benefits in addition to the stated objective. Some approaches such as alternative livelihoods can improve health and educational opportunities among poor communities.</p>	<p>1 - Low co-benefits 2 - Moderate co-benefits 3 - High co-benefits</p>
<p>POVERTY REDUCTION</p> <p>Forest-dependent people have been under-represented in public decisions about forest futures and some incentive schemes may perform less well in regard to alleviating poverty. Alternative livelihoods can in some circumstances favour better off families, who have access to other resources and education which allow them to take fuller advantage of new opportunities (Gubbi and MacMillan, 2008).</p>	<p>1 - Low reduction 2 - Moderate reduction 3 - High reduction</p>
<p>FINANCIAL SUSTAINABILITY</p> <p>Economic incentives will only work if external money keeps flowing in or the strategy generates sustainable sources of wealth. All funding sources run the risk of running out, including market approaches which are governed by consumer preference. Political priorities can change over time and government funding may be reduced without warning depending on circumstances.</p>	<p>1 - Low sustainability 2 - Moderate sustainability 3 - High sustainability</p>

CRITERIA	RATING
<p>TRUST Economic incentives tend to work best where trust has built up between all the key stakeholders. This may have involved education and outreach, collaboration on previous projects, and shared objectives and perspectives.</p>	<p>1 - Low 2 - Moderate 3 - High</p>
<p>SCALE Some economic incentives have limited in terms of their scale. Eco-tourism schemes for example, tend to be very site specific, focusing on a particular Protected Area. REDD+ payments, on the other hand can be applied nationally as carbon is a homogenous product of peatland conservation where performance is only governed by management and growth rate rather than other micro-factors such as landscape and access to markets and resources.</p>	<p>1 - Small scale 2 - Moderate scale 3 - Large scale</p>
<p>DRIVERS Economic instruments will be cost-effective if it is targeted at the drivers of peatland degradation and destruction and the appropriate financial penalties or rewards. REDD+ payments to conserve carbon stocks may not be effective if other non-economic (political, social, cultural) forces are behind the damage. This could also mean that action should focus on the removal of perverse incentives such as direct or hidden government subsidies for plantation agriculture and palm oil that may be driving peatland degradation.</p>	<p>1 - Low fit 2 - Moderate fit 3 - Good fit</p>

Table 6: Comparison of Incentive Options by Criteria

CRITERIA	HAZE FUND	REDD+	USER PAYS	INCENTIVES AT LOCAL LEVEL	OTHER COMMENTS
Conditionality	3 - HIGH Payments only paid if fires have not occurred.	3 - HIGH REDD+ schemes based on principle of performance but protocols being developed.	2 - MODERATE Often charges do not reflect environmental performance.	1 - LOW Some benefits difficult to revoke and temptation to transgress conditions may be strong.	Countries with stronger regulatory frameworks and environmental governance will perform best.
Perverse Incentives	3 - LOW Payments should be clear incentive to prevent fires.	2 - MODERATE Still problems with carbon based funds damaging peat-lands around the world.	2 - MODERATE Taxes can be avoided and perpetrator is often one step ahead of the regulator.	3 - LOW Carefully designed incentives at site level should avoid negative outcomes.	
Value Chain	2 - MODERATE Could be quite complex involving international transfers and brokers.	1 - LONG International mechanism with funds filtered through a number of government agencies.	2 - MODERATE National or regional mechanism.	3 - SHORT Often locally based, direct payments to communities from local agency.	Will depend to an extent on institutional set-up – number of agencies, departments etc.
Transaction Costs	2 - MODERATE As it is a new scheme these may be high initially, unless able to work with existing pilot projects.	1 - HIGH REDD+ projects are complex involving a long value chain from national government to local communities, with complex verification and monitoring. Likely to decrease in long term.	3 - LOW Taxation and charges require considerable effort, but can operate very efficiently for large areas regionally and nationally.	2 - MODERATE Due to their local nature requires considerable investment at each site but relatively few partners are involved.	Transaction costs decline over time if governance mechanisms are aligned with the scheme.
Rent-Seeking	3 - LOW As currently planned funds can only be used for very specific actions connected to fire prevention and fighting.	1 - HIGH Large sums of money potentially involved and very long value chain suggest high potential.	0 - NA Not really an issue for tax/charging systems.	2 - MODERATE Risk of communities seeking payment and not contributing positively to conservation outcomes.	

CRITERIA	HAZE FUND	REDD+	USER PAYS	INCENTIVES AT LOCAL LEVEL	OTHER COMMENTS
Government Sovereignty	1 - HIGH HAZE requires one country to implement actions for the benefit of another.	1 - HIGH REDD+ is an international mechanism and involves relinquishing some aspects of national sovereignty.	2 - MODERATE May be issues between provincial and central government.	3 - LOW Maybe some problems with foreign NGOs.	
Government involvement	2 - MODERATE Especially at start up but could be left to NGOs to operate.	1 - HIGH Will depend on the country but high until REDD+ fully established.	1 - HIGH Typically government are the only agents with the legal right and capacity to levy charges.	3 - LOW Can be left to the private sector in some circumstances.	Government involvement will be determined by the policy culture on the country concerned.
Monitoring costs	2 - MODERATE If focus is on fire prevention then monitoring from satellite possible. Ground monitoring also required.	1 - HIGH In initial stages as protocols are established and improved. There remains substantial uncertainty over the quantitative aspects of monitoring emissions.	1 - HIGH Strong incentive not to pay tax so close monitoring required.	1 - LOW Monitoring can be built into agreements and communities can potentially self-police.	Monitoring costs are difficult to predict but can be very significant element of total project cost.
Leakage	1 - HIGH Fires may be started in areas, regions not covered by agreement. Mitigated if payments based on regional/ national performance.	1 - HIGH Can be mitigated if payments based on regional / national totals every year.	1 - HIGH Potential to export peatland degradation outside the region / country to places where there are no charges.	2 - MODERATE Can be minimised if area protected is large enough and encompasses all nearby communities.	
Additionality	2 - MODERATE Occurrence and scale of fires unknown and uncertain so not easy to establish strong additionality.	2 - MODERATE It is conceivable that some peatland areas may receive payments but may not be under any threat.	2 - MODERATE Taxes and charges will deter some legitimate users of peatland on financial grounds but risks illegal actions that avoid charges (e.g. setting fires).	3 - HIGH Generally leads to higher environmental performance than status quo if there is good understanding at outset.	Incentives could risk of punitive damage by stakeholders excluded from the Scheme – possibility of 'negative additionality'.

CRITERIA	HAZE FUND	REDD+	USER PAYS	INCENTIVES AT LOCAL LEVEL	OTHER COMMENTS
Co-Benefits	2 - MODERATE Preventing large-scale fires should bring significant other conservation benefits but this is not a focus of the proposal.	2 - MODERATE REDD+ is specifically designed to bring co-benefits but these are difficult to specify and measure. Need strong controls on activities such as hunting, small scale clearance.	1 - LOW Charges will encourage landholders to look for efficiencies from resource use possibly leading to loss of benefits.	3 - HIGH Incentives can include conditions that secure co-benefits. Non-contractual benefits may also flow due to good relations.	
Poverty Reduction	1 - LOW HAZE fund may be very top down. Depends on who is involved and detailed agreements but not clear how it will help.	2 - MODERATE REDD+ is very top-down with long value chain but poverty alleviation is high on the agenda in REDD+ debates.	1 - LOW Taxes take money from the local economy. Funds would need to be ring-fenced for poverty alleviation to have positive impact.	2 - MODERATE Can be good if built into payment scheme but will depend on stakeholders preference.	All schemes have potential to have high poverty reduction impacts but this needs to be included in the design on the scheme.
Financial Sustainability	2 - MODERATE The Haze fund has not grown significantly and there has to be question mark over sustainability.	2 - MODERATE REDD+ payments, if linked to global carbon markets should be secure. Value of carbon could fall due to technology change but questions remain.	3 - HIGH Funds are generated by peatland developments hence inherently sustainable.	2 - MODERATE Some activities such as eco-tourism are vulnerable to market forces and difficult to predict long term sustainability.	
Trust	2 - MODERATE Must establish strong local arrangements to build trust. Fund should be 'ring-fenced'.	1 - LOW Many uncertainties (scientific and political) which might undermine trust.	1 - LOW Corruption and previous experience with government might undermine trust.	3 - HIGH Benefits flow quickly and directly to stakeholders and cannot be easily taken away.	

CRITERIA	HAZE FUND	REDD+	USER PAYS	INCENTIVES AT LOCAL LEVEL	OTHER COMMENTS
Scale	3 - HIGH Has potential to contribute to the conservation of large areas of peatland in ASEAN countries.	3 - HIGH Has potential to contribute to the conservation of large areas of peatland in ASEAN countries.	2 - MODERATE Charging systems will typically work at regional/ provincial/ national scales.	1 - LOW Only apply to relatively small areas in distinctive local context.	
Drivers	1 - LOW HAZE fund targeted at fire suppression and prevention and may not address underlying drivers.	2 - MODERATE REDD+ payments are being designed to deal with underlying socio-economic and cultural drivers but challenging to address specific local concerns within a global financing mechanism.	3 - HIGH If eco-taxes are specifically targeted at drivers!	3 - HIGH Local understanding and relationships, providing there are good feedback mechanisms, should tackle drivers effectively.	
Country analysis	Haze Fund: Will require inter ASEAN cooperation to achieve international transfer of funds. Clear transparent mechanism, for deployment of Haze fund, based on clear TOR required. Needs to support fire avoidance as well as fire suppression activities.	Indonesia has the biggest potential due to its wide coverage of peatlands. Malaysia and Brunei are in the initial stages of developing National REDD+ strategy, hence it will not be feasible in short term. REDD+ pilots is possible. Voluntary carbon financing is possible for specific sites as pilot studies and opportunities on peatlands should be further developed. (e.g. North Selangor Peat Swamp Forest).	User pays stronger in nations with stronger regulatory system (Malaysia and Viet Nam). Strong political will is required. There is potential in Indonesia if peatland continues can gain political attention at the national level.	Malaysia, Brunei and to a lesser extent Viet Nam have political buy-in to eco-tourism and hence could develop a more regional or even national mechanisms based on eco-tourism. Can work in any country as long as there is source of funding and government support.	

