REPORT

OF THE FINAL REVIEW OF THE ASEAN PEATLAND MANAGEMENT STRATEGY (APMS) 2006-2020

one vision
one identity
one community

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

The ASEAN Secretariat is based in Jakarta, Indonesia.

For inquiries, contact:
The ASEAN Secretariat
Community Relations Division (CRD)
70A Jalan Sisingamangaraja
Jakarta 12110, Indonesia

Phone: (62 21) 724-3372, 726-2991
Fax: (62 21) 739-8234, 724-3504

E-mail: public@asean.org

Catalogue-in-Publication Data

Report of the Final Review
of the ASEAN Peatland Management Strategy (APMS) 2006-2020
Jakarta, ASEAN Secretariat, August 2021

333.7359
1. ASEAN – Environment – Peatland
2. ATFP – Air Pollution – Transboundary Haze Pollution

ISBN no: ISBN 978-623-6945-16-2

ASEAN: A Community of Opportunities for All

General information on ASEAN appears online at the ASEAN website: www.asean.org

European Union

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Global Environment Centre

The Report of the Final Review of the ASEAN Peatland Management Strategy (APMS) 2006-2020 was prepared by Global Environment Centre with support from the Sustainable Use of Peatland and Haze Mitigation in ASEAN (SUPA) Programme funded by European Union and Government of Germany.

Photo credit: Global Environment Centre.

REPORT OF THE FINAL REVIEW OF THE ASEAN PEATLAND MANAGEMENT STRATEGY (APMS) 2006-2020

The ASEAN Secretariat
Jakarta

TABLE OF CONTENTS

FIGURES

TABLES

Photo credit: Armin Hari.

ACRONYM LIST

AADCP	ASEAN-Australian Development Cooperation Program
AATHP	ASEAN Agreement on Transboundary Haze Pollution
ACB	ASEAN Centre for Biodiversity
ACC THPC	ASEAN Coordinating Centre for Transboundary Haze Pollution Control
AMME	ASEAN Ministerial Meeting on Environment
AMMH	ASEAN Ministerial Meeting on Haze
AMS	ASEAN Member State
APFP	ASEAN Peatland Forests Project
APHI	Indonesian Forest Concessionaires Association
APMI	ASEAN Peatland Management Initiative
APMS	ASEAN Peatland Management Strategy
APN	Asia Pacific Network
APSMPE	ASEAN Programme on Sustainable Management of Peatland Ecosystems
ASCC	ASEAN Socio-Cultural Community
ASEAN	Association of Southeast Asian Nations
ASEC	ASEAN Secretariat
ASMC	ASEAN Specialised Meteorological Centre
ASOEN	ASEAN Senior Officials on Environment
ATFP	ASEAN Task Force on Peatlands
AusAID	Australian Aid
BDMD	Brunei Darussalam Meteorological Department
BFP	Bureau of Fire Protection
BFRD	Brunei Fire Rescue Department
BMKG	Meteorology, Climatology and Geophysical Agency (*Badan Meteorologi, Klimatologi dan Geofisika*), Indonesia
BMPs	Best Management Practices
BMS	Biodiversity Monitoring System
BMU	Federal Ministry for Environment, Nature Conservation and Nuclear Safety
BNCCC	Brunei Darussalam National Council on Climate Change
BNPB	*Badan Nasional Penanggulangan Bencana*
BPBD	*Badan Penanggulangan Bencana Daerah*
BRG	Peatland Restoration Agency (*Badan Restorasi Gambut*), Indonesia
BRGM	*Badan Restorasi Gambut dan Mangrove*, Indonesia
BSWM	Bureau of Soils and Water Management
BUI	Build Up Index
C	Carbon
CAWED	Caves, Wetlands and other Ecosystems Division
CBD	Convention on Biological Diversity
CBFiM	Community-based fire management
CDD	Conservation and Development Division
CDM	Clean Development Mechanism
CEPA	Communication, education and public awareness
CIFOR	Center of International Forestry Research
COM	Committee under COP to AATHP
COP	Conference of the Parties to the AATHP
CO_2	Carbon dioxide
CSOs	Civil Society Organisations
CSR	Corporate Social Responsibility
DAP	Detailed Action Plan
DC	Drought Code
DENR	Department of Environment and Natural Resources, Philippines
DENR-BMB	Department of Environment and Natural Resources – Biodiversity Management Bureau
DFID	Department for International Development, United Kingdom
DMC	Duff Moisture Code
DNP	Department of National Park, Wildlife and Plant Conservation
DOE	Department of Environment
DWR	Department of Water Resources
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
ENIPAS Act	Expanded National Integrated Protected Areas
ERDB	Ecosystems Research and Development Bureau System Act
EU	European Union
EWS	Early Warning System
FD	Forestry Department
FDPM	Forestry Department Peninsular Malaysia
FDRS	Fire Danger Rating System
FFMC	Fine Fuel Moisture Code
FGD	Focus Group Discussion
FMB	Forest Management Bureau
FORDA	Social Economy, Policy and Climate Change
FPIC	Free, Prior and Informed Consent
FRIM	Forest Research Institute Malaysia
FWI	Fire Weather Index
GAPKI	Indonesia Oil Palm Entrepreneur Association
GIZ	*Deutsche Gesellschaft für Internationale Zusammenarbeit*
GFMC	Global Fire Monitoring Center
HFSLP	Haze-Free Sustainable Livelihood Project
HGI	*Himpunan Gambut Indonesia*
HOB	Heart of Borneo
MPA	Fire Care Community
GEC	Global Environment Centre
GEF	Global Environment Facility
GHG	Greenhouse gas
GPI	Global Peatlands Initiative
GWL	Ground Water Level
Gt	Giga tons
Ha	Hectare
HTTF	Haze Technical Task Force
IBAs	Important Bird Areas
IBSAP	Indonesian Biodiversity Strategy and Action Plan
IER	Institute for Environment and Natural Resources
IFM	Integrated Fire Management
IKI	International Climate Initiative, Germany
IIRR	International Institute of Rural Reconstruction
IMCG	International Mire Conservation Group
IMP	Integrated Management Plan
IMPLI	Integrated Management of Peatland Landscapes in Indonesia
IoT	Internet of Thing
IFAD	International Fund for Agricultural Development
IPB	Institute Pertanian Bogor
IPS	International Peatland Society
ISI	Initial Spread Index
ISPO	Indonesian Sustainable Palm Oil Standards
ITPC	International Tropical Peatland Center
IUCN	International Union for Conservation of Nature
JASTRe	*Jabatan Alam Sekitar, Taman dan Rekreasi*
JICA	Japan International Cooperation Agency
KASA	Ministry of Environment and Water (*Kementerian Alam Sekitar dan Air*), Malaysia
KBA	Key Biodiversity Areas

KeTSA	Ministry of Energy and Natural Resources (*Kementerian Tenaga dan Sumber Asli*), Malaysia
KHG	*Kesatuan Hidrologi Gambut*
KFCP	Kalimantan Forests and Climate Partnership
LAPAN	National Institute of Aeronautics and Space (*Lembaga Penerbangan dan Antariksa Nasional*), Indonesia
LiDAR	Light Detection and Ranging
LULUCF	Land Use, Land Use Change and Forestry
M&E	Monitoring and Evaluation
MAHFSA	Measurable Action for Haze-Free Land and Water Management in Southeast Asia
MARD	Ministry of Agriculture and Rural Development, Viet Nam
MET Malaysia	Malaysian Meteorological Department
mm	milliliter
MOA	Ministry of Agriculture
MOALI	Ministry of Agriculture, Livestock, and Irrigation Forestry
MOD	Ministry of Development, Brunei Darussalam
MOE	Ministry of Environment
MOECAF	Ministry of Environmental Conservation and **MOEF** Ministry of Environment and Forestry (*Kementerian Lingkungan Hidup dan Kehutanan/KLHK*), Indonesia
MONRE	Ministry of Natural Resources and Environment
MONREC	Ministry of Natural Resources and Environmental Conservation, Myanmar
MPIC	Ministry of Primary Industries and Commodities, Malaysia
MPOB	Malaysian Palm Oil Board
MSC	Sub-Regional Ministerial Steering Committee on Transboundary Haze Pollution
MSPO	Malaysian Sustainable Palm Oil Standards
MTR	Mid-Term Review
MUDeNR	Ministry of Urban Development and Natural Resources Sarawak
NAPC	Networked ASEAN Peat Swamp Forest Communities
NAP-DLDD	National Action Plan to Combat Desertification, Land Degradation and Drought
NAPPs	National Action Plans on Peatlands
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NDMC	National Disaster Management Centre
NDPE	No Deforestation, No Peat and No Exploitation
NEDA	National Economic Development Authority
NFP	National Focal Point
NGO	Non-Governmental Organisation
NMC	National Monitoring Center
NPSC	National Peatland Steering Committee
NPWC	National Peatland Working Committee
NSPSF	North Selangor Peat Swamp Forest
NTFP	Non-Timber Forest Product
NUS	National University of Singapore
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PAMB	Protected Area Management Board
PAO	Provincial Administrative Organisation
PDP	Philippine Development Plan
PEST	Political, Economic, Social and Technical Analysis
PHUs	Peatland Hydrological Units
PKG	*Direktorat Pengendalian Kerusakan Gambut*
PLUP	Participatory Land Use Planning
PPI	*Ditjen Pengendalian Perubahan Iklim*
PPKL	*Ditjen Pengendalian Pencemaran dan Kerusakan Lingkungan*
PPRR	Prevention, Preparedness, Response and Recovery
Propeat	Peatland Management and Rehabilitation Project
PSF	Peat swamp forest
PU-PR	*Kementerian Pekerjaan Umum dan Perumahan Rakyat*
RAN-API	Indonesian National Action Plan for Climate Change Adaptation
RECOFTC	Regional Community Forestry Training Center
RFMRC-SEA	Regional Fire Management Resource Center – South East Asia
RPPEG	*Rencana Perlindungan dan Pengelolaan Ekosistem Gambut*
RSPO	Roundtable on Sustainable Palm Oil
RTE	rare, threatened and endangered
SAPP	State Action Plan on Peatlands
SCPW	Society for the Conservation of Philippine Wetlands, Inc.
SEA	Southeast Asia
SEApeat	Sustainable Management of Peatland Forests in Southeast Asia Project
SHGSU	*Sahabat Hutan Gambut Selangor Utara*
SIMATAG	Monitoring System on Ground Water Level of 0.4m
SMART	Singapore – MIT Alliance for Research and Technology
SMPEI	Sustainable Management of Peatland Ecosystems in Indonesia
SMPEM	Sustainable Management of Peatland Ecosystems in Malaysia
SOP	Standard Operating Procedures
SPM	Sustainable Peatland Management
SRFA	Sub-regional Fire-Fighting Arrangement
SSTC	South-South Triangular Cooperation
STROPI	Sarawak Tropical Peat Research Institute
SUPA	Sustainable Use of Peatland and Haze Mitigation in ASEAN
SWMT	Sub-Committee for Wetlands Management of Thailand
SWOT	Strength, Weakness, Opportunity and Threat Analysis
TAKE-SMPEM	Technical Assistance and Knowledge Exchange for Sustainable Management of Peatland Ecosystems in Malaysia
TAO	Tambon Administrative Organisation
TPAs	totally protected areas
TROCARI	Tropical Catchments Research Initiative
TROPI	Tropical Peat Research Institute
TWG	Technical Working Group
TWG Mekong	ASEAN Technical Working Group on Transboundary Haze Pollution in the Mekong Sub-Region
UBD	University of Brunei Darussalam
UMTNP	U Minh Thuong National Park
UNCCD	UN Convention to Control Desertification
UNDRR	UN Disaster Risk Reduction
UNEA	UN Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	UN Framework Convention on Climate Change
USAID	United States Agency for International Development
UN SDGs	United Nations Sustainable Development Goals
VEA	Vietnam Environment Administration
VSU	Visayas State University
WI	Wetlands International
WG	working group

FOREWORD

Seasonal fire and its associated transboundary haze pollution are persistent risk in the ASEAN region. It incurs high economic, social, and health costs. Realising the risks and impacts to the region and its people, all ten ASEAN Member States (AMS) have long been cooperating on the issue of transboundary haze pollution over the years, at national and regional levels. The commitment to regional cooperation remains strong as the Leaders at 37th ASEAN Summit on 12 November 2020 renewed their assurance to the full and effective implementation of the ASEAN Agreement on Transboundary Haze Pollution (AATHP) and the Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation (Haze-Free Roadmap).

The AATHP has played a crucial role as the main driver of ASEAN to jointly tackle the haze challenges in the region. The Agreement comprehensively addresses all aspects of fire and haze including prevention, emphasising the underlying causes, monitoring, and mitigation. Fires in peat soils have been identified as a major contributor to transboundary haze pollution in the region. 40% of the world's known tropical peatlands and roughly 6% of the entire extent of global peatland resource are found in Southeast Asia, covering an estimated area of 23 million hectares, a valuable ecosystem critical for preserving biodiversity and storing carbon. Drainage and unsustainable management practices have made peatlands vulnerable to fire. These fires create toxic smoke that covers large areas of the region, poses serious health hazards and emits tons of greenhouse gases.

Recognising the importance of sustainable management of peatlands, ASEAN established a framework of the ASEAN Peatland Management Initiative (APMI) in 2002. The ASEAN Peatland Management Strategy (APMS) 2006-2020 was developed as its initial workplan to address the pressing need for wise use and sustainable management of peatlands, as well as to address the emerging threat of peatland fire and its associated haze to the economy and health of the region, and its possibility of contributing to global climate change.

This Report of the Final Review of the APMS was prepared under the guidance of the Committee under the Conference of Parties to the ASEAN Agreement on Transboundary Haze Pollution and the ASEAN Task Force on Peatlands (ATFP), with the support of the European Union and Germany through the Sustainable Use of Peatlands and Haze Mitigation in ASEAN (SUPA) programme. The Report documented significant achievements that had since been made at the local, national and regional level. Among others, it highlighted the successful implementations of the ASEAN Peatland Forests Project (APFP) (2009-2015), funded by Global Environment Facility (GEF) through International Fund for Agricultural Development (IFAD), the EU-supported Sustainable Management for Peatland Forests in Southeast Asia (SEApeat) (2011-2015), the establishment of ASEAN Task Force on Peatlands (ATFP) in 2013, the endorsement of the ASEAN Guidelines on Peatland Fire Management, and the development of ASEAN Programme on Sustainable Management of Peatland Ecosystems (2014-2020) (APSMPE).