5.2 SPECIFIC NATIONAL AND REGIONAL CONSIDERATIONS

For the assessment of appropriate economic and financing incentives for Brunei Darussalam, Indonesia, Malaysia, the Philippines and Viet Nam, this section outlines some of the main national and regional considerations for these and other ASEAN countries.

1. Economic incentive schemes cannot operate in isolation. Conservation objectives can often be met when a range of measures are taken over a period of time. Education and outreach, new regulations and incentives are all part of the policy tool-box.
2. Different incentives systems can be deployed to target different stakeholders – taxation which might be effective on large corporations investing in palm oil operations, can run alongside livelihood assistance schemes to promote peatland conservation in local communities.
3. Some incentive schemes can be operated at different scales and require different governance mechanisms and institutions. Taxes generally operate at a federal or national level and require direct government involvement. Eco-tourism on the other hand, operates at the local scale and can be achieved without government intervention. Some are multi-scale: REDD+ will require coordination at international, national and local levels to deliver peatland conservation.
4. All incentive systems require clarity on the legal status of peatlands. Across Indonesia for example, there are contested claims by the state and local communities over land rights and conflicts are partly the cause of burning on peatland and encroachment on peatland forests. Resolution of these conflicts is a prerequisite for many incentive schemes and finance options.
5. A broad range of agencies and organisations have involvement in, and a degree of responsibility towards the sustainable management of peatlands. Effective deployment of economic incentives and finance may require new collaborations between government agencies, NGOs, community-based organisations, and the private sector and will therefore take time. Furthermore, some institutions will require to be strengthened to play their role effectively.
6. A lead organisation needs to be identified. This is crucial, and maybe highly sensitive given the range of organisations involved. For example, in the case of REDD+ transfer mechanisms should the national or provincial government take the lead, or should NGOs and private agencies be prominent? Deployment of economic incentives needs careful process management.
7. Avoid conflicts of interest. For example, it is assumed that in any form of national REDD+ system that the government will play a role in monitoring, accounting for emissions reductions and technical support. However, from an accountability perspective it may be preferable for the government not to be involved in financial transactions as a buyer or seller (i.e. transactions should occur at lower levels). To guarantee fairness clear mechanisms for checks and balances from independent third parties will therefore be required, whichever institutions are involved.
8. Existing institutions may need to be reconstructed to create a cost-effective value chain. For example, a REDD+ value chain will include fund managers for receiving and redistributing funds; registries for tracking emission reduction credits; legal institutions for adjusting existing laws, enforcing REDD+ related laws and resolving disputes; monitoring and verification entities for ensuring that emissions reductions are real and achieved in environmentally and socially acceptable ways; implementing and administrative organisations for handling contracts and logistics; and the sellers of carbon themselves who may need to organise internal redistribution mechanisms.
9. Learn from existing fund and incentive schemes, and support local ideas and initiatives to ensure that the ‘top down’ approach meets the ‘bottom-up’ approach.

10. Form of payment, payment schedule and provision of upfront financing are crucial. If all stakeholders are clearly identified, then individual payments matching their opportunity costs are likely to be most effective and there is less likelihood of elite capture if stakeholders are able to assert their rights to payments. However, the transaction costs of dealing with large numbers of individual contracts gives rise to a trade-off. Payments to groups might involve lower transaction costs for those making the payments, but mechanisms for equitable decision-making on rules and procedures for benefits sharing within the group are likely to be required.
11. Understand the institutional and cultural factors which could determine the cost-effectiveness of economic instruments, including corruption and landowner objectives.
12. Economic instruments should be targeted specifically at stakeholders who suffer legitimate losses as a result of conservation measures.
13. Economic rewards for peatland conservation should exceed the costs of compliance.
14. Establish clear goals, indicators of success, and end points and develop metrics to help industry and consumers assess costs and benefits of production or behavioural changes.
15. Build flexibility, practicality, and adaptability into programs. Economic incentives must correspond with the aspirations, skills and experience of the target group. Incentives cannot be used to get people to do things they do not want to do. The emphasis is always on voluntary cooperation because people want to do it. When very significant behavioural change, rules and regulations are likely to be the better approach.
16. The adoption and effective deployment of an economic incentive system at a national scale requires considerable time (years not months), and significant 'buy-in' from all major stakeholders. This requires intensive investment in lobbying and information. In most ASEAN countries civil society is relatively weak compared to Western Europe and North America, and environmental concerns are not strongly articulated through the political process. Perhaps more significantly, farmers constitute a much higher proportion of the population, and many depend on peatland exploitation for their livelihood. The other key stakeholders are powerful investors and multi-national corporations who have considerable influence within government circles. These combined factors mitigate against the swift adoption of innovative incentive-based programmes and will probably necessitate more than one type of economic instrument.
17. Economic instruments should aim to build on current policies and budgets – this will help minimise political and bureaucratic problems associated with introducing fresh legislation and policy. This has very much been the approach in Europe where agricultural policies and associated budgets have evolved away from supporting production to supporting wise use or environmentally friendly farming.
18. Incentive schemes should be compatible with other government policy objectives.

5.3 INDICATIVE COUNTRY STRATEGIES FOR ECONOMIC INSTRUMENTS FOR PEATLAND CONSERVATION

This section sets out guidelines for a potential strategy for deploying economic instruments to prevent fires and avoid peatland degradation for five ASEAN countries: Brunei Darussalam, Indonesia, Malaysia, the Philippines and Viet Nam. The guidelines for country strategy incorporate the general principles outlined previously in the report, but which also take account of specific relevant national and provincial policies and programmes that are relevant to peatland conservation in each country that has been informed by:

- Institutional capacity at national level.
- Significance of the peatland resource in terms of area, location and quality.
- Existing policy framework as it relates to land-use and especially peatland.
- Previous experience with economic incentives.

For ease of presentation and communication, the country analysis is set out in terms of a country profile in tabular format, and two diagrams which, respectively, give an overview of the most appropriate incentive and financing schemes in the policy cycle and a 'Road Map' which identifies future short term (within 5 years); medium term (5-10 years); and long term (more than 10 years) actions.

Further study will be required to explore these recommendations through more detailed analysis at national level and to consider wider issues such as displacement, additionality, impact on employment and the economy.

5.3.1 ANALYSIS OF ECONOMIC INCENTIVES: VIET NAM

KEY POINTS

- The only quality peatland areas are restricted to UMT and UMH National Parks. There are some other areas located in Mekong Delta but all other peatlands have been degraded or are too small to be conserved.
- There is no specific agency responsible for managing peatlands and their resources, and no single agency coordinates decisions affecting peatlands.
- Under the Green and Red Book system, households could be contracted to protect the peatlands in the core and buffer areas of UMT and UMH NPs.
- A pilot eco-tourism project developed and implemented in pilot project sites in conjunction with relevant Government Ministries and private eco-tourism enterprises ventures should be developed in UMT and UMH National Parks.
- Funding to incentivise the wise use of peatlands may be sourced from existing agricultural subsidies and loans.
- **Medium term:** PES and REDD+, with government and NGO support, may have a significant role to play in establishing a national programme to conserve all peatlands.
- Reforestation of degraded peatlands may be possible under climate finance mechanism of CDM.
- **Long term:** peatland needs to be recognised as a valuable resource in the 5-year plan produced at Provincial level.