The Report further reaffirmed the values of sustainable management of peatlands in the region by means of collective actions and enhanced cooperation. The findings and recommendations provide essential information and knowledge on the achievements, challenges, lesson learnt, best management practices, and approaches as well as stakeholder engagements. I have confidence that the Report will provide key entry points and directions to the development of the new ASEAN Peatland Management Strategy building on our strength and success as well as dealing with various challenges ahead of us.

The spirit of ASEAN cooperation on transboundary haze pollution remains strong. We learn from the past and ongoing experiences to improve our cooperation and coordination mechanisms, as well as double our efforts and determination. ASEAN will continue to strengthen cooperation and partnership to prevent and address the transboundary haze pollution challenge.

KUNG PHOAK
Deputy Secretary-General of ASEAN
for ASEAN Socio-Cultural Community

ACKNOWLEDGEMENTS

This Final Review of the Implementation of the ASEAN Peatland Management Strategy (APMS) 2006-2020 was funded by the Sustainable Use of Peatland and Haze Mitigation in ASEAN (SUPA) Programme funded by European Union and Government of Germany. This Review was undertaken from February until December 2020 by a team from the Global Environment Centre (GEC) under the coordination of the ASEAN Secretariat, GIZ and the Task Force of the Final Review of the APMS. It was formally presented to the ASEAN Task Force on Peatlands and the Committee of the Conference of Parties (COP) of the ASEAN Agreement on Transboundary Haze Pollution (AATHP). Production of this current report and an accompanying Executive Summary have also been financed by the SUPA programme.

Appreciation is given to all the ASEAN Member States (AMS) that have been actively engaged in the Review processes, including making extended communications and sharing the questionnaire to relevant national and local peatland stakeholders from government agencies, private sector, civil society organisations, research institutes and universities/academe for comprehensive feedback. Great appreciation is given to ASEAN Dialogue and Development Partners, as well as regional and international stakeholders that have provided invaluable inputs and recommendations to contribute to the final report of the Review.

EXECUTIVE SUMMARY

INTRODUCTION AND METHODS

The ASEAN Peatland Management Strategy 2006-2020 (APMS) was adopted by ASEAN in 2006 and has provided the framework for action by ASEAN Member States (AMS) to address peatland management over the past 15 years.

Based on the decision of the 4th Meeting of ASEAN Task Force on Peatlands (ATFP) in February 2019 to merge the second and final review of the APMS to allow an early start of the final review, and to anticipate the smooth continuation of the current APMS which is expiring in 2020, the review of the APMS is being conducted in two phases:

i. Final Review of the APMS with a view to be reported to the Sixteenth Conference of the Parties (COP-16) to the ASEAN Agreement on Transboundary Haze Pollution (AATHP) in 2020. This final review will include recommendations for the next APMS; and
ii. Development of the next APMS (for 2021-2030) with a view to be reported and endorsed by COP-17 in 2021.

The objective of the Final Review of the APMS is to provide a consolidated assessment at national and regional levels on the implementation of the APMS 2006-2020 and achievements of the targets; and generate information and learning to inform the formulation of the next strategy. The review has been undertaken in close consultation with the AMS, ASEAN Secretariat (ASEC), and relevant stakeholders.

The review process started in March 2020 with a plan for a series of regional and country level meetings to seek stakeholder feedback and input. As a result of the COVID-19 pandemic, all travel plans were cancelled and a revised method using virtual meetings and remote interviews was adopted. A working paper and questionnaires were prepared and circulated to National Focal Points (NFPs) of the ATFP. A specific Task Force of the APMS Review was established to work closely with the review team. The final review has been undertaken through desk study, questionnaire, focus group discussions (FGDs) and verification interviews with relevant stakeholders including experts in peatland management in the region. It also involved literature review and meetings with ASEC and the Task Force on the APMS Review/ATFP, drew upon relevant AMS reports to the ASEAN meetings; experts' inputs and also harnessed experiences from previous ASEAN peatland programmes and related ASEAN processes.

The above process combined with the knowledge of the review team members were used to develop a matrix of the progress of implementation of the APMS, according to the 13 Focal Areas and 25 Operational Objectives of the APMS. Indicative level of achievement has been estimated based on feedback and discussions with the APMS focal person and/or ATFP NFPs as well as other stakeholders, literature analysis and FGDs as well as the expert judgement of the review team and feedback from the AMS. A detailed review and analysis of progress against the 98 actions specified in the APMS is also presented.

IMPLEMENTATION OF THE APMS

There has been good progress against the overall objectives of the APMS as follows:

General Objective 1: Enhance Awareness and Capacity on Peatlands

There has been very good progress in enhancing awareness and capacity on peatlands in all AMS. Each AMS has designated a focal point agency related to peatland management and several have established national committees or working groups on peatlands or incorporated peatlands into the work of other committees like biodiversity or wetland committees. Some AMS have developed specific regulations and policies related to peatland or incorporated peatlands into national policies. Most AMS have significantly enhanced institutions and individual capacity related to peatlands. All AMS now have recognised national experts on different aspects of peatlands related to peatland assessment, fire prevention and control, management and climate change linkages.

General Objective 2: Address Transboundary Haze Pollution and Environmental Degradation

Significant action has been taken by AMS to minimise transboundary haze and environmental degradation related to peatlands especially in the southern ASEAN region where most peatlands are. There has been a paradigm shift in the approach to address peatland fires – moving from an early focus on fire-fighting to a broader approach emphasising prevention. The ASEAN Guidelines on Peatland Fire Management adopted in 2015 called for 80% of resources to be allocated to peatland fire prevention. This has been actively adopted by AMS with Indonesia establishing a Peatland Restoration Agency (*Badan Restorasi Gambut/BRG*[1]) focused on rewetting peatlands to prevent fire on 2 million hectares of peatland and a National Peatland Fire Prevention Programme in Malaysia. Although there have been periodic transboundary haze events, linked to droughts associated with El Nino or Indian Ocean Dipole events, the scale and severity of the fires and events, which were linked to decreased compared to prior to the APMS. The prediction, warning and monitoring of peatland fires has also significantly improved by enhancement of Fire Danger Rating System (FDRS) as well as satellite observation and tracking of fires and haze.

FOOTNOTE

1 Institutional change of BRG to BRGM started on 23 December 2020 with additional tasks to rehabilitate mangrove ecosystem in Indonesia, as designated by the President of Indonesia.

General Objective 3: Promote Sustainable Management of Peatlands

AMS have recognised the importance of sustainable management of peatlands with peatlands designated as environmentally sensitive areas in Malaysia's National Physical Plan in 2010 and Indonesia stopping the allocation of new licenses for peatland development in 2011 and adopting National Regulations on Peatland Ecosystems Protection and Management in 2014. Water management has been recognised as one of the most critical aspects of peatland management with restrictions and best management approaches for water management in peatlands being promoted. The Indonesian Sustainable Palm Oil Standards (ISPO) and the Malaysian Sustainable Palm Oil Standards (MSPO) both incorporate requirements for sustainable peatland management. The Roundtable on Sustainable Palm Oil (RSPO) published manuals of best management practices for cultivation of oil palm on peat and management and conservation of peatlands in 2012 which were updated in 2019. Significant progress has been made in promoting sustainable management by local communities including the introduction of zero burning approaches and also paludiculture – the cultivation of suitable species on wet or rewetted peatlands.

General Objective 4: Promote Regional Cooperation

Regional cooperation and exchange has significantly increased under the framework of the APMS. A large number of regional and international conferences, workshops and training programmes have been organised by ASEC and AMS over the past 15 years. The APFP (2009-2014) and the associated SEApeat project facilitated significant collaborative work and exchanges. Exchanges and peer-to-peer learning have demonstrably advanced peatland management in the region and has enabled AMS to fast track introduction of new approaches to peatland management. The COP of the AATHP has reiterated the importance of the APMS and collaborative action on peatland management. A growing number of bilateral and regional cooperation initiatives have been supported in recent years including the EU-ASEAN SUPA Programme and the IFAD-funded Measureable Action for Haze-Free Sustainable Land Management in Southeast Asia (MAHFSA) Programme as well as a series of Global Environment Facility (GEF) financed projects at country and sub-regional levels. The ATFP was approved in 2013 and has met regularly to review progress in the implementation of the APMS.

IMPLEMENTATION OF OBJECTIVES AND ACTIONS

An in-depth assessment was made of the implementation of the 98 Actions and 25 Operational Objectives in 13 Focal Areas in the APMS as in **Table A**. It was determined that 100% of the Actions have been initiated at the regional or country level. On average, 7 AMS undertook activities in each focal area with a range of 2-10 AMS undertaking some actions and 3-8 addressing specific objectives. The review has confirmed that good progress has been made particularly to enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze; to enhance information on management and promote sharing; and to promote exchange of expertise in addressing peatland management issues. Progress has also been made in determining the extent and status of peatlands in the region, to undertake priority research activities and to reduce the occurrence of fire and associated haze, and to promote best management practices. Slower progress was made in relation to peatlands and climate change and ensuring adequate funding and resources for implementation of the APMS. While good progress has been made with many actions, most of the actions by their nature are ongoing and should be continued in the future.

Table A: Summary of scoring for APMS implementation against Focal Areas

Focal Areas	Started	Ongoing/ continuous	Geographic Scope	Progress Score
1. Inventory and Assessment	100 %	100 %	7 (5-8)	70 %
2. Research	100 %	100 %	6 (5-7)	63 %
3. Awareness and Capacity Building	100 %	100 %	8 (5-10)	76 %
4. Information Sharing	100 %	100 %	7 (6-8)	77 %
5. Policies and Legislation	100 %	100 %	7 (7-8)	70 %
6. Fire Prevention, Control and Monitoring	100 %	100 %	5 (4-6)	60 %
7. Conservation of Peatland Biodiversity	100 %	100 %	8 (7-9)	69 %
8. Integrated Management of Peatlands	100 %	100 %	6 (3-8)	61 %
9. Promotion of Best Management Practices of Peatlands	100 %	100 %	7 (5-9)	70 %
10. Restoration and Rehabilitation	100 %	100 %	5 (4-7)	65 %
11. Peatland and Climate Change	100 %	87 %	3 (1-6)	42 %
12. Regional Cooperation	100 %	100 %	8 (5-10)	73 %
13. Financing of the Implementation of Strategy	100 %	100 %	4 (2-7)	45 %
Grand Total	**100 %**	**99 %**	**7**	**69 %**

* Notes: Score 1-10 (Geographic scope) based on average number of AMS undertaking activity (Range is given in brackets for number of countries implementing each of the separate actions within each focal area). Figures are average for all actions related to that Focal Area. Note that participation in some actions included all 10 AMS, but average for all actions is lower. Details are in **Chapter 5** and **Annex 7**.

REVIEW AGAINST CRITERIA

An analysis was made of the information collated from all stakeholders and information sources against five criteria, as follows:

- **Appropriateness/relevance** – The assessment has indicated that the APMS is still very relevant to the ASEAN and international frameworks and plans.
- **Effectiveness** – The APMS has been effective in stimulating the development of National Action Plan on Peatlands (NAPPs) and associated national implementation programmes in countries with significant peatland areas. NAPPs have been developed in six AMS which collectively include more than 90% of the documented peatlands in ASEAN. Furthermore, the APMS has acted as a framework to stimulate and demonstrate the active engagement of multiple stakeholders in sustainable peatland management and delivery of the APMS.
- **Efficiency** – With regard to the level of resources that had been utilised to achieve the APMS objectives, emphasis of the APMS on building national capacity through regular exchange and sharing of experience and building local capacity has been cost effective in stimulating and fast-tracking peatland work and attracting finance from multiple sources. It has helped developed cost effective approaches to peatland degradation and fires in particular developing and promoting the rewetting and rehabilitation of peatlands as a solution to the major regional problem of peatland fires and associated national and transboundary haze.
- **Impact** – The review process has assessed the degree of progress towards enhancing sustainable peatland management and reduction in extent and severity of transboundary smoke haze linked to peatland management. The APMS has acted as a key framework and tool for the implementation of the AATHP. Amongst others, it has promoted a focus on prevention of peatland fires rather than the earlier approach on fire-fighting. Also there have been significant enhancements in institutions and policies related to peatlands over the past 15 years linked to the APMS.
- **Sustainability** – The review process has assessed the trends and effectiveness of resource allocation for the implementation of the APMS as well as establishment of institutions and expertise for peatland management. All countries have designated NFPs for the APMS and have participated actively in the meetings and activities of the ATFP. Most of the AMS have indicated the intention to extend their NAPPs beyond 2020 or develop a NAPP or equivalent framework (where they do not have one). There has been a major increase in allocation of domestic resources for peatland management, as well as in the level of interest and support from international donors for peatland work in the region.

BEST MANAGEMENT PRACTICES

From the FGDs and discussions with the NFPs as well as the review of the peatland-related projects reports and literature, it appeared that there is a growing number of case studies and best management practices (BMPs) for peatlands in Southeast Asia. Many of these BMPs have been recognised at international fora, publication platforms and exchange programmes. While it was not a formal part of the scope of the APMS review, this report includes a listing or summary of some of the BMPs from the ASEAN region that have been developed during the APMS implementation period. As part of recognition of the achievements of the APMS, it is proposed that a separate publication on the BMPs be developed.

CONCLUSIONS AND RECOMMENDATIONS

The main conclusions of the Final Review of the APMS, grouped into four main areas, are as follows:

APMS and Regional Approach

1. All the actions specified in the APMS have been initiated and most are well underway.
2. Significant progress has been made in achieving the Goal and General Objectives of the APMS.
3. AMS continue to value the APMS and the associated work on peatlands.
4. The APMS continues to be highly relevant and important in the ASEAN region.
5. Implementation of the APMS makes an important contribution to safeguard regional and global environment and meeting obligations of global environment conventions and multilateral environmental agreements.
6. The APMS has led to significant progress and achievements on conservation and restoration of peatlands and fire prevention.
7. The APMS has helped to share good practices and stimulate regional and national actions.
8. The APMS institutional framework has improved with establishment of the ATFP but needs further enhancement.
9. The resources available to implement the APMS from national and international sources have been increasing but there are still significant resource mobilisation gaps and challenges.
10. The APMS has enabled cost-effective action by sharing low cost appropriate techniques between countries and stakeholders.

National Action

11. Six AMS have developed and started implementation of their own NAPP.
12. There has been a significant improvement in national capacity and institutions to undertake work on peatlands.
13. Peatlands have been incorporated into other policy and legislative frameworks in several AMS.
14. All AMS have taken some actions to support the APMS implementation, depending on capacity, resources and relative importance of peatland-related issues at the national level.

Stakeholder Engagement

15. NFP for Peatlands of AMS are key to coordinate and facilitate effective engagement of different government agencies including provincial/state and local governments from different sectors.
16. The engagement of local communities is essential for sustainable peatland management.
17. The private sector is a key partner for sustainable peatland management.
18. Civil society is a key partner to facilitate engagement of stakeholders and enhance public awareness on peatland management issues.
19. Research on peatlands has rapidly expanded in recent years but more remains to be done.
20. International cooperation partners have increased their support for peatland management in recent years but this needs to be further scaled-up and provided in a more expedited and predictable manner.

Sustainable Peatland Management Approaches

21. The majority of peatlands in ASEAN have been identified and documented but there are still important gaps in knowledge.
22. Peatlands in ASEAN are of global significance for biodiversity conservation and climate regulation as well as of national and local significance for water management and livelihood support.
23. Peatlands in the ASEAN region have been seriously degraded in the last 50 years and relatively few areas of pristine peatland remain.
24. Effective water management in the peatland landscape is the most important factor for sustainable peatland management.
25. Enhanced peatland management and fire prevention is critical to eliminate transboundary haze in ASEAN.
26. Peatland fire needs to be managed using an integrated fire management approach.
27. The root cause of peatland degradation includes business as usual approaches to peatland development such as drainage and planting of dryland crops.
28. The importance of peatlands as carbon store has been recognised and actions to reduce greenhouse gas (GHG) emission in peatland has been prioritised by some AMS.
29. Insufficient action has been taken to assess the impacts of climate change on peatlands and develop adaptation strategies.

Based on the above conclusions, the following recommendations for the development of the next phase of the APMS are proposed for consideration by the ATFP and/or Meeting of the Committee of the AATHP (COM to AATHP), as below:

APMS and Regional Approach

1. The APMS should be reformulated for the period 2021 to 2030 to maintain and scale-up action for sustainable peatland management.
2. The scope of the APMS focal areas and objectives should be updated, focused and also broadened to certain additional areas.
3. Clear targets, criteria and indicators should be developed for the next phase of the APMS to enable effective monitoring and evaluation.
4. The next phase of the APMS should be developed through a participatory and multi-stakeholder process.
5. The institutional framework at regional level should be strengthened and enhanced with support from ASEAN Secretariat and partners.
6. Consideration should be given to establish sub-regional action plans for the northern and southern ASEAN in the next APMS given the different nature and drivers of the peatland management.
7. An investment framework should be developed for the next phase of the APMS to guide/support resource allocations at local, national and international levels.
8. A multi-stakeholder financing mechanism and resource mobilisation plan should be established to support implementation of the APMS.
9. A regional knowledge hub for peatland management should be established and information sharing and exchange should be enhanced.
10. A special publication to showcase the achievements and lessons learned from the 15 years of APMS implementation (2006-2020) should be prepared.

National Actions

11. Strengthen the capacity of NFPs of Peatlands to work with multiple agencies.
12. AMS with existing NAPPs should update and extend them in parallel with the revised APMS.
13. AMS without NAPPs should either develop a NAPP or integrate peatlands into other appropriate plans and strategies.
14. Peatlands should be fully incorporated into national development plans, national climate mitigation and adaptation plans, and rules and regulations related to environment and land management.
15. Further assessments of peatlands at national and sub-national levels should be undertaken in each of the AMS to fully document all peatlands.

Stakeholder Engagement

16. Partnership framework/platforms should be established at regional and national levels to facilitate enhanced engagement of key stakeholders for implementation of the APMS.
17. AMS should adopt a community-based approach when implementing the APMS at local level.
18. Linkages should be enhanced to other relevant ASEAN sectors.
19. The engagement of civil society, private sector and research institutions in the APMS and sustainable peatland management should be enhanced.
20. Expand targeted research on key issues related to peatland management.

Sustainable Peatland Management Approach

21. Remaining intact peatlands should be designated protected areas to conserve biodiversity and ecosystem functions.
22. Special measures should be taken to assess and conserve montane or upland peatlands.
23. Experience in sustainable peatland management should be documented and shared through exchange programmes and regional site networks.
24. New and economically-viable peatland management options for local communities need to be developed and promoted.
25. Best management practices (BMPs) for sustainable management of peatland need to be scaled up and more broadly applied.
26. Peatland ecosystem management should be mainstreamed based on the peatland hydrological unit (PHU) or landscape approach.
27. Peatland fire prevention should be enhanced through investment, incentives, capacity development, multi-stakeholder partnerships and technology.
28. Rights of local and indigenous communities living in and adjacent to peatlands should be recognised and land tenure conflicts resolved.
29. New approaches for result-based management for peatlands should be developed including payments for ecosystem services.
30. An ambitious target should be set for rewetting and rehabilitating degraded peatlands for fire prevention, biodiversity conservation, climate mitigation and sustainable livelihoods.

This Final Report was reviewed by the Task Force of the APMS Review and ATFP on 28 October 2020 and comments received during the meeting and until 10 November were incorporated. Final comments were received from AMS on 24 November after a second circulation and changes were incorporated. This final version was endorsed by the Task Force on the Final Review of Implementation of the APMS on 25 November 2020 and was presented to the 5th Meeting of the ASEAN Task Force on Peatlands on 1 December 2020 and was subsequently adopted by the ATFP. Subsequently, it was presented to the COM to AATHP through a special briefing on 28 December 2020. The inputs from the special briefing and AMS were incorporated into this final version of the Report. The Final Report was endorsed ad-referendum by COM on 11 January 2021*.

FOOTNOTE

** A further revised Final Report incorporated inputs provided by Thailand on 30 June 2021 at the Sixth Meeting of the ATFP was endorsed by COM via ad-referendum on 4 August 2021. The COM also endorsed to publish the Report.*

1. INTRODUCTION

The Strategy and Action Plan for Sustainable Management of Peatlands in AMS, generally known as ASEAN Peatland Management Strategy 2006-2020 (APMS) was endorsed by 12th ASEAN Ministerial Meeting on Environment (AMME) in 2006 to guide action and support the sustainable management of peatlands in the region for the period of 2006-2020. The general objectives of the APMS are to: (i) enhance awareness and capacity of peatlands; (ii) address transboundary haze pollution and environmental degradation; (iii) promote sustainable management of peatlands; and (iv) promote regional cooperation. Since 2006, it has been actively implemented by the AMS, supported by the ASEC and overseen by the COP of the AATHP with the assistance of a range of partners and supporters.

The first review of APMS was conducted in 2012, was facilitated by the ASEC and the GEC, supported by the APFP and Sustainable Management of Peatland Forests in Southeast Asia (SEApeat) Project funded by GEF, IFAD and the European Union (EU). The review and related adjustments to the APMS were adopted by the 9th Meeting of the COP to AATHP in September 2013. As decided by the COP, the ATFP was established in 2013 to monitor and support the implementation of the APMS.

The 4th Meeting of ATFP held in February 2019 agreed to merge the second and final review of the APMS implementation that would allow an early start of the final review, to anticipate the smooth continuation of the current APMS which is expiring in 2020, and development of next APMS for 2021-2030.

GEC was appointed by GIZ, as implementer of the ASEAN-European Union SUPA Programme Component 1, to undertake the final review of the implementation of the APMS (**Annex 1** on Terms of Reference of the Final Review of the APMS). The final review of the APMS has been undertaken in close consultation with the AMS, ASEC, and relevant stakeholders.

The review process started in March 2020 and was undertaken by a multidisciplinary team of peatland specialists from different AMS[2]. It was guided by ASEC and GIZ[3] and overseen by the Task Force on the Review of the APMS (see **Annex 2** for TOR and membership). The review has involved literature review, focus group discussions, interviews, questionnaires, review of reports submitted by AMS, discussions and decisions of ASEAN meetings; as well as meetings with ASEC and the Task Force on the Review/ATFP. It also drew upon relevant AMS reports to the ASEAN meetings; experts' inputs and also harnessed experiences from previous ASEAN peatland programmes and related ASEAN processes. The initial findings of the review were presented to the Task Force on the APMS Review on 30 July 2020 and was finalised shortly thereafter with minor adjustments.

This report is the final outcome of the assessment of the existing APMS 2006-2020. This final review also includes conclusions and recommendations for the development of the next phase of the APMS.

This report was reviewed by the Task Force of the APMS Review and ATFP on 28 October 2020 and comments received during the meeting and until 10 November were incorporated. Final comments were received from AMS on 24 November after a second circulation and changes were incorporated. This final version was endorsed by the Task Force on Final Review of Implementation of the APMS on 25 November 2020 and was presented to the 5th Meeting of the ATFP on 1 December 2020 and was subsequently adopted by the ATFP. Subsequently, it was presented to the COM to AATHP through a special briefing on 28 December 2020. The inputs from the special briefing and AMS were incorporated into this final version of the report. This report was endorsed ad-referendum by COM on 11 January 2021*.

FOOTNOTE

2 The review team included among others: Mr. Faizal Parish and Ms. Lew Siew Yan (Serena) of Global Environment Centre in Malaysia; Dr. Le Phat Quoi of the Institute for Environment and Natural Resources (IER), National University, Ho Chi Minh, Viet Nam; Dr. Lailan Syaufina of the Bogor Agriculture University, Indonesia; and Ms. Riena Rachmatillah, from Yayasan Gambut in Indonesia.

3 Key personnel from ASEC were Dr. Vong Sok, Head of the Environment Division, Ms. Mardiah Hayati and Mr. Haryono Hansen Sirait; and Mr. Htain Lin from GIZ.

** A further revised Final Report incorporated inputs provided by Thailand on 30 June 2021 at the Sixth Meeting of the ATFP was endorsed by COM via ad-referendum on 4 August 2021. The COM also endorsed to publish the Report.*

2. BACKGROUND

APMS was adopted by ASEAN in 2006 and has provided the framework for action by AMS to address peatland management over the past 15 years.

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

There are four General Objectives to the APMS:

General Objective 1: Enhance Awareness and Capacity on Peatlands;

General Objective 2: Address Transboundary Haze Pollution and Environmental Degradation;

General Objective 3: Promote Sustainable Management of Peatlands; and

General Objective 4: Promote Regional Cooperation.

Each General Objective above is to be delivered by the Operational Objectives that are grouped in 13 Focal Areas, 25 Operational Objectives and 98 Actions (**Annex 3**).

Based on the decision of the 4th Meeting of ATFP held in February 2019 to merge the second and final review of the APMS to allow an early start of the final review, and to anticipate the smooth continuation of the current APMS which will expire in 2020, the review of the APMS will be conducted in two phases:

i. Final Review of the APMS with a view to be reported to the COP-16 in 2020. This final review will include recommendations for the next APMS; and

ii. Development of the next APMS (for 2021-2030) with a view to be reported and endorsed by COP-17 in 2021.

2.1 PEATLAND AND PEATLAND ISSUES IN ASEAN

2.1.1 Peatland Extent and Nature

The total area of peatlands in Southeast Asia is estimated to be about 23 million hectare (ha) (**Table 1**), which is approximately 40% of the world's known tropical peatlands and roughly 6% of the entire extent of global peatland resource. The majority of the peatlands of Southeast Asia occurs in Indonesia, which has over 80% of total peatland area in Southeast Asia. Other major peatland areas are found in Malaysia, Brunei Darussalam and Thailand, while Viet Nam, Philippines, Cambodia, Lao PDR and Myanmar have smaller areas of peatlands (**Figure 1**). Singapore has no reported peatlands in the country. However, increased development, land conversion and degradation caused by land and forest fires have reduced the extent and quality of peatland resources in ASEAN significantly over the last 30 years.

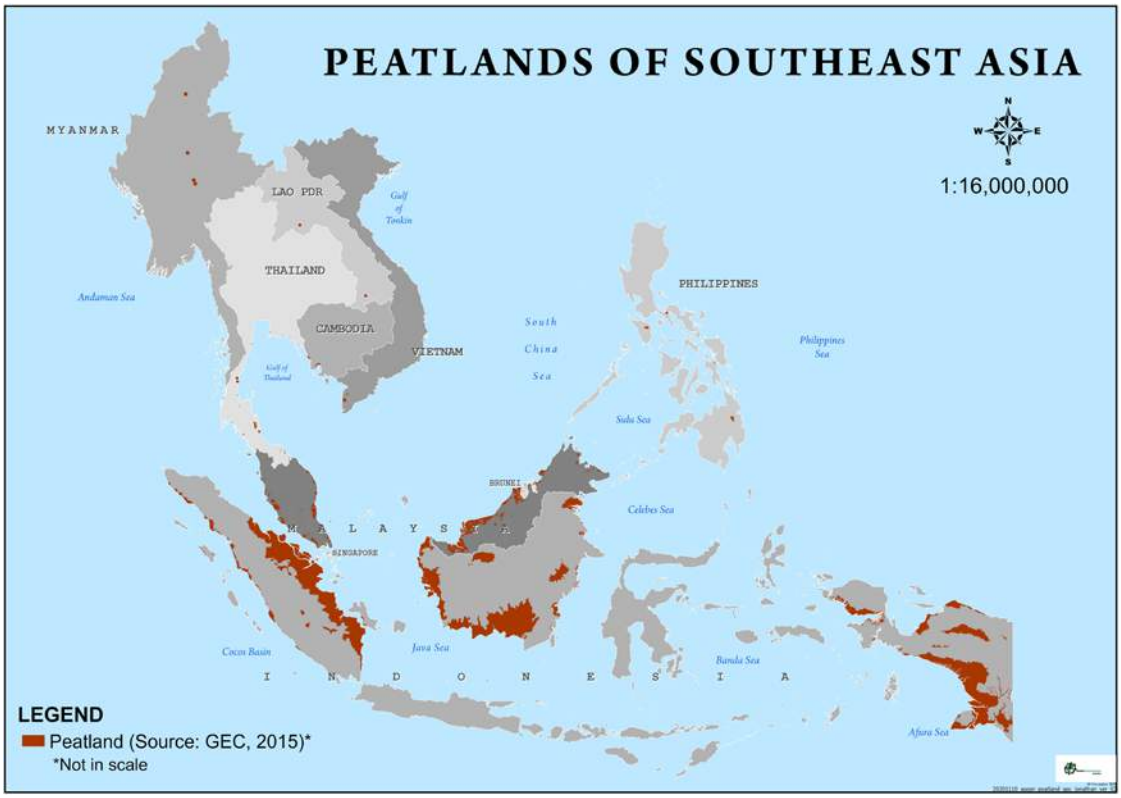
Peat is formed by decomposition and accumulation process of plant materials grow on the land which influenced by dry and wet season periods. Peat formation occurs over a long period with the formation rate about 1-2 millimetres (mm) per year, which means 1 metre (m) depth of peat layer needs 500-1,000 years to form. Peat in Sumatra and Borneo is sometimes more than 10 m deep. Based on the decomposition level, peat is classified as *fibrist* (1/3 decomposed), *saprist* (2/3 decomposed), and *hemist* (between *fibrist* and *saprist*). Tropical peat is different to temperate peat which originated mainly from homogenous materials such as sphagnum, sedge and other smaller plant species, tropical peat originated primarily from the roots of tropical forest tree species. Tropical peatlands have generally formed faster than temperate peats due to higher rates of and year-round plant productivity. When tropical peatlands are drained, they degrade at much faster rates than temperate peatlands, due to year round high temperatures and more rapid rates of bacterial decomposition and high fire risks. Tropical peatlands are very sensitive to changes, hence they need careful and wise management in particular to minimise any disruption of their water table.