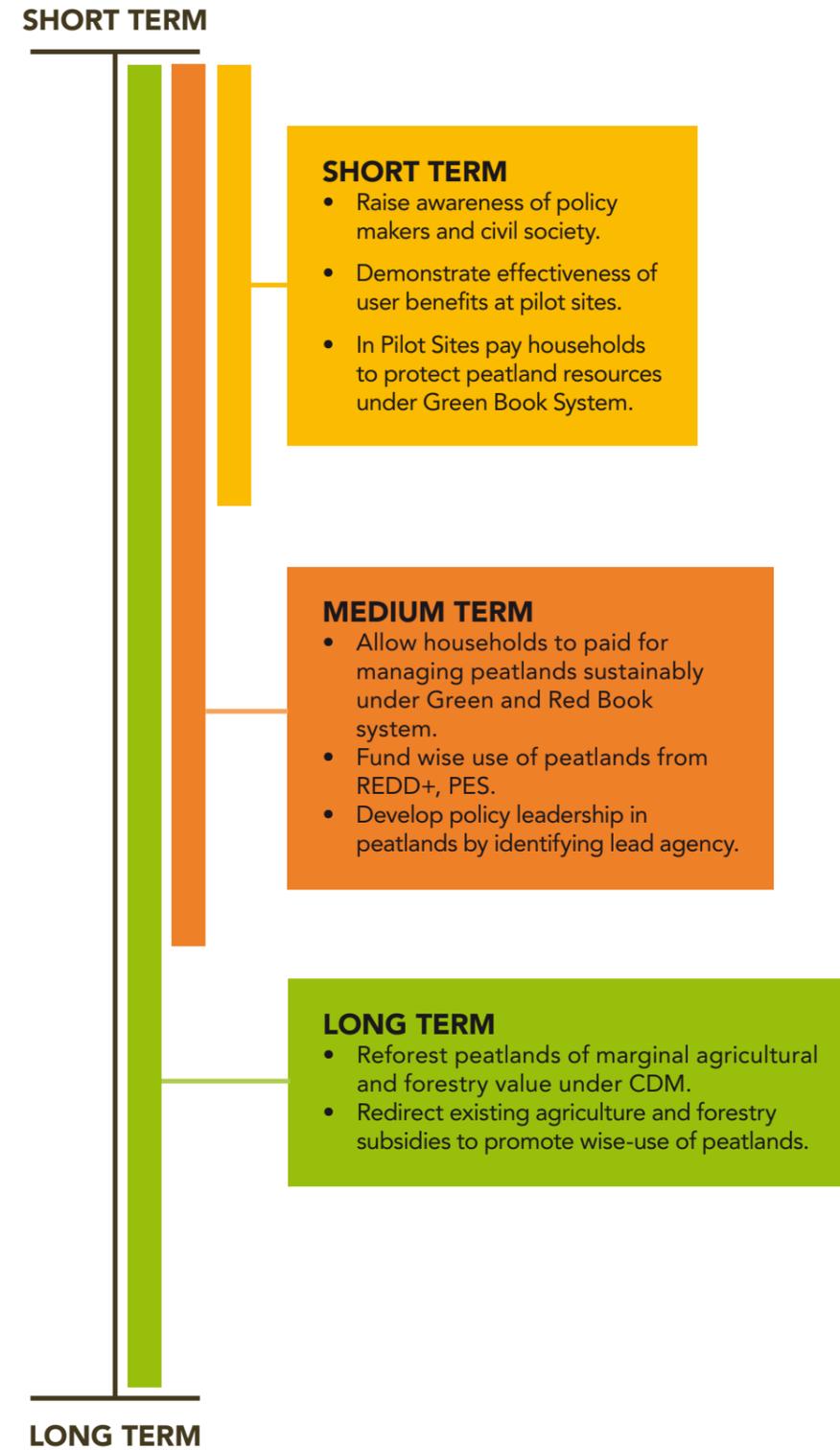
NATIONAL SUMMARY: VIET NAM

Area of Peatland:	36,000 hectares (approximately 53,300 hectares in Page <i>et al.</i> , 2011).
Distribution of Peatland:	The only quality peatland areas are restricted to UMT and UMH National Parks. There are some other areas located in Mekong Delta but all other peatlands have been degraded or too small to be conserved.
Current Status of Peatland:	Largest areas of undeveloped peatlands within U Minh Thuong and U Minh Ha National Parks. The status of other peatlands are not known, but are suspected to have been moderately to severely degraded due to agricultural and forestry developments.
Main threats:	<ul style="list-style-type: none"> • Conversion to agriculture and forestry crops. • Fires and degradation from altered drainage. • Lack of peatland management capacity.
Current Policy for Peatland:	There is no provincial or national policy to conserve or manage peatlands specifically. Two significant areas of peatlands are protected as National Parks. There are a number of laws and regulations covering peatlands, but no specific policy or agency is responsible for peatland management and conservation. The National Action Plan on Peatland has been finalised in 2011 and waiting for cabinet approval.
Drivers:	<ul style="list-style-type: none"> • Poverty. • Agricultural and Forestry Policy objectives and incentives. • High and increasing prices for food and timber commodities.
Short Term Strategy:	<ul style="list-style-type: none"> • Based on Green and Red Book system households to be paid to protect peatlands and develop alternative livelihoods in UMT and UMH NPs. • Eco-tourism has some potential to be developed in UMT and UMH but management capacity, road access and infrastructure are barriers to development. • Pilot project financing likely to come from government agencies or external project funds. Potential to use HAZE Fund to support pilot activities, but this would require changes to terms and conditions of HAZE Fund. • Adapt existing agricultural subsidies in pilot areas to support wise use of peatlands.
Medium Term Strategy:	<ul style="list-style-type: none"> • Establish policy focus and lead agency for peatlands conservation. • Target funding from PES and REDD+ projects.
Long Term Strategy:	<ul style="list-style-type: none"> • Reforest peatlands that are unsuitable for agriculture. • Reduce conversion rate of peatlands to agriculture or forest plantations. • Provide national incentive programme to support wise use of peatlands. • Funding potentially available through CDM. • Introduce user charges on multi-nationals wishing to invest in plantations on peatlands. • Adapt existing government financial assistance to small farmers and from user charge funds.

INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN VIET NAM



ROAD MAP FOR INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN VIET NAM



5.3.2 ANALYSIS OF ECONOMIC INCENTIVES: THE PHILIPPINES

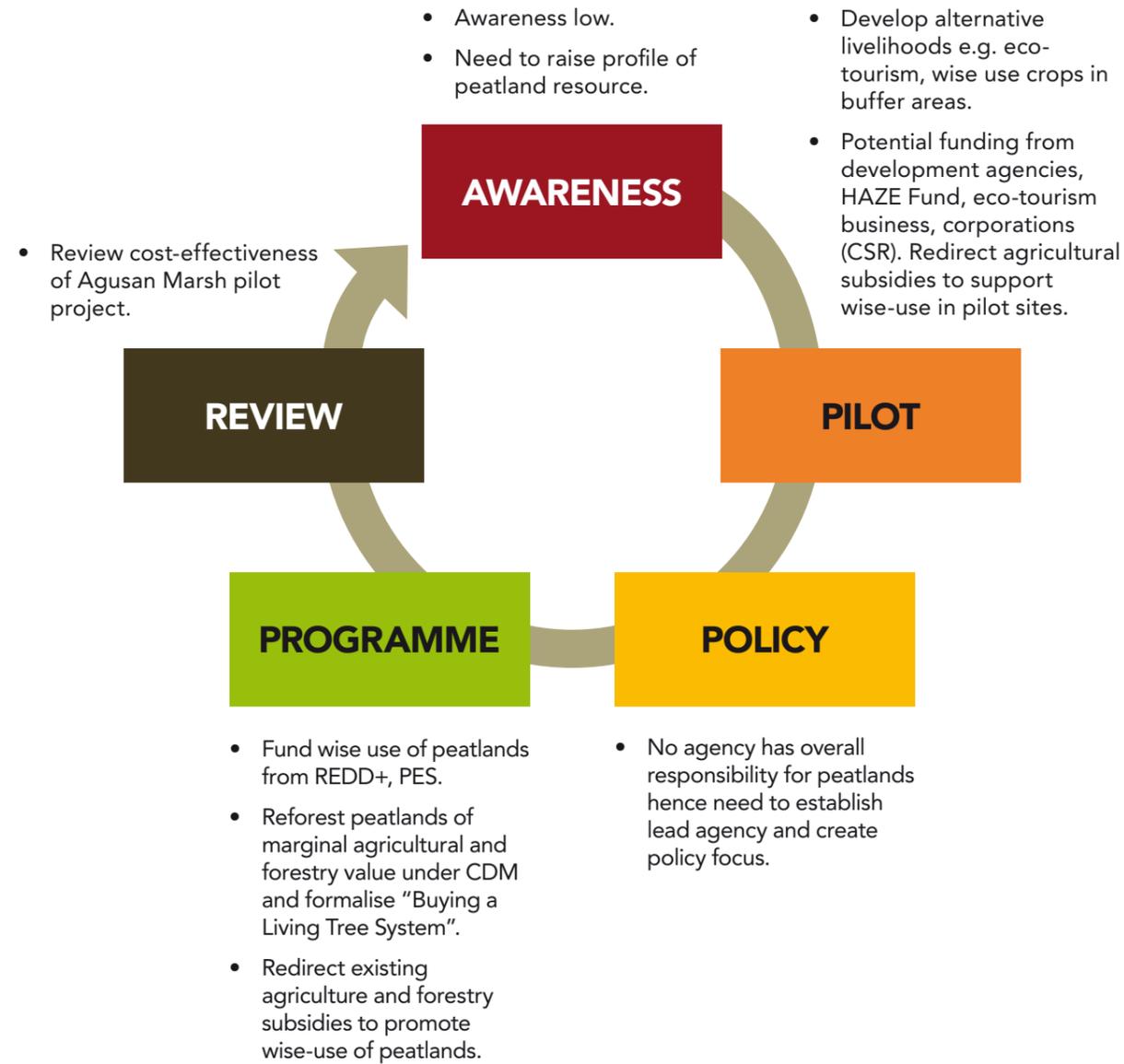
KEY POINTS

- The extent and quality of peatlands are not known, but are believed to be limited in area.
- There is no specific agency responsible for managing peatlands and their resources and no single agency coordinates decisions affecting peatlands.
- **Short term:** user incentives should be developed and implemented in pilot project sites in conjunction with relevant ministries and eco-tourism ventures to protect existing high value peatlands.
- Funding to incentivise the wise use of peatlands to be sourced by adapting existing agricultural subsidies and loans.
- **Medium term:** PES and REDD+, with government and NGO support, may have a role to play in creating a programme to conserve all peatlands.
- Reforestation of degraded peatlands may be possible under climate finance mechanism of CDM.
- **Long term:** peatland needs to be recognised as valuable resources and wise use promoted in mainstream agriculture and forestry policy.