Table 1: Distribution of peatlands in Southeast Asia

No.	AMS	Peatland area (ha)	Reference
1.	Indonesia	20,200,000	CIFOR[4] (2017 and 2018)
2.	Malaysia	2,560,341	DOE[5], 2019
3.	Brunei Darussalam	90,900	National Action Plan on Peatlands (NAPP), 2014
4.	Thailand	64,555	Input provided to Joint Regional Training of SUPA and MAHFSA, September 2020
5.	Viet Nam	24,000	Input provided to Joint Regional Training of SUPA and MAHFSA, September 2020; National Action Plan on Peatlands (NAPP)
6.	Philippines	20,188	Input provided to Joint Regional Training of SUPA and MAHFSA, September 2020; National Action Plan on Peatlands (NAPP); Assessment reports, 2011-2015, APFP-SEApeat Project
7.	Myanmar	11,233	Input provided to Joint Regional Training of SUPA and MAHFSA, September 2020; Assessment reports, 2014-2015, SEApeat Project
8.	Cambodia	9,850	Assessment reports, 2014-2015, SEApeat Project
9.	Lao PDR	1,000	Assessment reports, 2014-2015, SEApeat Project
	TOTAL	**22,982,067**	**Estimated figures from multiple source as listed above**

Peatlands in ASEAN are mainly found at low altitude, sub-coastal areas extending inland for distances up to 300 kilometre (km) and fed mostly by rainfall and sometimes by groundwater or excess water from rivers or lakes. The depth of peat varies from 0.5 m to more than 20 m. However, peatland can also be found in high altitude, which is formed by biomass accumulation and decomposition in topographic depressions fed by high rainfall. There has been lots of interest focused on lowland peats, but highland peatlands have not been well described and documented. In Indonesia, for example, highland peat is found in North Sumatera, Sulawesi and Papua. It has also been documented in Malaysia and Thailand.

Figure 1: Peatlands in Southeast Asia (Source: APFP and SEApeat Project, 2015)



FOOTNOTE

4 Gumbricht *et.al.* (2017) An expert system model for mapping tropical wetlands and peatlands reveals South America as the largest contributor. Wiley Global Change Biology, DOI: 10.1111/gcb.13689, Accepted 20 January 2017; Murdiyarso et.al. (2017) New map reveals more peat in the tropics. Brief Info No. 189, October 2017, DOI: 10.17528/cifor/006452. Center of International Forestry Research (CIFOR); Hergoualc'h et.al. (2018) Managing peatlands in Indonesia: Challenges and opportunities for local and global communities. Brief Info No. 205, February 2018, DOI: 10.17528/cifor/006449. CIFOR.

5 Department of Environment, Malaysia (2019) National Programme on Peatland Fire Prevention to Tackle Haze in Malaysia.

2.1.2 Peatland Characteristics and Values

A main role of peatland is a hydrological function which regulates and maintains hydrological balance in dry and wet seasons, and helps to prevent floods and droughts in its surrounding areas. Besides, peatland ecosystems play very important roles in relation to climate regulation, in particular acts as a large global carbon pool. Tropical peatland covers about 10-12% of the world total peatland area, but stores about 190 billion tons of Carbon (C) or more than a third of the total carbon storage in the peatland. Assuming an average peat depth of 5 m, tropical peatland ecosystem stores 2,500 tons C/ha, compared to the average of 1,200 tons C/ha in peatlands globally. Peatlands in ASEAN represent the largest terrestrial carbon store in the region, conversely, degradation of peatlands constitute one of the largest sources of GHG in the region. Peatlands are also rich in biodiversity, endemic flora can be found in the ecosystem, such as Jelutung (*Dyera polyphylla*) and Meranti (*Shorea* spp). Peatlands in Southeast Asia also habitat for various fauna including 126 mammals, 268 birds, 75 reptiles and 219 fish species recorded in the region. Peatlands provide habitat to many threatened species with 45% of the mammals and 33% of the birds being listed in the red data book including False Gharial (*Tomistoma schlegelii*), Sumatran Tiger (*Panthera tigris sumatrae*), Honey Bear (*Helarctos malayanus*), Tapir (*Tapirus indicus*), White Winged Wood Duck (*Cairina scutulata*), Smooth-coated Otter (*Lutrogale perspicillate*), Orang Utan (*Pongo pygmaeus*), White Winged Wood Duck (*Cairina scutulata*) and the Lesser Adjutant (*Leptoptilos javanicus*). A large number of fish species occur including more than 30 newly described species of fish as well as high value ornamental fish of Arowana (*Osteoglossidae*), and the smallest vertebrate in the world (*Paedocypris*) - a fish that lives in shallow pools in PSF in Indonesia and Malaysia. Peatlands also produce a range of forest products which provide livelihoods for local communities. Economically, peatland ecosystems may provide high economical value timber such as 'ramin' (*Gonystylus bancanus*) and non timber forest products such as Jelutung sap, honey, medicinal plants and rattans.

In summary, peatlands have important natural values and provide a number of benefits in most of the AMS including: i) carbon sequestration and storage; ii) biodiversity conservation; iii) water storage and supply; iv) flood control and prevention of saline intrusion; v) timber and non-timber forest products (NTFPs); vi) education and research; and vii) recreation and tourism. Nevertheless, peatland ecosystems have been frequently cleared, drained and converted to other uses such as agriculture, oil palm or forest plantations, or housing and infrastructure development.

2.1.3 Management Issues

Peatland is a sensitive ecosystem to environmental changes, especially climate change and hydrology. In the last few decades, there have been large scale changes to peatlands throughout ASEAN. Clearance and drainage of peat swamp forests for various land uses such as forest plantations, oil palm plantations, agricultural farms, settlement, and other development purposes have been causing disturbance to the peatland ecosystem function especially by decreasing water level and enhancing irreversible drying characteristic of peat, which increases forest and land fires risk. About 30% of the greenhouse gas (GHG) emissions in the region come from peatland degradation.

A review of the drivers of tropical peatland degradation in Southeast Asia in 2017[6] confirmed that logging, conversion to industrial plantations, drainage and recurrent fires were the main direct drivers of peatland degradation in ASEAN. These are compounded by a complex mix of socio-economic, policy and climate change factors. Drainage is the main activity in peatland conversion and development is the most important root cause for subsidence and drying of peatland which leads to increased susceptibility for peatland fires which, according to studies by the Max Planck Institute[7], cause approximately 90% of the transboundary haze pollution in the southern portion of ASEAN. Decreasing water level to 70 cm may cause subsidence rate of more than 5cm/year and a GHG emission of 70 tCO_2/ha/yr. More than 12 million ha of peatland forests have been cleared and drained and much of the remaining forest lands have been affected by over-exploitation, drainage and fires. This is severely affecting the associated carbon storage, biodiversity and other ecosystem services. Degradation is releasing an estimated 800 million tons of carbon dioxide (CO_2) per annum[8], i.e. equivalent to 2.5% of global emissions from fossil fuel, and also leading to transboundary smoke haze pollution which affects the economy and health of more than 50 million people in the region. The rate and extent of degradation has significantly increased in recent years. Other important issue is threats to peatlands include: infrastructure and housing development, oil production, peat mining, intensive agriculture, charcoal production, hunting and fires.

In summary, the main management issues affecting peatland in the ASEAN region include: i) peatland fire and transboundary haze pollution; ii) over-exploitation of peatland and its resources; iii) loss of biodiversity; iv) land conversion of peatlands for the development of plantations, agriculture and settlement; v) drainage and subsidence; vi) floods; vii) GHG emissions; viii) spreading of invasive alien species and diseases; and ix) small-scale community livelihood such as collecting medicinal plants, harvesting non-wood products, and farming activities.

FOOTNOTE

6 Dohong, A., Aziz, A.A., and P. Dargusch (2017). A review of the drivers of tropical peatland degradation in South-East Asia. Land use policy 69 pp349-360.

7 Heil, A. (2007). Indonesian Forest and Peat Fires: Emissions, Air Quality, and Human Health, Report on Earth System Science, Max Planck Institute for Meteorology. 155pp

8 Miettinen, J. Hooijer, A., Vernimmen, R., Liew, S.C. and S.E. Page (2017). From carbon sink to carbon source: extensive peat oxidation in insular Southeast Asia since 1990. Environmental Research Letters, Volume 12, Number 2

2.1.4 Status of Peatlands

The peatlands in the ASEAN region have undergone dramatic changes in the last 30 years with large areas being converted to plantations or agriculture or degraded by logging, drainage and fire. An assessment of 15 million ha of peatlands in the south western part of ASEAN (Sumatra, Borneo and Peninsular Malaysia) in 2015[9] indicated that only 996,000 ha (6.4%) remained as intact peat swamp forest, 3.6 million ha (22%) was degraded forest. This represented a decline of 41% in the area of forested peatlands since 2007 and 76% decline since 1990. An estimated 7.8 million ha (50%) was under agriculture and plantations, while a further 3 million ha (20.2%) were open or flooded peatlands, shrub and secondary forest.

More than 5 million ha of peatlands have been severely degraded by fire in the region since 1998 and 2.6 million ha have been identified in 2018 as priorities for rehabilitation in Indonesia alone. Approximately 5 million ha of peatlands have been planted for oil palm and industrial tree plantations in the region, but many have faced significant challenges of fire and subsidence. Approximately 3.2 million ha of these plantations in Indonesia have been required by the government to enhance their water management and monitoring activities.

At least 26 peatlands important for biodiversity conservation in Southeast Asia have been protected and conserved within totally protected areas, including: 1 in Brunei Darussalam (Tasek Merimbun National Park); 2 in Cambodia (Botum Sakor National Park and Koh Kapik Ramsar Site); 8 in Indonesia (Danau Sentarum National Park, Sebangau National Park, Lorentz National Park, Giam Siak Kecil Wildlife Reserve, Bukit Batu Wildlife Reserve, Kerumutan Wildlife Reserve, Memberamo Wildlife Reserve and Tanjung Puting National Park); 1 in Lao PDR (Beung Kiat Ngong Ramsar Site); 6 in Malaysia (Sungai Dusun Wildlife Sanctuary, Tasek Bera Ramsar Site, Kalumba Wildlife Reserve, Klias Peat Swamp Forest, Maludam National Park and Loagan Bunut National Park); 1 in Myanmar (Inle Lake Wildlife Sanctuary), 2 in Philippines (Caimpugan Peatlands, Agusan Marsh National Park, Mindanao and Leyte Sab-A Basin, Leyte, Visayas); 3 in Thailand (Thale Noi Non Hunting Area, Doi Intanon National Park, Pru To Daeng); and 2 in Viet Nam (U Minh Thuong National Park and U Minh Ha National Park). However, some of these protected areas are facing challenges of illegal logging, encroachment and fire. The estimated area of all the peatlands included in protected areas in the region is approximately 1.1 million ha or about 4.4% of the total area of peatlands. This is much lower than the target of 17% of all terrestrial ecosystems to be included in protected areas under the Aichi Targets of the Convention on Biological Diversity (CBD). While some other peatland areas are included in forest reserves or protected forests, the level of protection is generally only limited.

2.2 RELEVANT DECISIONS FROM ASEAN MEETINGS

Regional cooperation has been enhanced on peatland fire prediction, monitoring and implementation through a range of activities. The APMS was developed by the AMS to guide actions to support management of peatlands in the region. The APMS was developed from a series of national and regional planning and consultation meetings.

The COP to AATHP provides oversight and policy guidance for the implementation of the APMS as well as facilitating linkage to activities at the national level. The ATFP was established in 2013 as a subsidiary body under the COM to specifically look into peatland issues and give input to the implementation of the APMS and undertake other technical tasks. The ASEC undertakes the formal coordination amongst AMS and facilitate the main regional activities and meetings as well as linkage with other activities.