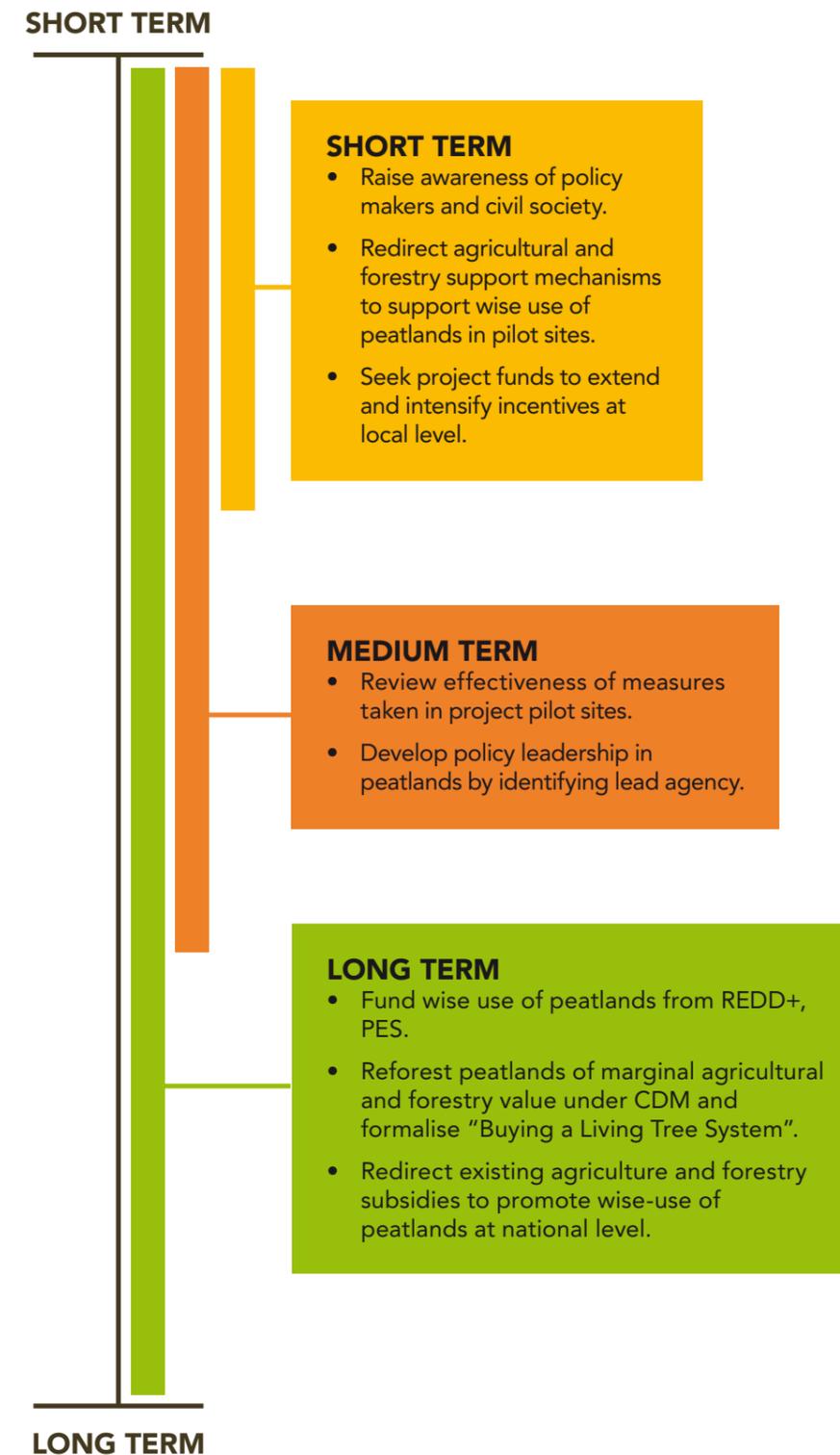
NATIONAL SUMMARY: THE PHILIPPINES

Area of Peatland:	20,000 hectares (approximately 64,500 hectares in Page <i>et al.</i> , 2011).
Distribution of Peatland:	The full extent and condition of peatlands is not known.
Current Status of Peatland:	Peatlands within Agusan Marsh and the Leyte Sab-a Basin are the most significant peatland areas in the Philippines. The status of other peatlands is not known but other peatlands exist in the Ligawasan Marsh in Mindanao, the largest marshland area in the Philippines; Dolongan area in Basey, Western Samar and Mt. Pulag in Northern Luzon. Other areas may have been severely degraded due to agricultural and forestry developments but their status is not known.
Main threats:	<ul style="list-style-type: none"> • Conversion to agriculture and forestry crops. • Fires and degradation from altered drainage. • Lack of peatland management capacity.
Current Policy for Peatland:	There is no provincial or national policy to conserve or manage Peatlands and there is no specific policy or agency is responsible for peatlands management and conservation. The Philippines National Action Plan on peatland has been endorsed and has been integrated into the National Wetland Policy.
Drivers:	<ul style="list-style-type: none"> • Poverty. • High and rising commodity. • Agricultural and forestry policies and associated incentives.
Short Term Strategy:	<ul style="list-style-type: none"> • Provide incentives to promote alternative livelihoods and wise use of Peatlands in core and extended buffer zone. • Eco-tourism has some potential to be developed in areas around Agusan Marsh where there are indigenous people but access over river needs improvement. • Adapt current agricultural subsidies and loans to favour wise use crops and management at local level. • Pilot project finance to come from government agencies or external project funds. Potential to use HAZE Fund to support pilot activities, but this would require changes to terms and conditions.
Medium Term Strategy:	<ul style="list-style-type: none"> • Establish policy focus and lead agency for Peatlands conservation.
Long Term Strategy:	<ul style="list-style-type: none"> • Reafforest peatlands that are unsuitable for agriculture. • Reduce conversion rate of peatlands to agriculture or forest plantations. • Provide incentives to support wise use of peatlands. • Funding potentially available through CDM. • User charge on corporations investing in activities damaging peatlands • Adapt existing government financial assistance to small farmers and from user charges at national level. • Formalise “Buying a Living Tree System”.

INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN THE PHILIPPINES



ROAD MAP FOR INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN THE PHILIPPINES



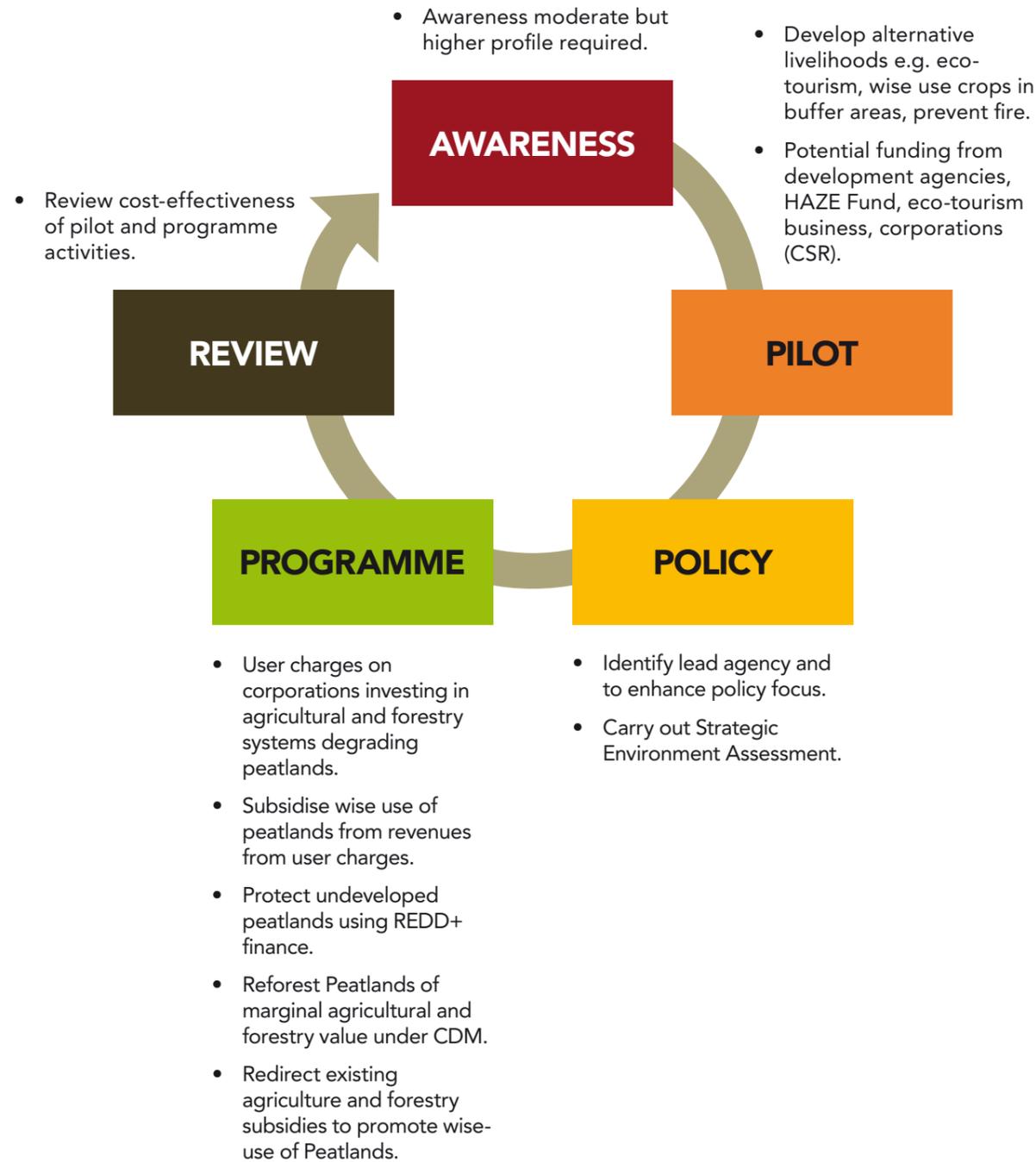
5.3.3 ANALYSIS OF ECONOMIC INCENTIVES: MALAYSIA KEY POINTS

- Malaysia has extensive peatland areas, much of which have been exploited for agriculture and forestry.
- There is no specific agency responsible for managing peatlands and their resources and no single agency coordinates decisions affecting peatlands.
- **Short to medium term:** it might be possible to introduce a user tax to incentivise the wise use of peatland and to generate funds to conserve the remaining peatlands.
- Reforestation of degraded peatlands may be possible under climate finance mechanism of CDM.
- **Long term:** peatland needs to be recognised as valuable resources and wise use promoted in mainstream agriculture and forestry policy.