Among the significant decisions from ASEAN meetings relevant to the APMS are:

i. Adoption of the ASEAN Peatland Management Initiative (APMI) in 2003 by the 20th Meeting of the Haze Technical Task Force held on 27-28 February 2003 in Manila, Philippines;

ii. Endorsement of the APMS in 2006 by the 10th AMME held on 10 November 2006 in Cebu, Philippines as the strategy and action plan for sustainable management of peatlands in AMS for 2006-2020 under the framework of the APMI;

iii. Adoption of the revised updated APMS in 2013 by the 9th Meeting of COP to AATHP held on 23 September 2013 in Surabaya, Indonesia – the implementation of the APMS was reviewed by the AMS and ASEC between August 2012 to March 2013, and various changes had been made as a result of the review and included in the revised version of the APMS;

iv. Establishment of the ATFP to assist the Committee in monitoring and supporting the implementation of the APMS by the 9th Meeting of the COM of the AATHP held on 23 September 2013 in Surabaya, Indonesia;

v. The Ministers' support for the ASEAN Programme on Sustainable Management of Peatland Ecosystems for the period 2014 to 2020 (APSMPE) based on the lessons learned from ASEAN/IFAD/GEF on APFP and ASEAN/EU Project on SEApeat in order to achieve the goals and objectives of the APMS by the year 2020 (at the 9th Meeting of the COP to AATHP held on 25 September 2013 in Surabaya, Indonesia);

FOOTNOTE

9 Miettinen J, Shi C and Liew S C 2016 Land cover distribution in the peatlands of Peninsular Malaysia, Sumatra and Borneo in 2015 with changes since 1990 Glob. Ecol. Conserv. 6 67–78

vi. Endorsement of the ASEAN Guidelines on Peatland Fire Management that was developed to serve as a reference for AMS in applying holistic Integrated Fire Management (IFM) approach coupled with Community-Based Fire Management (CBFiM) which includes prevention, preparedness, response and recovery (PPRR), by the 11th Meeting of the COP to AATHP held on 29 October 2015 in Hanoi, Viet Nam.

vii. The Ministers supported the second review of the APMS to be undertaken by the ATFP, by the 19th Meeting of the Sub-Regional Ministerial Steering Committee on Transboundary Haze Pollution (MSC) held on 18 May 2017 in Kuala Lumpur, Malaysia.

viii. The Ministers noted the significant progress of the implementation of the APMS through the APSMPE and expressed appreciation for the support from the ASEAN Dialogue and Development Partners. The Ministers reaffirmed their commitment to coordinate implementation of programmes/projects under the APSMPE through ASEAN mechanisms, enhanced national level efforts and multi-stakeholder partnership. The Ministers also supported the second review of the APMS to be undertaken by the ATFP, by the 20th Meeting of the MSC held on 1 June 2018 in Bangkok, Thailand.

ix. The Ministers' noted with satisfaction the significant progress of the implementation of the APMS through the APSMPE. The Ministers expressed appreciation for the support and cooperation that have been further strengthened with ASEAN Dialogue and Development Partners as well as with other International Organisations. The Ministers welcomed the final review of the APMS to be undertaken by the ATFP with the support from the ASEAN/EU SUPA Programme, by the 15th AMME and 15th Meeting of the COP to AATHP held on 8-9 October 2019 in Siem Reap, Cambodia.

2.3 OBJECTIVES OF THE REVIEW

The objective of the Final Review of the APMS is to provide a consolidated assessment at national and regional levels on the implementation of the APMS 2006-2020 and achievements of the targets; and generate information and learning to inform the formulation of the next strategy.

The assessment shall include challenges and opportunities, lesson learnt, best practices, and key conclusions and recommendations. The review will ensure that initiatives and activities remain consistent with the overall goal and general objectives and are responsive to emerging issues and priorities.

2.4 METHODOLOGY AND ANALYSIS

2.4.1 Desk Study

The agreed methodology to undertake this review was to conduct a desktop analysis by reviewing country reports of APMS progress, articles and other peatland relevant documents; and facilitate two workshops/consultation meetings with the ATFP on preliminary findings and provide strategic recommendations to further mainstream sustainable peatland management in the AMS.

Approaches in conducting the final review included the following elements:
a) to closely consult AMS, ASEC, and relevant stakeholders;

b) consolidate AMS reports to the relevant ASEAN meetings;

c) draw on experts' review while harnessing experiences from previous ASEAN peatland programmes; and

d) ensuring linkages with related ASEAN processes and programmes.

The documents reviewed were related to peatland management and progress of implementing the country's NAPPs (i.e. for Brunei Darussalam, Indonesia, Malaysia, Philippines, Thailand and Viet Nam).

Materials for the desk study included the country reports submitted to relevant ASEAN meetings, such as ATFP, Technical Working Group on Transboundary Haze Pollution (TWG), MSC, COP to AATHP and COM to AATHP, and other relevant reports submitted to ASEC. Reports, presentation files, speeches, press releases and others made available at national, regional and international meetings/conferences were also reviewed.

Documents were collated and reviewed for understanding the challenges and opportunities, as well as identifying national priorities on peatland, forest and land fire issues, which contributed to the review of the countries' level of implementation of the APMS focal areas and achieving the APMS objectives.

See **Annex 4** for list document reviewed and list of stakeholders that provided responses on questionnaires.

2.4.2 Inputs from AMS through Questionnaires

A detailed working paper with the methodology for the APMS review and key questions to be posed to AMS was prepared in February/March, and discussed and agreed with the ASEC. This paper was circulated by the ASEC to AMS with a letter dated on 4 March 2020. A total of 39 responses were received from AMS and national stakeholders. Beside responses to the question or questionnaire, AMS also provided other input such as list of experts and list of publications related to peatlands. Modified questionnaires were prepared for regional and international stakeholders and ASEAN Development Partners – 15 responses were received. **Table 2** below shows total responses received from different stakeholders. Copies of the questionnaires are included in **Annex 5**. Follow-up with each AMS took place from April to September 2020.

Table 2: Responses to Questionnaires on the Final Review of the APMS

Stakeholder	Responses	Sector
AMS ATFP and national stakeholders	39	Government, private sector, CSOs, academia, research institutions
Regional and International stakeholders	10	NGOs, CSOs, research institutes
ASEAN Development Partners	5	Embassies and International Development Partners
TOTAL	**54**	**All sectors/stakeholders**

2.4.3 Verification Interview/Focus Group Discussions with AMS and ASEC

Eight FGDs were held with NFPs and other stakeholders on peatland management from Indonesia (3), Malaysia (3) and Philippines (2) in March, July, August and October 2020. The FGDs were held with the objective to compile early information and inputs, and share the findings extracted from the questionnaire's responses, views on analysis, conclusions and proposed recommendations, and to get additional input from stakeholders to support the outcomes of the review.

In Indonesia, the first FGD with peatland stakeholders was held on 13 March 2020 to go through working paper and questionnaire and seek feedback on national actions in relation to the APMS focal areas. The second FGD with Indonesia was held on 22 July 2020 to go through draft preliminary findings from responses to questionnaires, draft SWOT analysis and implementation progress of the APMS, with 15 participants from Indonesian stakeholders. Both FGDs were chaired by Directorate of Peatland Degradation Control, Ministry of Environment and Forestry (MOEF) (the NFP of ATFP). The FGDs were attended by peatland stakeholders, which included: Ministry of Environment and Forestry (MOEF, different Directorates/Divisions), Ministry of Agriculture, BRG, Meteorological, Climatological, and Geophysical Agency (BMKG), universities and CSOs. A final FGD was held on 26 October 2020 to discuss the Draft Final Report.

The FGDs in Indonesia generated important inputs from stakeholders on the progress of the APMS implementation in each institution, challenges of peatland management, and proposed strategy for the next period of APMS, which can be highlighted as follows:

a) Indonesia has significant policy progress on peatland management with the issuance of Government Regulation on Management and Protection of Peatland Ecosystem, which implies on the mainstreaming of peatland issues in all development sectors;

b) various systems have been developed to monitor peatland condition and peatland fire as the important issues at the regional level (e.g. Sumatra, Kalimantan and Papua);

c) community and private sector involvement in peatland management need to be strengthened to achieve sustainable peatland management;

d) some good practices in peatland management were identified to be the lessons learned for national level as well as regional level; and

e) multi-stakeholder partnership as the key approach in sustainable peatland management need to be strengthened.

A FGD with Philippines was held on 24 July 2020 attended by NFP and representatives from Biodiversity Management Bereau - Department of Environment and Natural Resources (BMB-DENR). A second FGD was held on 12 August 2020. It was attended by 36 participants from various agencies such as the National Economic Development Authority (NEDA), Bureau of Soils and Water Management (BSWM), concerned Bureaus and Regional Offices of the Department of Environment and Natural Resources (DENR), International Institute of Rural Reconstruction (IIRR), Society for the Conservation of Philippine Wetlands, Inc. (SCPW), Visayas State University (VSU), National Irrigation Administration, Bureau of Fire Protection (BFP) and Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). An indirect FGD was held on 5 and 6 August 2020 through People for Peat Webinar on Peatland Management in the Philippines under Component 2 of the SUPA Programme. Through these communications, Philippines have provided input related to peatland management system and additional information of publications, journals and expert lists.

Three FGDs were held in Malaysia with the NFP of ATFP i.e. Ministry of Energy and Natural Resources (KeTSA) and the Forestry Department Peninsular Malaysia (FDPM). The first was held on 4 May 2020 to go through the working paper and questionnaire and finalise the list of Malaysian stakeholders to be engaged for input. A second FGD was held on 23 July, with both KeTSA and FDPM to go through draft preliminary findings from the country reports, literature, draft SWOT analysis, implementation progress of the existing APMS/NAPP and priorities for next strategy. The final FGD was held on 23 October to discuss the Draft Final Report.

While many AMS have been busy dealing with the pandemic, draft SWOT analysis were prepared in July for Cambodia, Lao PDR, Myanmar and Viet Nam for review and comment. Inputs from Cambodia, Lao PDR and Myanmar were received with minor adjustments. The revisions have been incorporated into preliminary report as presented on 30 July the virtual 1st Task Force Meeting of the Final Review of the APMS. Viet Nam has also reviewed the draft SWOT in October 2020.

A FGD was held with the ASEC and GIZ on 12 March at the ASEC office in Jakarta to review and confirm the methodology and working papers for the review. Further meetings were held with ASEC and GIZ on 17 July to review the Interim Report of the Review and on 23 September to discuss key elements of the final report of the review.

2.4.4 Inputs from Other Stakeholders

Significant responses and feedback were gained through questionnaires sent in July 2020 to regional and international stakeholders through the SEA Peat mailing list[10] and direct contacts of GEC. With assistance of ASEC, a modified questionnaire was circulated to ASEAN Dialogue and Development Partners on 18 August. A total of 15 responses were received from various contributors, ranging from academia, NGOs, CSOs, and international organisations that have been working on peatland and transboundary smoke haze related programmes in the ASEAN region (see **Annex 5** for list of stakeholders that provided responses on questionnaire).

2.4.5 Task Force of APMS Review

A Task Force for the APMS Review (the APMS Task Force, hereinafter) was established in March 2020 to support the process of the final review of the APMS. The main role of the APMS Task Force is to work closely with ATFP, COM and GEC to:

i) realise the objectives of the final review of the APMS and facilitate cooperation with relevant key stakeholders and partners within respective AMS;

ii) work closely with GEC on compiling and sharing inputs from the relevant key stakeholders and partners from respective country;

iii) review recommendations for the next steps to advance APMS;

iv) facilitate briefing of other stakeholders including ATFP Focal Points and COM to AATHP on progress and issues with the final review; and

v) assist in gathering feedback, guidance, and support at management and political level from respective AMS.

The Chair of the APMS Task Force is Cambodia, which follows the ATFP chairmanship, and the APMS Task Force reports to and is responsible to the ATFP. The APMS Task Force was meant to have its first meeting in Cambodia in April 2020, but this meeting was cancelled due to the COVID-19 pandemic. The first meeting of the APMS Task Force was held online on 30 July 2020 to review the interim report of the Review. A second meeting was held on 28 October 2020 to consider the final report of the Review. The list of members of the APMS Task Force as in **Annex 2** and list of ATFP as in **Annex 6**.

2.4.6 Review of Literature, Reports and Publications

An extensive review of literature, reports and publications, published between 2005 to 2020 related to peatlands in the ASEAN region was undertaken. Literature was classified according to AMS and topics covered. The collation and review of publications related to peatlands was assisted by the MAHFSA Programme.

FOOTNOTE

10 SEA Peat mailing list was developed during implementation of the APFP-SEApeat project (2010-2015) and there have been 280 subscribers to the list. Subscription can be done at www.aseanpeat.net or www.gec.org.my/index.cfm?menuid=282

2.4.7 Limitations

The main limitation for the review was that it was almost all undertaken during the unprecedented COVID-19 pandemic. During the period of mid-March to July 2020, government and stakeholder offices in many of the AMS were closed and many staff were put on leave or were working from home with limited or no access to files and reference materials in their offices. Travel bans have been in operation between AMS since March till October 2020. As a result, no travel or face-to-face meetings were possible. This has meant that almost all of the review has been undertaken through emails, virtual meetings and communication by phone calls or instant messaging.

The original plan for the review included a series of regional physical meetings for representatives of all AMS and face-to-face focus group discussions (FGDs) in many countries. It was expected that there would be interactive workshops with breakout discussions on various elements of the review with active participation of AMS. It was also expected that the team would be able to access and review reports and literature in libraries and reference collections. Almost none of these planned actions have been possible[11].

The APMS review has therefore been almost fully based on the review of reports and literature which were available in soft copies in the collections of the ASEC and GEC, supplemented by additional materials obtained through online searching or supplied by different AMS. Therefore, reports or studies which are not available online may have been missed. A series of online meetings and FGDs were held with AMS and significant feedback was obtained through direct communication with NFPs and other AMS representatives and other stakeholders. The review was able to draw on the 20-year history of some of the review team members in working with AMS in the development and implementation of the APMS.

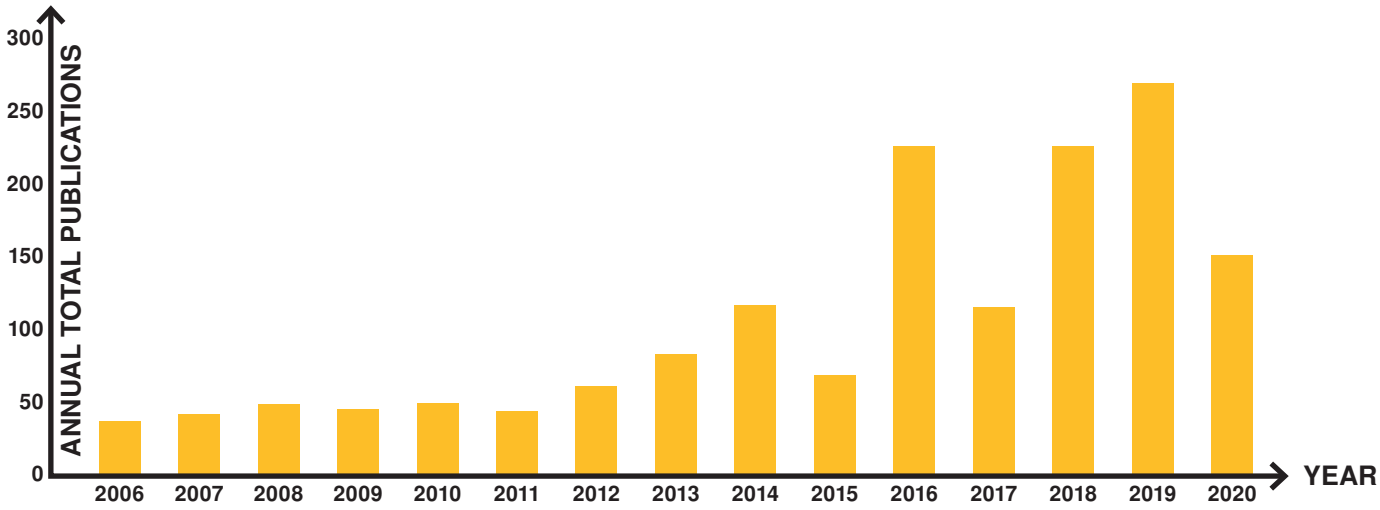
FOOTNOTE

11 Face-to-face meetings were held with ASEC and GIZ in February and March 2020 to plan the Review and obtain key initial feedback on the APMS implementation. A face-to-face FGD was held on 13 March 2020 with key stakeholders in Indonesia hosted by the Ministry of Environment and Forestry

3. REVIEW OF LITERATURE, REPORTS AND PUBLICATIONS

A total of 1,680 papers, reports and publications related to peatlands at national, regional and international levels have been identified and classified according to different key topics namely peatland management, peatland fire management, development on peat, climate change, peatland/wetland inventory, peatland assessment and others. The breakdown of the publications according to each topic is shown in **Table 3**. Generally, 2019 was the most productive year with highest number of publications related to peatland produced for the Southeast Asia (**Figure 2**). It is clear that there has been a significant increase in the number of publications produced per year from 33 in 2006 to 266 in 2019.