NATIONAL SUMMARY: MALAYSIA

Area of Peatland:	2.5 million hectares (approximately 2,588,900 hectares in Page <i>et al.</i> , 2011).
Distribution of Peatland:	Peatland is distributed throughout Peninsula Malaysia, Sabah and especially Sarawak where over 50% of the resource is located.
Current Status of Peatland:	Much of the peatland resource has been developed for forestry and agriculture throughout Malaysia. The largest areas of undeveloped peatlands outside protected areas are in Sarawak. Intact peatlands found within protected area includes Loagan Bunut National Park and Maludam National Park, Sarawak; North Selangor Peat Swamp Forest, Selangor; Pekan Forest Reserve, Pahang.
Main threats:	<ul style="list-style-type: none"> • Conversion to agriculture and forestry crops. • Fire and degradation from altered drainage. • Lack of management capacity. • Lack of clear policy on peatland.
Current Policy for Peatland:	There have been some effort into creating a holistic policy for peatlands/wetlands (e.g. The National Wetland Policy (2004) which calls for the sustainable and wise use of wetlands with respect to their ecological characteristics) and there is no single agency or specific policy instruments exist for Peatland management and conservation. The National Action Plan of Peatlands has been adopted in 2011.
Drivers:	<ul style="list-style-type: none"> • High prices of palm oil and other commodities. • Agricultural and forestry commodity prices.
Short Term Strategy:	<ul style="list-style-type: none"> • Reduce conversion rate of peatlands to agriculture or forest plantations. • Encourage wise use of peatlands under agriculture and forestry crops. • Prevent fires. • Introduce hypothecated user charges on corporation investing in plantation crops on peatlands, with revenues used to subsidise wise use practice. • Potential to use HAZE Fund for pilot.
Medium Term Strategy:	<ul style="list-style-type: none"> • Reafforest peatlands that are unsuitable for agriculture. • Protect undeveloped peatlands. • Funding potentially available through CDM. • REDD+ funds and user charges.
Long Term Strategy:	<ul style="list-style-type: none"> • Develop a national wise use peatland strategy and implemented at state level. • Identify lead agency for peatland conservation. • With additional funding from REDD+ in addition to peatland-use charges.

INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN MALAYSIA



ROAD MAP FOR INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN MALAYSIA

SHORT TERM

SHORT TERM

- Promote BMPs and redirect agricultural and forestry support mechanisms to support wise use of peatlands nationally.
- Establish user charges for corporations investing in agricultural and forestry cropping systems that degrade peat.
- Use revenues from user charges to subsidise wise use of peatlands.
- Government budget line for peatland management/NAP.
- REDD+ pilots.

MEDIUM TERM

- Continue to raise awareness about peatlands.
- Review effectiveness of measures taken in programme and project pilot sites.
- Peatland-use regulations to prevent unsustainable use.
- National Fund for integrated peatland management.
- Carry out Strategic Environment Assessment.
- National Carbon Finance Scheme for peatlands (e.g. protect undeveloped peatlands using REDD+ finance).

LONG TERM

- Policy leadership in peatlands in the ASEAN by identifying lead agency.
- Sustainable management requirements for all peatlands.
- National Fund and agency for integrated peatland management.

LONG TERM

5.3.4 ANALYSIS OF ECONOMIC INCENTIVES: INDONESIA

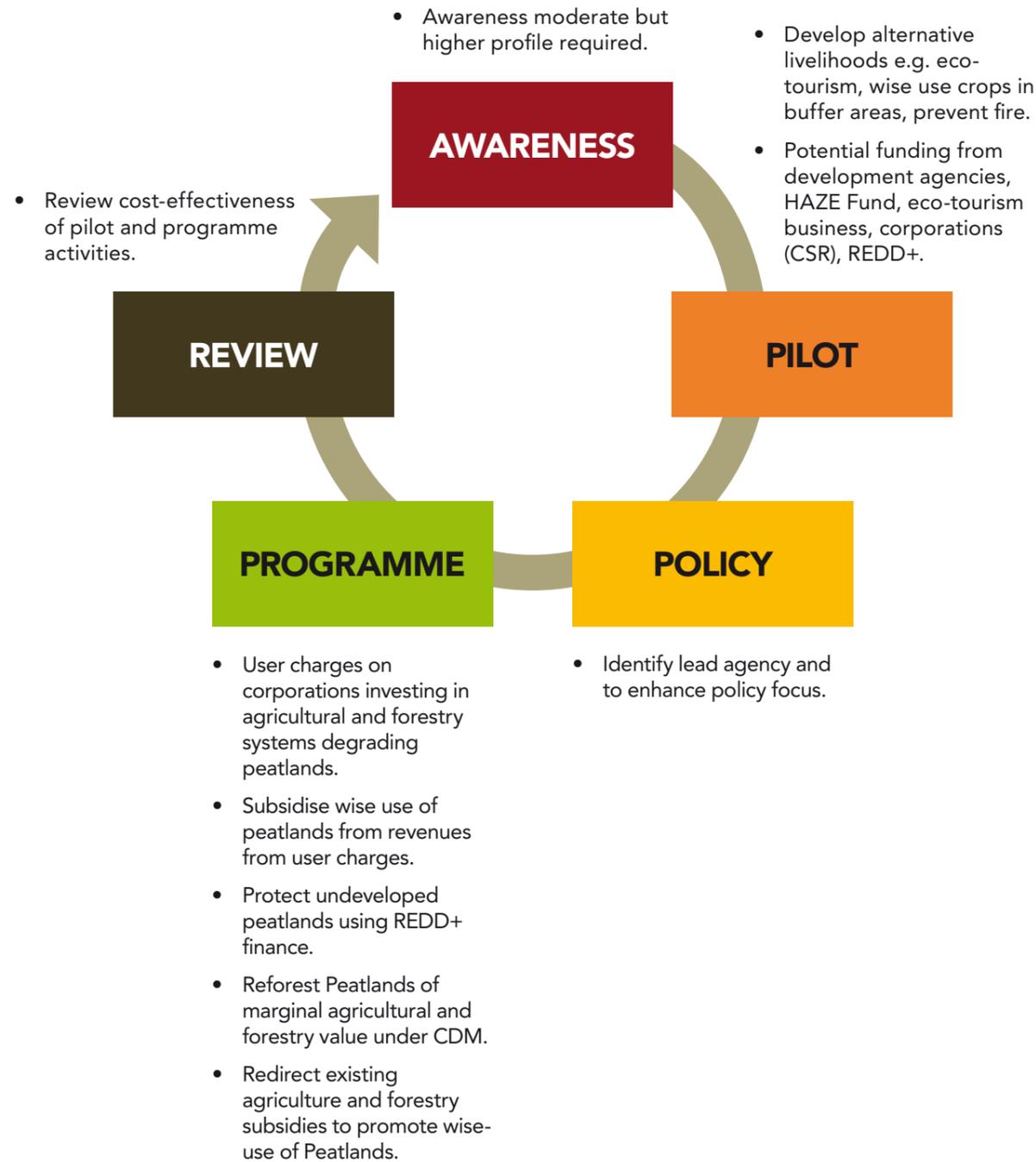
KEY POINTS

- Indonesia has the most extensive area of peatland and some areas remain unexploited.
- There is no specific agency responsible for managing peatlands and their resources and no single agency coordinates decisions affecting peatlands.
- **Short to medium term:** it might be possible to introduce a user tax to incentivise to support existing guidelines on the wise use of peatland and to generate funds to conserve the remaining area.
- In medium term REDD+ funding should be targeted at protecting remaining areas of unexploited Peatland in Sumatra, Kalimantan and Papua.
- Reforestation of degraded peatlands may be possible under climate finance mechanism of CDM.
- **Long term:** peatlands need to be recognised as valuable resources and wise use promoted in mainstream agriculture and forestry policy.

NATIONAL SUMMARY: INDONESIA

Area of Peatland:	20 million hectares (approximately 20,695,000 hectares in Page <i>et al.</i> , 2011).
Distribution of Peatland:	Distributed throughout Indonesia but the largest areas of not yet exploited for agricultural or forestry plantations is in Papua.
Current Status of Peatland:	Indonesia has the vast majority of peatlands in the region, many of which remain undeveloped for forestry and agriculture. Given the size of the peatland area there is increasing pressure to convert them to palm oil and forestry plantations.
Main threats:	<ul style="list-style-type: none"> • Conversion to agriculture and forestry crops. • Fire and degradation from altered drainage. • Lack of management capacity. • Lack of clear policy on peatland matters.
Current Policy for Peatland:	Peatland conservation has a higher profile in Indonesia than in any other ASEAN nation. Awareness of the importance of peatland as a carbon source and for other ecosystem services has grown and some policies are in place to protect Peatlands. There are regulations which prohibit development on peatlands in excess of 3m, for example, but these regulations are often overlooked due to the very high profitability of palm oil currently. As in other ASEAN countries no single agency or specific policy instruments exist for peatland management and conservation. The National Action Plan of Peatlands is under review.
Drivers:	<ul style="list-style-type: none"> • High prices of palm oil and other commodities. • Agricultural and forestry commodity prices. • Poverty.
Short Term Strategy:	<ul style="list-style-type: none"> • Reduce conversion rate of peatlands to agriculture or forest plantations. • Encourage wise use of peatlands under agriculture and forestry crops. • Prevent fires. • Introduce hypothecated user charge on corporation investing in plantation crops on peatlands, with revenues used to subsidise wise use practice. • Provide local livelihood options that does not require fire using project funds including REDD+.
Medium Term Strategy:	<ul style="list-style-type: none"> • Reforest peatlands that are unsuitable for agriculture. • Protect undeveloped peatlands. • Funding potentially available through CDM. • REDD+ and user charges.
Long Term Strategy:	<ul style="list-style-type: none"> • Develop a national wise use peatland strategy and implemented at provincial level. • Identify lead agency for peatland conservation.

INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN INDONESIA



ROAD MAP FOR INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN INDONESIA

SHORT TERM

SHORT TERM

- Establish user charges for corporations investing in agricultural and forestry cropping systems that degrade peat.
- Use revenues from user charges to subsidise wise use of peatlands.
- Redirect agricultural and forestry support mechanisms to support wise-use of peatlands nationally.

MEDIUM TERM

- Continue to raise awareness about peatlands.
- Review effectiveness of measures taken in programme and project pilot sites.
- Develop new approaches to peatland conservation at pilot sites.
- Protect undeveloped peatlands using REDD+ finance.

LONG TERM

- Establish policy leadership in peatlands by identifying lead agency.

LONG TERM

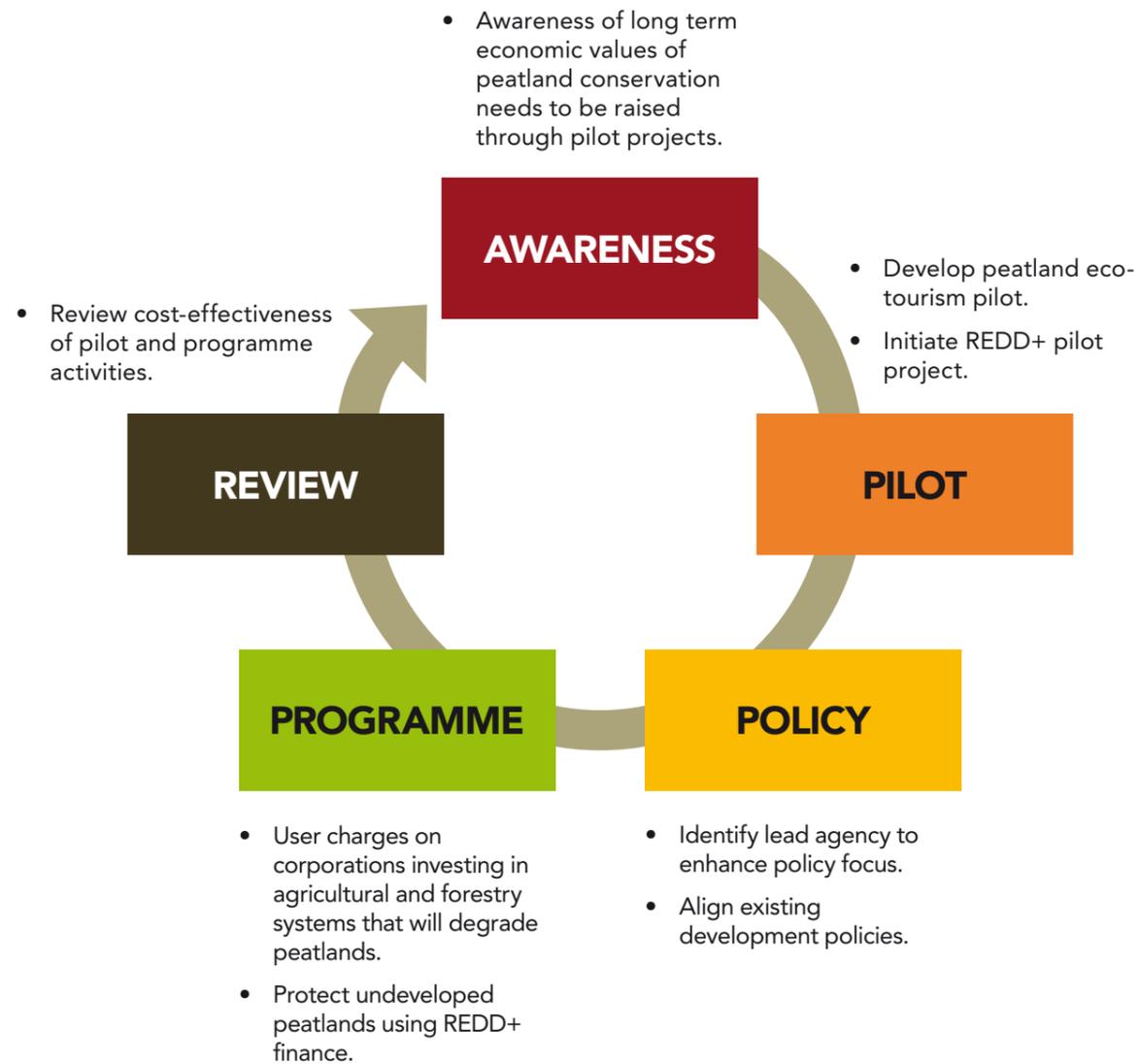
5.3.5 ANALYSIS OF ECONOMIC INCENTIVES: BRUNEI DARUSSALAM KEY POINTS

- Brunei Darussalam has extensive peatland areas of which 80% are believed to be in good condition such as the Kuala Belait Peatland.
- Major threats are infrastructure development and construction, man-made drainage and subsequent risk of fires.
- Brunei Darussalam is politically stable, but has developed legal and administrative structures that could be effective for conserving peatland.
- Brunei Darussalam has recently ratified the UNFCCC and in the medium to long term funding from REDD+ or other carbon payments may provide a sustainable source of income for peatland protection and management.
- The rich diversity of birds, orchids, insects and amphibians on peatland areas, together with good transport links and stable government should attract a steady stream of eco-tourists that should also help sustain peatland resource conservation.