Figure 2: Number of publications published related to peatlands in ASEAN by year from 2006 to 2020 (July)



From **Table 3**, 65% of the publications identified were generated from studies undertaken related to peatlands in Indonesia; approximately 15% of the publications were based on a regional perspective on peatland; and 10% of the publications were on peatlands in Malaysia. From the entire collection of 1,680 publications, the main topics were addressed, namely peatland assessment (22%), followed by peatland management (16%), development on peat (16%), peatland fire management (16%), climate change (11%), peatland/wetland inventory (7%), and other topics of 12%. The breakdown of interest by topic/sector is shown in **Figure 3**.

Table 3: Summary of papers/reports/publications collated by country and topics (number of papers/publications) for the period of 2006-2020 (as of October 2020)

	Peatland Management	Peatland Fire Management	Climate Change and Peat	Development on Peat	Peatland Inventory	Peatland Assessment	Others	TOTAL
Brunei Darussalam	1	2	-	-	1	11	7	22
Cambodia	2	-	1	-	3	1	-	7
Indonesia	158	225	129	184	74	207	125	1102
Lao PDR	1	1	-	-	2	-	-	4
Malaysia	41	12	5	36	-	42	35	171
Myanmar	5	-	-	-	2	2	2	11
Philippines	7	1	5	1	2	6	5	27
Singapore	1	-	-	-	-	-	1	2
Thailand	9	-	3	-	1	3	5	21
Viet Nam	15	4	3	2	3	16	12	55
Regional	31	19	42	43	20	76	15	246
International	1	-	-	-	-	8	3	12
TOTAL	**272**	**264**	**188**	**266**	**108**	**372**	**210**	**1,680**

Note:

Others – refer to other topics that were not specifically mentioned in categories, such as rehabilitation, restoration and conservation

Regional – study covers more than one country in Southeast Asia

International – study covers countries in Southeast Asia and other countries outside the region

An analysis was made on the publication trend related to peatland before 2006 and in every 5-year intervals after the establishment of APMS in 2006, as shown in **Figure 4**. Before the development of APMS, there were only 73 publications related to peatlands were identified. The main interest during that time were peatland management and peatland assessment. The earliest publication[12] related to peatland study in the list of literature compiled during the review was published in 1963 by the Forest Department Sarawak of Malaysia, titled 'The Flora of the Peat Swamp Forests of Sarawak and Brunei Darussalam, including a catalogue of all recorded species of flowering plants, ferns and fern allies'.

Generally, the number of peatland related publications has increased gradually by the year. Following the adoption of APMS in 2006, the interest in peatland increased significantly, with many research undertaken to assess its uniqueness and to gain more understanding of its ecosystem. However, the number of research on peatland inventory/mapping is still relatively low and needs to be enhanced. Under the category of peatland/ wetland inventory, half of the total publications is about using remote sensing technique. The interest in peatland fire management, development on peat and peatland assessment had doubled since the last five years.

Figure 3: Breakdown of publications by key topics/sectors

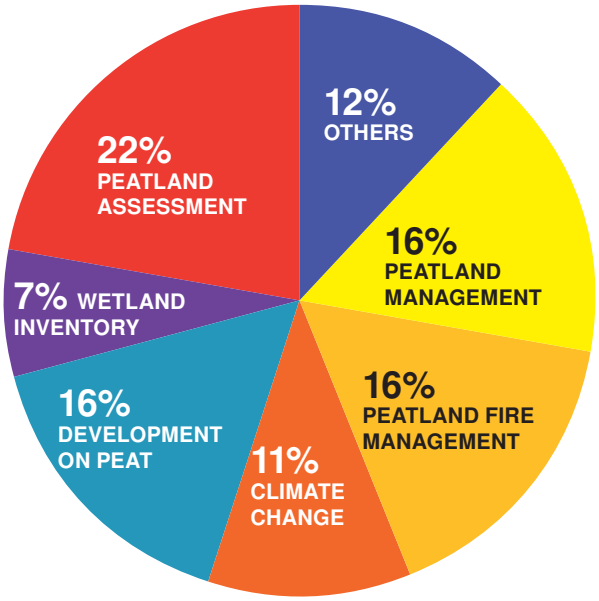
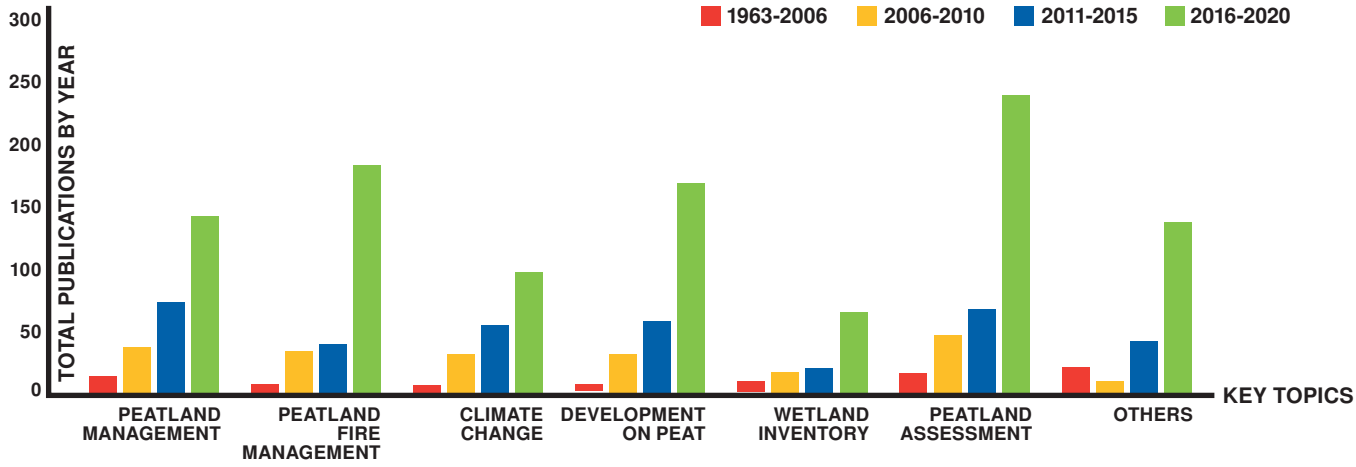


Figure 4: Graph showing trend of peatland publications in Southeast Asia



The number of peatland-related publications in Indonesia has increased gradually by year and it was found that during the period of 2005/2006 to 2018/2019, the number of publications has increased to more than 1,000 publications in total. From the academic point of view, peatland has been an interesting area of research which can be studied from various aspects, such as its characteristics, inventory and mapping, climate change, carbon emission and sequestration, peatland fire and smoke haze, peatland degradation, land use change, biodiversity conservation, peatland rehabilitation and restoration, community livelihood of peatland area, economic and ecological values of peatland, peatland policy and other social aspects. Interested researchers are not only Indonesian but also international academicians that have collaboratively working with local universities or organisations to conduct the studies, on this largest tropical peatland country in the ASEAN region. The majority of the publications are related to peatland fire management (20%) and peatland assessment (18%), followed by development on peat (16%), peatland management (14%), climate change (11%), wetland inventory/mapping (7%) and others (11%).

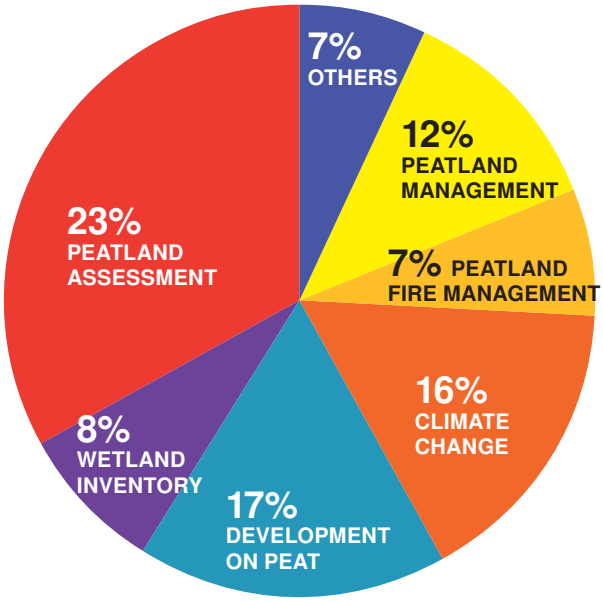
FOOTNOTE

12 It is known that there are some earlier publications including those from expeditions in Indonesia in 1800s and surveys in Myanmar in the early 19th century which identified peatlands – such publications could not be detected through the online literature analysis undertaken for the review of the APMS.

In line with the increased interest in peatland research, peatland concerned community in Indonesia established the Peatland Society of Indonesia or "Himpunan Gambut Indonesia" (HGI) on 3 May 2016, formally under legal institutional formation of Ministry of Law and Human Rights. The Society has more than 400 members comprising scientists coming from universities and ministries, and practitioners from plantation and forestry companies. As a formal and professional organisation, HGI has organisational structures at national and local levels. It contributes very actively to the government policies by conducting congresses, seminars, FGDs on updated peatland issues.

Apart from Indonesia, a large number of publications have also been produced at regional and international levels, which make up 15% from the total publications (**Table 3**). High interest was given to peatland assessment with the fact that only 2 publications were identified to have been published at a regional or international level before the adoption of APMS. While peatland is not only found in ASEAN region, international interest were also to assess other tropical peatland in Congo, Brazil and Amazon, as well as other peatland types in China and other temperate peat countries (**Figure 5**).

Figure 5: Breakdown of topics of peatland publications by regional and international stakeholders



4. POLICY FRAMEWORK TO ADDRESS PEATLAND ISSUES

4.1 ASEAN AGREEMENT ON TRANSBOUNDARY HAZE POLLUTION (AATHP)

The Governments of the ten AMS signed the AATHP on 10 June 2002 in Kuala Lumpur, Malaysia. The Agreement is the first regional arrangement in the world that binds a group of contiguous states to tackle transboundary haze pollution resulting from land and forest fires. It has also been considered as a global role model for the tackling of transboundary issues.

The Agreement requires the Parties to the Agreement to[13]:

1. Co-operate in developing and implementing measures to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, and to control sources of fires, including by the identification of fires, development of monitoring, assessment and early warning systems, exchange of information and technology, and the provision of mutual assistance.
2. When the transboundary haze pollution originates from within their territories, respond promptly to a request for relevant information or consultations sought by a State or States that are or may be affected by such transboundary haze pollution, with a view to minimising the consequences of the transboundary haze pollution.
3. Take legislative, administrative and/or other measures to implement their obligations under this Agreement.

The Agreement entered into force on 25 November 2003. All AMS have ratified and became Parties to the Agreement. The Agreement gives a mandate and provides a framework to establish an ASEAN Coordinating Centre for Transboundary Haze Pollution Control (ACC THPC) to facilitate cooperation and coordination among parties in managing the impact of land and/or forest fires in particular haze pollution arising from such fires. Pending the establishment of the Centre, the ASEC has performed the functions of the Centre on an interim basis with support from the ASEAN Specialised Meteorological Centre (ASMC).

4.2 ASEAN PEATLAND MANAGEMENT INITIATIVE (APMI)

The APMI was established following a decision of the Haze Technical Task Force (HTTF) in 2002 to mandate the ASEAN Secretariat, the Chairperson the HTTF and the Global Environment Centre to work together to develop a collaborative initiative between AMS to address peatland management issues in particular peatland fires and haze. It was conceptualised in the spirit of a so-called Type 2 initiative (i.e. involving collaboration between governments and non-governmental organisations to address common challenges), as proposed under the World Summit on Sustainable Development, held in September 2002.

The APMI was adopted at the 20th HTTF Meeting in 2003 to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation as well as to reduce risk of fire and associated regional haze and contribute to global environmental management.

The APMI provides the mechanism and framework for cooperation, contains objectives and principles, and includes a broad range of activities related to capacity building, fire prevention, national-level activities, regional cooperation and initial work plan for 2003-2005.

The specific objectives are to:

a) enhance understanding and build capacity on peatland management issues in the region;

b) to reduce the incidence of peatland fires and associated haze;

c) to support national and local levels implementation activities on peatland management and fire prevention; and

d) to develop a regional strategy and cooperation mechanisms to promote sustainable peatland management.

Among the proposed outputs of the APMI was an ASEAN Strategy and National Action Plans on Sustainable Peatland Management, which provided basis for the development of the APMS.

FOOTNOTE

13 Source: Article 4 of AATHP

4.3 ASEAN Peatland Management Strategy 2006-2020 (APMS)

The Strategy and Action Plan for Sustainable Management of Peatlands in ASEAN Member Countries (APMS) was developed by AMS to guide actions to support management of peatlands in the region in the period of 2006-2020. The APMS was prepared due to the pressing need recognised by both local and international communities for wise use and sustainable management of peatlands as well as the emerging threat of peatland fire and its associated haze to the economy and health of the region, and its possibility of contributing to global climate change. The APMS was developed within the framework of the APMI and the AATHP. The APMS was developed with technical assistance from GEC and funding support from UNEP-GEF through the project of Integrated Management of Peatlands for Biodiversity and Climate Change.