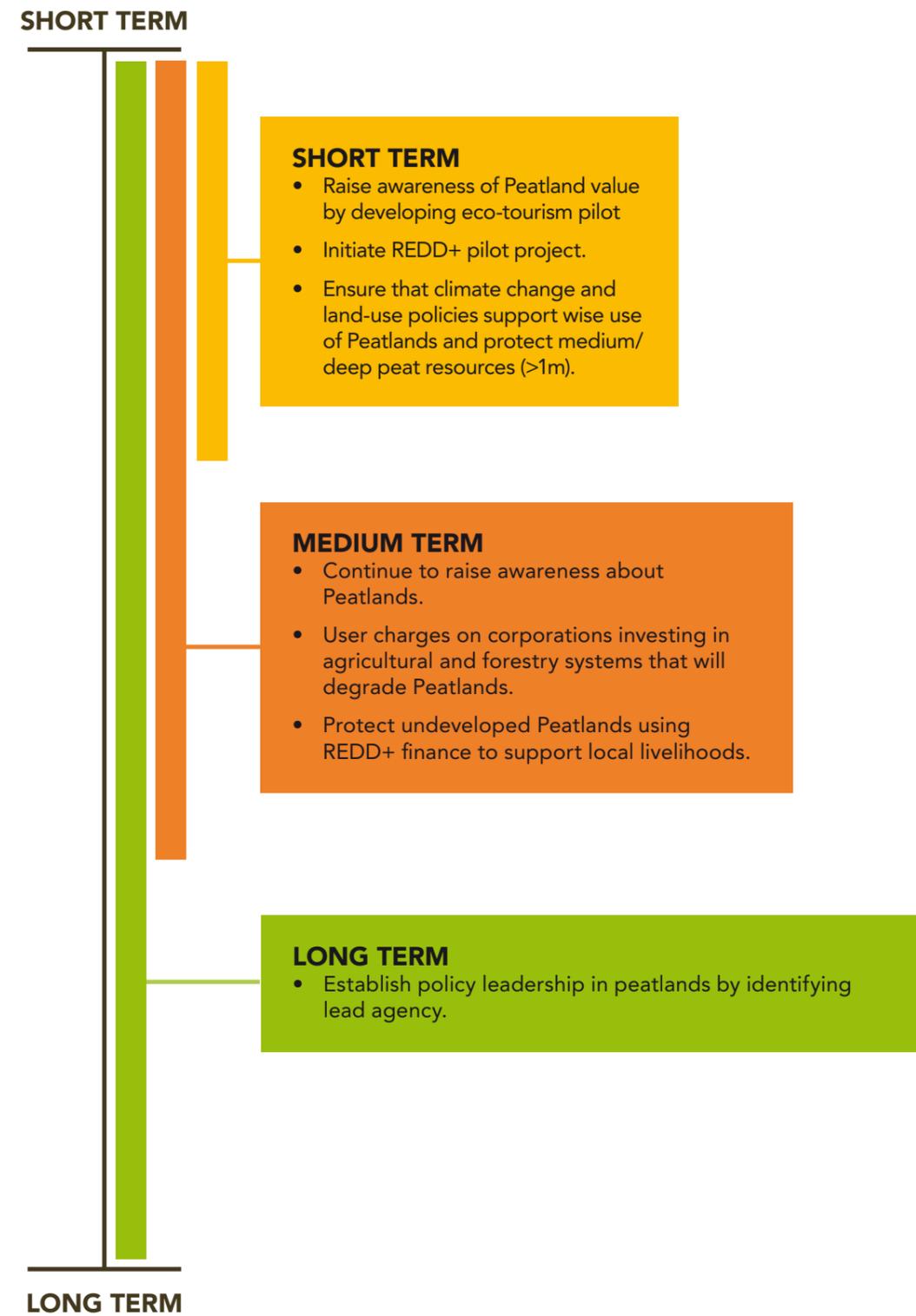
NATIONAL SUMMARY: BRUNEI DARUSSALAM

Area of Peatland:	90,900 hectares.
Distribution of Peatland:	The greater proportion of peatlands occur at low altitude, riparian and coastal area , from sea level to about 50 metres above sea level, although pockets of peatland are found at higher elevation ('kerangas').
Current Status of Peatland:	c. 80% of the peatland area in good condition.
Main threats:	<ul style="list-style-type: none"> • Infrastructure development such as highway construction passing through it. • Sand mining activities in peatlands. • Man-made draining of peatland. • Subsequent fire risk. • Unsustainable development practices and change in landuse.
Current Policy for Peatland:	<p>Most peatlands are on state land and under the control and administration of the Land Department. However, a few have been gazetted under the Forestry Department and are legally protected or managed sustainability by that Department.</p> <p>In the case of peatland forests not on state land, only the harvesting of forest resources are within the government's legal jurisdiction. However, such peatlands that fall within the Brunei Heart of Borneo (HoB) initiative, are required to be managed sustainably as guided by the principles of sustainable development of the HoB National Council.</p>
Drivers:	<ul style="list-style-type: none"> • Oil related infrastructure development. • Agricultural and forestry commodity prices.
Short Term Strategy:	<ul style="list-style-type: none"> • Maintain sustainable management of peatland areas. • Where development takes place encourage 'wise use' agriculture and forestry crops. • Prevent fires and retain waterlogged condition. • Introduce EIA for conversion or change in landuse. • Develop non-consumptive value of peatlands through eco-tourism. • Provide support for existing policies to encourage sustainable forestry by ensuring deep peatlands are protected.
Medium Term Strategy:	<ul style="list-style-type: none"> • Protect undeveloped Peatlands. • Seek funding through CDM, REDD+ carbon funds.
Long Term Strategy:	<ul style="list-style-type: none"> • Develop and implement a national wise use Peatland strategy. • Identify lead agency for Peatland conservation. • Seek additional funding from User charges should peatlands be sought after for agriculture and forestry development.

INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN BRUNEI DARUSSALAM



ROAD MAP FOR INTRODUCING ECONOMIC INCENTIVES FOR PEATLAND CONSERVATION IN BRUNEI DARUSSALAM



SECTION 6: CONCLUSIONS

The report has highlighted the approaches to funding and incentives that will do most to conserve existing undeveloped peatlands and to promote the wise use of peatlands already under cultivation.

The introduction of a successful incentive-based system represents a considerable challenge to policy makers in ASEAN, and this is especially true for tropical peatlands, where policy and governance mechanisms are not well defined or developed, nor is there any great experience with the deployment of economic instruments for environmental goals.

Some key considerations influencing the assessment were:

- Incentives that can encourage wise use of peatlands and discourage unwise use or reduce / remove the economic drivers that threaten peatlands should be favoured.
- Financial sustainability – funds must come from a sustainable source for long term conservation of peatlands.
- Economic incentives that do not require entirely new environmental policies or frameworks and can be introduced with only simple modification to existing administrative systems or jurisdictional realignment should be favoured.

Taking account of these considerations and specific national circumstances with respect to existing land-use policy and capacity the main recommendations for the adoption of financing and economic incentives are as follows:

VIET NAM AND THE PHILIPPINES

In the short term, with funding from development agencies, international NGOs and eco-tourism ventures, user incentives for alternative livelihoods that avoid fire should be developed and implemented in pilot project sites at high value peatland sites. In Viet Nam payments to households to protect peatland resources in UMT and UMH NPs should be made under the Green and Red Book system. In the Philippines, the opportunity to redirect existing agricultural and forestry subsidy payments to promote the wise use of peatlands should also be explored. In the medium term PES schemes supported potentially by REDD+ finance may be deployed to protect the national peatland resource. Reforestation of degraded peatlands may be possible under climate finance mechanism of CDM.

MALAYSIA

Malaysia has extensive peatland areas, much of which has been exploited for agriculture and forestry thus an ambitious state and national programme to promote the wise use of peatland is required and should be based around an hypothecated user tax or 'CESS tax'. This approach would impose higher taxes on unsustainable uses such as oil palm production on peat and reinvest the income in financial incentives to support the wise use of peatlands. Given the strong support for the deployment of green taxation and other incentives by government in Malaysia such an approach may be implementable in the short term (within 5 years). Reforestation of degraded peatlands that have become marginal for agriculture may also be possible under the climate finance mechanism of CDM. In the medium term, additional funding for peatland conservation may be sourced from REDD+.

INDONESIA

Indonesia has the most extensive peatland resource in Southeast Asia. Although much of it has been exploited for agriculture and forestry, there remain extensive areas of undeveloped peatland, especially in Sumatra and Kalimantan. As the case of Malaysia, an ambitious provincial and national programme to promote the wise use of peatland is required using an hypothecated user tax. Given the particular institutional problems and complex governance processes determining land-use policy in Indonesia, adoption of this approach is likely to be in the medium term (5-10 years). Reforestation of degraded peatlands that become marginal for agriculture may also be possible under the climate finance mechanism of CDM. In the medium term, additional funding to protect undeveloped peatland areas for conservation may also be possible from REDD+ finance.

BRUNEI DARUSSALAM

Brunei has extensive peatland areas of which 80% are believed to be in good condition such as the Kuala Belait Peatland. Major threats are infrastructure development and construction, sand mining, drainage and subsequent risk of fires. There is no specific agency responsible for peatlands but most areas come under the control of the Forest Department and are protected or managed sustainably under National Forest Policy. Brunei has recently ratified the UNFCCC and in the medium to long-term funding from REDD+ or other carbon payments may provide a sustainable source of income for peatland protection and management. The rich diversity of birds, orchids, insects and amphibians on peatland areas, together with good transport links and stable government should attract a steady stream of eco-tourists which may also provide income for local communities who might otherwise seek to exploit the peatlands unsustainably. It can be anticipated that the threat to peatlands from exploitation for timber and development for commodity production may increase significantly should revenues from oil and gas fields dwindle, it is important that efforts are made now to raise the awareness of the value of peatlands in relevant land-use and climate change policies.

NEXT STEPS

Economic incentive schemes cannot operate in isolation as successful policy approaches rarely comprise a single tool and a wide range of measures will need to be taken in the next 5-10 years that promote awareness and build capacity for the sustainable use of peatlands such as education and outreach, successful piloting of more sustainable land-use practices and, where necessary, new regulations.

It is not possible within the scope of this project to identify all potential policy-tools or sources of funding and further, more detailed work will be required prior to implementation. Carried out at national level, this analysis should focus on assessing the cost-effectiveness of the proposed approaches by exploring key issues such as displacement effects, additionality, and impact on employment and the regional economy.

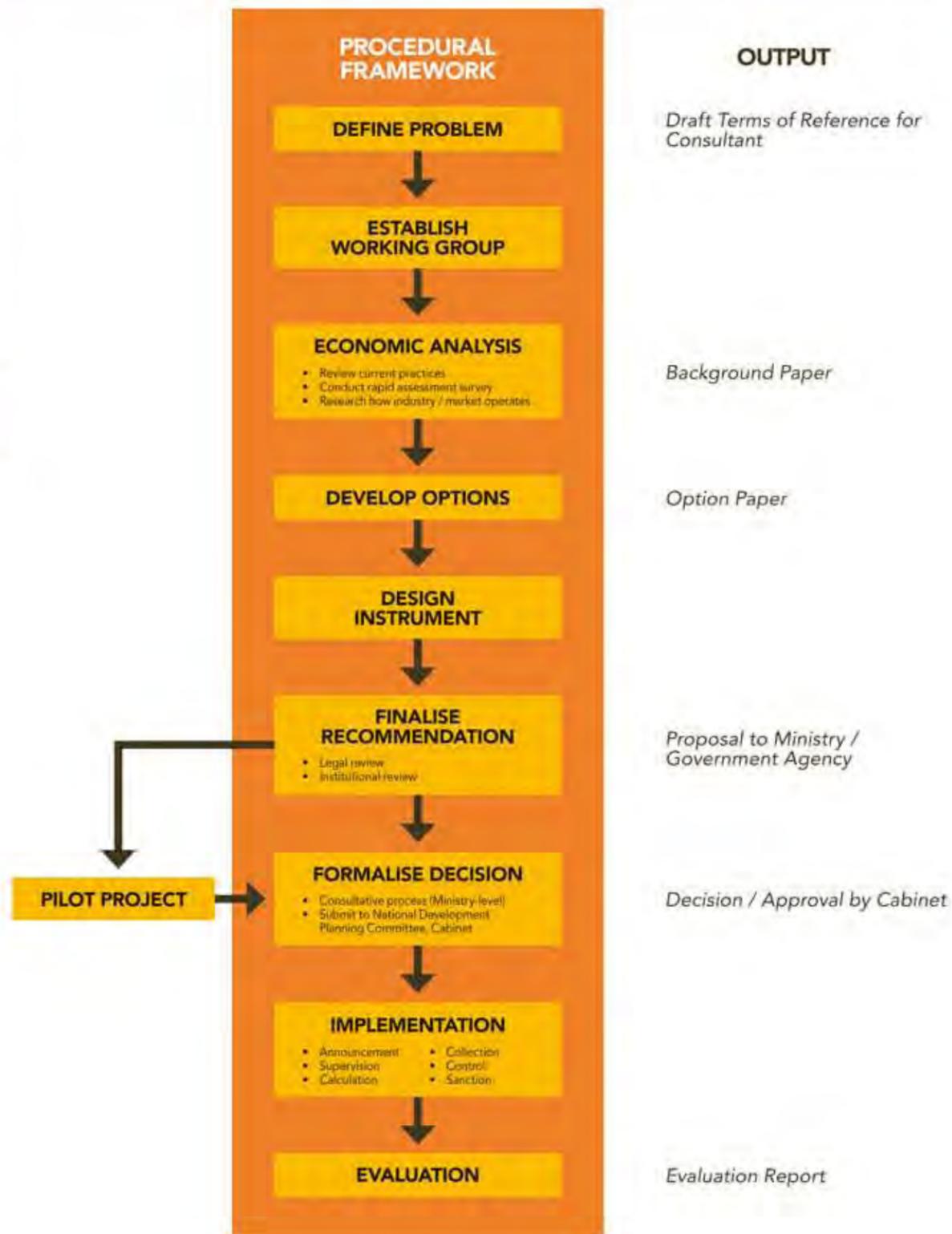
In the long term it may be that new forms of incentives and financing may evolve responding to local and national priorities and needs, creating 'hybrid' programmes that weave together and draw upon multiple central and provincial policies and funding sources.

It is also recommended that research is carried out to assess the total economic value of peatlands to raise awareness among policy makers and civic society about the contribution peatlands make to society and the economy at national, regional and international levels.

REFERENCES

- APMI. 2005. ASEAN Peatland Management Initiative - Sustainable Management of Peatlands: Wise Use, prevention of Fires and Rehabilitation. ASEAN Secretariat. 15pp.
- APMS. 2007. ASEAN Peatland Management Strategy - Strategy and Action Plan for Sustainable Management of Peatlands in ASEAN Member Countries. ASEAN Secretariat. 24pp.
- Bragg, O. and Lindsay, R. (Eds.). 2003. Strategy and Action Plan for Mire and Peatland Conservation in Central Europe (CEPP). Publication 18. Wetlands International, The Netherlands. 94pp.
- Butler, R. A., Koh, L. P. and Ghazoul, J. 2009. REDD in the red: palm oil could undermine carbon payment schemes. *Conservation Letters*. Vol. 2 Issue 2. p. 67-73.
- EPU. 2004. Handbook: Economic Instruments for Environmental Management Malaysia. Economic Planning Unit, Prime Minister's Department, Putrajaya.
- EPU. 2010. Tenth Malaysia Plan 2011-2015. Economic Planning Unit. Prime Minister's Department, Putrajaya.
- FAO. 2008. The State of Food and Agriculture 2008 - BIOFUELS: Prospects, Risks and Opportunities. FAO, Rome. <http://www.fao.org/docrep/011/i0100e/i0100e00.htm>.
- Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., Bruhl, CA., Donald, PF., Phalan, B. 2008. How will oil palm expansion affect biodiversity? *Trends in Ecology and Evolution* 23: 538-45.
- IFAD. 2011. Rehabilitation and Sustainable use of Peatland forests in Southeast Asia. International Fund for Agricultural Development and Global Environment Facility. GEFSEC ID 2751.
- Joosten, H. 2009. The Global Peatland CO₂ Picture. Peatland Status and Emissions in All Countries of The World. Wetland International.
- Kanninen, M., Murdiyarsa, D., Seymour, F., Angelson, A., Wunder, S and German, L. 2007. Do Trees Grow on Money? The implications of deforestation research for policies to promote REDD. CIFOR, Bogor, Indonesia.
- KETTHA. 2011. Handbook of the Malaysian Feed-in tariff for the Promotion of Renewable Energy. Ministry of Energy, Green Technology and Water, Malaysia.
- Koh, L. P. and Ghazour, J. 2008. Biofuels, biodiversity, and people: understanding the conflicts and finding opportunities. *Biological Conservation* 141.10 : 2450-2460.
- Miettinen, J., Hooijer, A., Shi, C., Tollenaar, D., Vernimmen, R., Liew, S. C., Malins, C. and Page, S. E. 2012. Extent of industrial plantations on Southeast Asian peatlands in 2010 with analysis of historical expansion and future projections. *Global Change Biology Bioenergy*. Volume 4, Issue 6, p.918.
- Miettinen, J., Hooijer, A., Tollenaar, D., Page, S., Malins, C., Vernimmen, R., Shi, C. and Liew, S. C. 2012. Historical Analysis and Projection of Oil Palm Plantation Expansion on Peatland in Southeast Asia. White Paper Number 17, Feb 2012, Indirect Effects of Biofuel Production. International Council on Clean Transportation.
- Miles, L., and Kapos, V. 2008. Reducing greenhouse gas emissions from deforestation and forest degradation: global land-use implications. *Science*, 320(5882), 1454-1455.
- MNREM. 2011. Malaysia Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC). Ministry of Natural Resources and Environment Report. 145pp.
- Myers, E. C. 2007. Policies to reduce emissions from deforestation and degradation (REDD) in tropical forests. Discussion Paper. RFF DP 07-50. Resource for The Future, Washington.
- Nguyen, Q.T. 2011. An Analysis of the Pilot Project in Lam Dong Province Forest Conservation Project. Occasional Paper No. 5. Institute for Global Environmental Strategies (IGES), Japan.
- Nguyen, T.H. 2011. Peatland Management in U Minh Area, Viet Nam. Presentation to the Technical Workshop on Best Management Practices for Sustainable Peatland Management. Central Kalimantan, June 2011.
- Page, S. E., Rieley, J. O. and Global and Banks, C. J. 2011. Regional importance of the tropical peatland carbon pool. *Global Change Biology*, 17, 798-818.
- Parish, F. and Silvius, M. 2009. Management of Peatlands for Biodiversity and Climate Change. Assessment on Peatlands, Biodiversity and Climate Change. Main Report. UNEP, GEF, GEC, Wetlands International.
- Pearce, D. and Koundouri, P. 2003. Fertilizer and pesticide taxes for controlling non-point agricultural pollution. *Agriculture and Rural Development*, 1(5).
- Pham, T. T., Campbell, B.M., Garnett, S., Aslin, H and Ha, H.M. 2010. Importance and impacts of intermediary boundary organizations in facilitating payment for environmental services in Viet Nam. *Environmental Conservation*, 37:64-72.
- Quoi, L. P. 2012. Preliminary identification of mangrove coastal peatlands in Koh Kong Province, Cambodia. APFP-SEApeat project Report.
- RSPO 2007. Principles and Criteria for Sustainable Palm Oil Production. Including Indicators and Guidance Roundtable on Sustainable Palm Oil. http://www.rspo.org/files/resource_centre/RSPO%20Principles%20&%20Criteria%20Document.pdf
- Schlamadinger, B., Johns, T., Ciccarese, L. et al. (2007). Options for including land use in a climate agreement post-2012: improving the Kyoto protocol approach. *Environmental Science and Policy*, 10 (4), 295 – 305.
- Stern, Nicholas. 2006. The economics of climate change: The Stern Review. United Kingdom 698 pp.
- Sunderlin, W. D. and Huynh, T. B. 2005. Poverty alleviation and forests in Viet Nam. CIFOR.
- UNEP. 2005. Sustainable Use of Natural Resources in the Context of Trade Liberalization and Export Growth in Indonesia - A Study on the Use of Economic Instruments in the Pulp and Paper Industry. UNEP, Geneva.
- UNFCCC. 2007. Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007. <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf>
- Van Noordwijk, M, Purnomo, H., Peskett, L and Setiono, B. 2008. Reducing emissions from deforestation and forest degradation (REDD) in Indonesia: options and challenges for fair and efficient payment distribution mechanisms. Working paper 81, World Agroforestry Centre (ICRAF), Bogor, Indonesia. 29pp.
- Zuehlke, Robert T. 2010. Scaling Up Palm Oil Certification: Gaps and Options for More Sustainable Production. Diss. Duke University.

APPENDIX 1: PROCEDURAL FRAMEWORK FOR DESIGNING AND INTRODUCING ECONOMIC INCENTIVES



Source: Economic Instruments for Environmental Management Malaysia 2004.



ABOUT ASEAN

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The members of the Association are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. The ASEAN Member States are working together to address common issues through collective spirit, collaboration, consultation and cooperation. The ASEAN Secretariat is based in Jakarta, Indonesia.

One Vision, One Identity, One Community



ABOUT GLOBAL ENVIRONMENT CENTRE

The Global Environment Centre (GEC) is a Malaysia-based non-profit organisation with activities at local, regional and global level to address environmental issues of global concern. It was established in 1998 and supports field programmes in more than 15 countries mainly in the Asia Pacific region as well as information exchange and policy formulation. It works primarily through multi-stakeholder partnerships and collaboration with networks of like-minded organisations.

Its primary programmes are:

- Forest and Biodiversity Programme
- Peatland Programme
- River Care Programme
- Outreach and Partnership Programme

It has been recognised by the Parties to the Convention on Biological Diversity for its work on peatlands and also river basin management. It is a founding partner of the ASEAN Peatland Management Initiative (APMI) and the development of ASEAN Peatland Management Strategy (APMS); both endorsed by all ten ASEAN Member States. It coordinates many networks and partnerships at local and international levels.

Building Partnerships for the Environment