The objectives of the APMS are given in **Section 4.2**. The General Objectives are to be delivered by 98 Actions under 25 Operational Objectives that are grouped in 13 Focal Areas (see **Annex 3**).

The first review of APMS was conducted in 2012, was facilitated by the ASEC and the GEC, supported by the APFP and SEApeat Project funded by GEF, IFAD and the EU. The revision was adopted by the 9th Meeting of the COP of the AATHP in 2013.

The AMS have been responsible to facilitate the implementation of the APMS at national level to help ensure that the general and operational objectives are met. This would be done through the development of NAPPs, for the period of 2006-2020, taking into account the thrust and objectives of the regional strategy. The NAPPs should be linked to and complement the regional strategy and vice versa. The actions to be implemented under the NAPPs are to be decided by each AMS through its national consultative processes. Assignment of priority for country-level actions will guide AMS in prioritising actions under their respective NAPPs. AMS should also take into account implementation capacity, including availability of budgetary resources, in developing their NAPPs. Status of development and progress in implementation of the NAPPs is reported by respective AMS to the ATFP at its annual meetings, to monitor and ensure their relevance to the regional strategy. Therefore the NAPPs is one of the most important documents in sustainably managing peatlands in AMS, and to date most AMS have worked on their NAPPs and many are already in use.

4.4 ASEAN PROGRAMME ON SUSTAINABLE MANAGEMENT OF PEATLAND ECOSYSTEMS 2014-2020 (APSMPE)

Although good progress has been made, recurring transboundary haze events, some were large scale, have indicated that efforts need to be enhanced further. In September 2013, ASEAN Ministers responsible for the environment endorsed the establishment of a long-term multi-stakeholder APSMPE.

APSMPE was established to support collaboration among various stakeholders (including government, private sector, communities and civil society) in the ASEAN region to achieve the goal of the APMS, namely: “To promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation, support and sustain local livelihoods, reduce risk of fire and associated haze and contribute to global environmental management.”

The six key targets for the APSMPE, as approved by the Ministers in September 2013, are:

i. All peatland areas identified and inventorised;

ii. Zero-burning uniformly practiced to prevent any uncontrolled wildfires on peatlands, and eliminate any widespread smoke haze;

iii. Fire prone sites rehabilitated by focusing on root causes of fire;

iv. Peatlands sustainably managed, sustainable livelihoods enhanced, and sustainable economic use mainstreamed;

v. Peatlands conserved to contribute to significantly reduced emissions of greenhouse gases and increased peatland biodiversity in the region; and

vi. APMS and NAPPs implemented; national and regional capacity enhanced.

5. PROGRESS AND ACHIEVEMENTS OF APMS IMPLEMENTATION

5.1 IMPLEMENTATION AGAINST FOCAL AREAS AND OBJECTIVES

5.1.1 Progress against Overall Objectives

There has been good progress against the overall objectives of the APMS as follows:

General Objective 1: Enhance Awareness and Capacity on Peatlands
There has been very good progress in enhancing awareness and capacity on peatlands in all AMS. Each AMS has designated a focal point agency related to peatland management and several have established national committees or working groups on peatlands or incorporated peatlands into the work of other committees like biodiversity or wetland committees. Some AMS have developed specific regulations and policies related to peatland or incorporated peatlands in to national policies. Most AMS have significantly enhanced institutions and individual capacity related to peatlands. All AMS now have recognised national experts on different aspects of peatlands related to peatland assessment, fire prevention and control, management and climate change linkages.

General Objective 2: Address Transboundary Haze Pollution and Environmental Degradation
Significant action has been taken by AMS to minimise transboundary haze and environmental degradation related to peatlands especially in the southern ASEAN region where most peatlands occur. There has been a paradigm shift in the approach to addressing peatland fires – moving from an early focus on fire-fighting to a broader approach emphasising prevention. The ASEAN Guidelines on Peatland Fire Management adopted in 2016 called for 80% of resources to be allocated to peatland fire prevention. This has been actively adopted by member states with Indonesia establishing a Peatland Restoration Agency focussed on rewetting peatlands to prevent fire on 2 million ha of peatland and a National Peatland Fire Prevention Programme in Malaysia. Although there have been periodic transboundary haze events, linked to droughts associated with El Nino or Indian Ocean Dipole events, the scale and severity of the fires and events has decreased compared to prior to the APMS. The prediction, warning and monitoring of peatland fires has also significantly improved by enhancement of FDRS as well as satellite observation and tracking of fires and haze.

General Objective 3: Promote Sustainable Management of Peatlands;
AMS have recognised the importance of sustainable management of peatlands with peatlands designated as environmentally sensitive areas in Malaysia's National Physical Plan in 2010 and Indonesia stopping the allocation of new licenses for peatland development in 2011 and adopting National Regulations on Peatland Protection and Management in 2014. Water management has been recognised as one of the most critical aspect of peatland management with restrictions and best management approaches for water management in peatlands being promoted. The ISPO and the MSPO both incorporate requirements for sustainable peatland management. The RSPO published manuals of best management practices for cultivation of oil palm on peat and management and conservation of peatlands in 2012 which were updated in 2019. Significant progress has been made in promoting sustainable management by local communities including the introduction of zero burning approaches and also paludiculture – the cultivation of suitable species on wet or rewetted peatlands.

General Objective 4: Promote Regional Cooperation.
Regional cooperation and exchange has significantly increased under the framework of the APMS. A large number of regional and international conferences, workshops and training programmes have been organised by ASEC and AMS over the past 15 years. The APFP (2009-2014) and the associated SEApeat project facilitated significant collaborative work and exchanges. Exchanges and peer-to-peer learning have demonstrably advanced peatland management in the region and has enabled AMS to fast track introduction of new approaches to peatland management. The COP of the AATHP has reiterated the importance of the APMS and collaborative action on peatland management. A growing number of bilateral and regional cooperation initiatives have been supported in recent years including the EU-ASEAN SUPA Programme and the IFAD-funded MAHFSA Programme as well as a series of GEF financed projects at country and sub-regional levels. The ATFP was approved in 2013 and has met regularly to review progress in the implementation of the APMS.

5.1.2 Progress in Focal Areas

Feedback from AMS on the questionnaires, national reports to ATFP and other bodies, reports and publications from studies in the region as well as discussions with representatives from AMS and other stakeholders, combined with the knowledge of the review team members were used to develop a matrix of the progress of implementation of the APMS, according to the 13 Focal Areas and 25 Operational Objectives of the APMS. Indicative level of achievement has been estimated using an analysis of progress in implementing the targeted actions, based on feedback and discussions with the APMS focal person and/or ATFP NFPs as well as other stakeholders, literature analysis and focus group discussions as well as the expert judgement of the review team and feedback from the AMS.

An in-depth assessment was made of the implementation of the 98 Actions and 25 Operational Objectives in 13 Focal Areas in the APMS as in **Table 4** below. It was determined that 100% of the Actions have been initiated at the regional or country level. On average, 7 AMS undertook activities in each focal area with a range of 2-10 AMS undertaking each action and 3-8 addressing specific objectives. The review has confirmed that good progress has been made particularly to enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze; to enhance information management and promote sharing; and to promote exchange of expertise in addressing peatland management issues. Progress has also been made in determining the extent and status of peatlands in the region, to undertake priority research activities and to reduce the occurrence of fire and associated haze, and to promote best management practices. Slower progress was made in relation to peatlands and climate change and ensuring adequate funding and resources for implementation of the APMS. While good progress has been made with many actions, most of the actions by their nature are ongoing and should be continued in the future.

Table 4: Summary of scoring for APMS implementation against Focal Areas

Focal Areas	Started	Ongoing/ continuous	Geographic Scope	Progress Score
1. Inventory and Assessment	100%	100%	7 (5-8)	70%
2. Research	100%	100%	6 (5-7)	63%
3. Awareness and Capacity Building	100%	100%	8 (5-10)	76%
4. Information Sharing	100%	100%	7 (6-8)	77%
5. Policies and Legislation	100%	100%	7 (7-8)	70%
6. Fire Prevention, Control and Monitoring	100%	100%	5 (4-6)	60%
7. Conservation of Peatland Biodiversity	100%	100%	8 (7-9)	69%
8. Integrated Management of Peatlands	100%	100%	6 (3-8)	61%
9. Promotion of Best Management Practices of Peatlands	100%	100%	7 (5-9)	70%
10. Restoration and Rehabilitation	100%	100%	5 (4-7)	65%
11. Peatland and Climate Change	100%	87%	3 (1-6)	42%
12. Regional Cooperation	100%	100%	8 (5-10)	73%
13. Financing of the Implementation of Strategy	100%	100%	4 (2-7)	45%
GRAND TOTAL	**100%**	**99%**	**7**	**69%**

** Notes:*

Score 1-10 (Geographic scope) based on average number of AMS undertaking activity (Range is given in brackets for number of countries implementing each of the separate actions within each focal area). Figures are average for all actions related to that Focal Area. Note that participation in some actions included all 10 AMS, but average for all actions is lower. Details are in the Annex 7.

Progress Score % is based on level of effort progress achievement (expert judgment) in those countries undertaking respective activity.

Scoring for the Focal Areas is based on expert judgement building on literature analysis with information taken from APFP/SEApeat completion reports plus ATFP meeting reports and country papers, APMS review questionnaires and focus group discussion, collated literature, information collection by MAHFSA Programme, reports of other peatland related agencies including MOEF, BRG, WI, GEC, knowledge of the review team, etc.

5.1.3 Progress against Operational Objectives

Progress against each of the 25 Operational Objectives of the APMS are given in **Table 5**. A detailed review and analysis of progress against the 98 actions specified in the APMS is in **Annex 7**.

Table 5: Matrix of the implementation progress of the APMS

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
1. Inventory and Assessment	1.1 Determine the extent and status of peatlands in the ASEAN region	The extent of most of the peatlands in the ASEAN region has largely been determined especially for the lowland peatlands. Atlases of Peatlands were developed for key regions of Indonesia (Sumatra Kalimantan and Indonesian Papua) in 2005-2008. A map of ASEAN peatlands was developed under the APFP in 2012-2015. Significant new peatlands have been identified over the past 15 years in Papua Region of Indonesia, the Mekong countries and Philippines. Some significant gaps include upland and montane peatlands which have been little studied in the region (and are estimated to be in the region of 2-3 million ha) and also peatlands in the Mekong countries (Cambodia, Lao PDR and Myanmar) and Philippines where more than 20 new peatlands covering about 20,000ha have been identified since 2006. Peatland mapping in Indonesia has been completed since 2011 at a scale of 1:250,000 with the extent of peatland approximately 15 million ha, within 865 peatland hydrological units (PHUs) covering 24,667,804 ha, distributed particularly in big islands of Sumatera, Kalimantan, Sulawesi and Papua[14]. Peatlands have been significantly degraded in the last 30 years in the region and work is ongoing to accurately assess the status of peatlands in the region. A series of studies have been undertaken by the national University of Singapore to assess the status of peatlands in the western portion of the ASEAN region (with a focus on Malaysia and Indonesia). Extensive assessments have been carried out at national level in a number of AMS. Thailand has developed a harmonised definition and classification of peatlands followed by development the peat swamp forest database. Review of direct and indirect uses, values and functions of peatland has also been executed. Indonesia is preparing maps at 1:50,000 scale with information such as peat depth, peat type, and land cover including mapping of Peatland Hydrological Unit and level of degradation.	77%
	1.2 Assess problems and constraints faced in peatland management	Significant work has been undertaken to identify the problems and constraints faced in peatland management especially in countries with larger areas of peatlands such as Indonesia, Malaysia and Thailand in the southern ASEAN region. Every AMS faces different constraint in peatland management. However, common constraints are conflict of interest by different stakeholders, institutional framework and unsustainable practices. Among the challenges that are difficult to deal with is the extreme dry weather from the effects of climate change. Some of the country also facing issues such as typhoons or extreme rainfall events.	70%
	1.3 Monitor and evaluate peatland status and management	Systems are still being established to monitor peatland status and management in the region. Relatively few parameters are consistently monitored across the region. A growing number of assessments have been undertaken using satellite remote sensing to determine changes in status of peatlands in the region. The peatland restoration Agency in Indonesia has established a monitoring system on peatland condition, particularly Ground Water Level (GWL), which so called SIPALAGA (Monitoring System of Peatland GWL) using automatic sensor measurement as many as 142 units distributed in 7 restoration priority provinces (Riau-47 units, Jambi-13 units, South Sumatera-20 units, West Kalimantan-13 units, Central Kalimantan-42 units, South Kalimantan-5 units and Papua-2 units). In addition, all private sector plantation operators in peatland are required to establish enhanced water management and monitoring systems to maintain water levels at no more than 0.4m below the surface to reduce fire and subsidence risks. Monitoring is undertaken with a combination of real-time and manual monitoring covering 3.2 million ha of plantations and reported to the Ministry of Environment and Forests.	63%
2. Research	2.1 Undertake priority research activities	There has been a major increase in the amount of research on peatlands being undertaken across the ASEAN Region with less than 80 publications being produced related to peatlands in Southeast Asia prior to 2006 and more than 1,300 being produced between 2006 and 2020. The level of research activity and publications in greatest in Indonesia, followed by Malaysia and regional.	63%

FOOTNOTE

14 207 PHUs in Sumatera (9,604,529 ha); 190 PHUs in Kalimantan (8,404,818 ha); 3 PHUs in Sulawesi (63,290 ha); and 465 PHUs in Papua (6,595,167 ha), with reference to RPPEG 2020-2049

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
		Peatland related research in Indonesia has been tremendously increased since 2005 by with as many as 831 journal publications, covering various aspects of peatland management, peatland characteristics, peatland fire, carbon emission and social economic aspects. It seems that the interest of national as well as international researchers on Indonesian peatlands has been increased triggering by global environmental change and challenges of peatland management and fires. DNP in Thailand has identified priorities to undertake research work on peatland characteristics and functions including hydrology, ecology, carbon storage, GHG flux and biodiversity. DNP has also undertaken R&D to enhance sustainable management or develop new uses for peatland products and resources. Research has also been undertaken to assess and support livelihood activities of local communities. DNP also encouraged funding and incentive to promote research activities on peatland. Active research has been undertaken related to peatlands in Philippines. Various studies on peatland mapping, biodiversity, climate change, carbon stocks and socio-economic studies have been conducted. Studies have been conducted by various government agencies, NGOs and research institute in two main peatland area namely Leyte Sab-a Basin and Agusan Marsh. There was a specific entity Tropical Peat Research Institute (TROPI) has been established in Sarawak of Malaysia to conduct research and studies with universities and government institutes. The National University of Singapore (NUS) has one of the best collections of specimens of species from peatlands in ASEAN and has been active in efforts to describe many new species of fish, invertebrates and plants from the region. NUS also has a satellite receiving station and has undertaken a lot of work to assess the land use and status of peatlands in the region. The International Tropical Peatlands Center (ITPC) was established in Indonesia in 2019 by the Ministry of Environment and Forestry (MOEF) in partnership with members of the Global Peatlands Initiative (GPI) in particular, UNEP, FAO and CIFOR. Member countries include Indonesia, Republic of Congo, and the Democratic Republic of Congo. The Center's main objective is to ensure that policy makers, practitioners and communities have access to sound, credible and legitimate information, analyses, and all other tools needed to design and implement conservation and sustainable management of tropical peatlands.	
3. Awareness and Capacity Building	3.1 Enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze through implementation of a comprehensive plan	A lot of progress has been made in enhancing the awareness and understanding of public on the importance of peatlands and the connection to transboundary haze. Prior to the APMS there was very little understanding of peatlands and functions and link to haze. The connection between peatlands and climate change and biodiversity conservation is still growing. Awareness amongst the plantation sector especially the oil palm sector has increased significantly. Awareness is highest in the Southern AMS. In AMS with relative smaller areas of peat – awareness amongst public and other stakeholders is still relatively low, however these stakeholders are aware of wetlands conservation and protection. A communication plan was developed under the APFP in 2011. Public awareness in Indonesia on the importance of peatlands has been enhanced following the issuance of Government Regulation on Management and Protection of Peatland Ecosystem at National as well as in provincial/district levels. Peatland has been considered in each infrastructure development. Local community awareness has also been enhanced through dissemination programme done by the government, facilitated by several agencies, including CSOs, universities, and private sector. In Malaysia, the connection between peatlands and climate change and biodiversity conservation is still growing. Awareness amongst the plantation sector especially the oil palm sector has increased significantly. This can be seen by adoption of certification and good practice regarding wise use of peatland such; as MyGAP, MSPO, RSPO, etc.	85%
	3.2 Build institutional capacity on management of peatlands	Capacity for integrated forest and peatland management in Indonesia has been strengthened by the issuance in 2011 of the government moratorium on primary forest and peatland conversion; and the merging of the Ministry of Environment with the Ministry of Forestry to be MOEF in 2014 and One of the significant progress is the establishment of Directorate of Peatland Degradation Control under MOEF, which monitors, evaluates, and facilitate sustainable peatland management in forest concession areas and oil palm plantations as well as community land. NFPs for ATFP have been designated in all AMS and national committees or working groups have been established in 3 AMS, i.e. Indonesia, Malaysia and Philippines. The institutional capacity to manage peatlands in a sustainable manner has been enhanced in the region with a significant number of new peatland related-institutions established in Indonesia (including the Peatland Directorate of the Ministry of Environment and Forestry, the Peatland Restoration Agency and Provincial Peatland Restoration Teams) in recent years. Enhancements in peatland management capacity have also been made at national and site level in a number of other AMS (including Malaysia, Philippines, Thailand and Viet Nam) However, in some countries such as in the Mekong Sub-region, there are still limitations of capacity for the management of peatlands that need to be addressed. At local level the capacity of local government and community have been enhanced for peatland management with active engagement of CSOs in several countries including Indonesia, Malaysia and Philippines.	70%

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
4. Information Sharing	4.1 Enhance information management and promote sharing	Documentation and exchange of information on peatlands in the ASEAN region has significantly increased in the last 15 years. Information on peatlands is available from numerous websites and disseminated through regional and international mailing lists and clearing houses. Best management practices have been compiled and made available in the form of handbooks – especially for peatland conservation and rehabilitation, peatland fire prevention and control, management of oil palm planted on peatlands. Peatland related information management and sharing has been enhanced in Indonesia through information systems such as SIPPEG (Information System for Management and Protection of Peatland Ecosystem under collaboration of MOEF-BMKG-LAPAN. In addition, information systems in the websites of MOEF, BRG, MOA, BMKG, LAPAN, private sectors, and CSOs, include information on peatland monitoring, peatland fire control, peatland rehabilitation and conservation, managing peatland area for oil palm and forest plantation. Dissemination has also been enhanced through seminars, conferences, and other discussion forums. In Philippines, promotion of peatland information has taken place through installation of signages/information about peatland which are also translated into local dialects. Awareness has been enhanced through in radio and TV interviews as well as print media. The 28th Philippine Biodiversity Symposium in August 2019 served as a platform/opportunity to feature the peatlands in Philippines, specifically the Leyte Sab-a peatland.	77%
5. Policies and Legislation	5.1 Develop or strengthen policies and legislation to protect peatlands and reduce peat fire	Policies, regulations and NAPPs have been developed in six of AMS (Brunei Darussalam, Indonesia, Malaysia, Philippines, Thailand and Viet Nam), with the largest amount being in Indonesia which has developed 24 peatland related regulations and policies in the past 15 years. The most significant progress in Indonesia in policy level is the issuance of Government Regulation No 71 year 2014 on peatland Ecosystem Protection and Management, which was then renewed by Government Regulation No 57 Year 2016. The regulation has been the main reference for a further 24 peatland-related regulations and policies. The Government has also issued Presidential Instruction No 11 Year 2015 on the Improvement Forest and Land Fire Control which was renewed by Presidential Instruction No 3 Year 2020 on the Forest and Land Fire Control. The policy has called all fire control related stakeholders to work together to control the forest and land fire, including peatland fire. Peatland related issues have also been incorporated into other policies and plans such as National Biodiversity Strategy and Action Plan (NBSAP) or environmental policies in several countries. Regulations related to peatlands have also been developed at the local level such as Municipal Ordinances in Philippines which is also developing a national legal framework for legal protection of peatlands. Monitoring and enforcement of regulations has been enhanced in many countries. Malaysia has highlighted the importance of peatlands in its National Policy Biological Diversity, 2016-2025, and has recently approved a new policy to halt the further development of peatlands for oil palm plantations, following a similar policy adopted in Indonesia in 2011. At the regional level, AMS have adopted the ASEAN Guidelines on Peatland Fire Management in 2016 and The Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation (2016-2020).	70%
6. Fire Prevention, Control and Monitoring	6.1 Reduce and minimise occurrence of fire and associated haze	Peatlands with high fire risk have been identified in five AMS (i.e. Brunei Darussalam, Indonesia, Malaysia, Philippines and Thailand) and measures initiated to prevent peatland fires through enhanced water management, improved surveillance and rapid responses. A Peatland Fire Prediction and Early Warning System has been developed incorporating FDRS and is actively used in a large number of fire prone peatlands. The ASMC monitors hotspots and haze daily as well as makes short and medium term weather forecasts for ASEAN and disseminates information to all AMS. LAPAN and BMKG Indonesia as competent authorities also monitor hotspots and haze daily, then data and information from LAPAN and BMKG is used in the monitoring and detection system that has been developed by Directorate of Forest and Land Fire Management of MOEF as the National Monitoring Center (NMC). The monitoring and detection system is called Sipongi (http://sipongi.menlhk.org). The information from Indonesia NMC is used by all stakeholders in Indonesia to conduct ground patrols and other fire prevention/suppression activities. MET Malaysia and BMKG Indonesia prepare and disseminate daily Fire Danger Rating Alerts for the whole ASEAN region while DNP Thailand prepares FDRS information for the Mekong countries. Most of northern AMS with minimal institutional framework on peatland are depending on hotspot and haze information from ASMC to be integrated with ground patrolling activity. Standard Operating Procedures (SOP) for fire prevention and control and training manuals have been developed and promoted. The ASEAN Guidelines on Peatland Fire Management was developed and adopted by ASEAN in 2015 and promoted through TOT programmes. The ASEAN SOP for Monitoring, Assessment and Joint Emergency Response was revised and endorsed by the COP at the 11th Meeting of COP to AATHP on 29 October 2015 in Hanoi, Viet Nam. Brunei Darussalam, Malaysia and other AMS have developed National Haze Action Plans. Through these plans, monitoring activities are carried out by tracking hotspots, air quality, identifying source, movement and extent of haze, disseminating information related to haze and public health, taking action and enforcement on open burning. Indonesia had developed a Grand Design for Forest, Plantation and Land Fire Prevention 2017-2019 to strengthen the prevention activities carried out by related stakeholders. Capacity for peatland fire prevention and control has been strengthened in agriculture and forestry agencies. Partnerships to prevent fire have been established with plantation companies and local communities and zero burning strategies for commercial agriculture and plantations on peat have been widely adopted while zero or controlled burning strategies for communities have been promoted.	60%

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
		In Indonesia, a multi-stakeholder and integrated patrolling programme (Integrated Prevention Patrol) combines *Manggala Agni* (Forest and Land Fire Brigades), army, police, voluntary groups (Fire Care Community/*Masyarakat Peduli Api*), local community and other stakeholders has been carried out since 2016 in fire prone provinces. The integrated prevention patrol teams undertake several actions such as socialisation, campaigns, hotspot groundchecks, peatland water level monitoring, initial suppression, etc. Currently, a mobile application for fire prevention patrols is being developed by MOEF and IPB University. Land clearing without fire (*Pembukaan Lahan Tanpa Bakar*/PLTB) in Indonesia has been socialised and implemented to promote zero burning practices. The Thai Government has set up a forest fire control unit in each province, with special support given to those provinces where there are extensive peatland areas. Attention is given to the peatland area with attempts to maintain high water levels. They also compile information at national and local level on fire prone peat areas and develop fire prone risk maps for fire prevention plans purposes and strengthen capacity of local authorities and other agencies in areas with high fire risk to develop fire prevention and control programmes at local level. The Brunei Forestry Department's Disaster Management Committee Taskforce was established in 2017 to lead prevention, mitigation, preparedness, response and recovery measures including for forest fires. Routine patrol and monitoring at the Forest Reserve also conducted during dry season. During the APMS period the approach for peatland fire management has shifted from fire suppression to fire prevention using multi-stakeholder approach in Indonesia. The most significant progress on forest and land fire control is a strong coordination among agencies. Indonesia has established fire information system (http://sipongi.menlhk.go.id/home/main), which shows important information on daily, monthly, and annual hotspots as fire indicators for the whole Indonesia in the form of data, graphs, and maps. For fire indicators, all fire related institutions use only one hotspot data source from the LAPAN (http://modis-catalog.lapan.go.id/monitoring), which is derived from various satellites including: Aqua, Terra, SNPP, NOAA 20, and Landsat 8. SOP for fire prevention and control and training manuals developed and promoted in Malaysia by Department of the Environment and the Fire and Rescue Department. Capacity for peatland fire prevention and control has strengthened in agriculture and forestry agencies. Zero burning strategies for commercial agriculture and plantations on peat have been widely adopted while zero or controlled burning strategies for communities have been promoted.	
7. Conservation of Peatland Biodiversity	7.1 Promote conservation of peatland biodiversity	Progress has been made in the documentation of peatland biodiversity in the region with significant progress in documenting peatland plant species in the region as well as peatland fish species with the identification of more than 50 new species of peatland fish including the smallest vertebrate in the world (*Paedocypris*) which lives in PSF in Sumatra, Indonesia and Malaysia. Many rare and endemic plant species have been recorded in peatland in the region including Caimpugan peat swamp forest in Philippines. Sites of importance for conservation of peatland biodiversity have been identified, but relatively few new totally protected areas have been designated, but peatlands have been newly documented in a number of existing protected areas in Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines and Thailand. Unique peatland ecosystems have been documented for the first time in the past 10 years in the region include calcareous mound spring peatlands (in Myanmar) and mangrove peatlands (in Cambodia). Integrated management plans have been developed for a number of peatland conservation areas in the region and some progress has been made in partnership with local communities within conservation areas and their buffer zones. Peatland in Indonesia has been classified as an essential ecosystem to be managed carefully and sustainably. Identification and documentation of peatland biodiversity is regular programme conducted in conservation area such as National Parks. This essential ecosystem management has been included in Strategic Plan for Environment and Forestry and the Indonesian Biodiversity Strategy and Action Plan (IBSAP). Peatlands in Indonesia is rich in biodiversity, endemic flora can be found in the ecosystem, such as Jelutung (*Dyera polyphilla*), Ramin (*Gonstylus bancanus*), Meranti (*Shorea* spp), various of species of Nepenthes, orchids, and rattans, which has high economic value. Peatlands also provide habitat for various fauna including False Gharial (*Tomistoma schlegelii*), Sumatran Tiger (*Panthera tigris sumatrae*), Honey Bear (*Helarctos malayanus*), Tapir (*Tapirus indicus*), Orang Utan (*Pongo pygmaeus*) White Winged Wood Duck (*Cairina scutulata*) and the Lesser Adjutant (*Leptoptilos javanicus*). Significant progress made in the documentation of peatland biodiversity especially peatland fish species with more than 10 new species to science described in recent years. 124 species of fish have been documented in the North Selangor Peat Swamp Forest including six newly described endemic species and 7 rare, threatened or endangered species.	68%

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
8. Integrated Management of Peatlands	8.1 Promote multi-agency involvement in peatland management	Inter-agency working groups to support peatland management have been established in Indonesia, Malaysia and Philippines to bring together government agencies and sometimes CSOs or research organisations to enhance peatland planning and management. Sustainable peatland management approaches have been successfully promoted in the oi palm sector through the multi-stakeholder Peatland Working Group of the RSPO which has developed BMP Manuals for Existing Oil Palm Cultivation on Peat[15] and Management and Rehabilitation of Peatlands[16] as well as agreeing to stop any further development of oil palm plantations on peat. Some progress has also been made to enhance sustainability of forest plantations on peat, but less progress has been made with seasonal or annual crops and small scale plantations and agriculture in peatland areas. A multi-stakeholders approach has been recognised as a key element for sustainable peatland management. The strong government policies in Indonesia has called all the key stakeholders to work together towards sustainable peatland management implementation. A very significant progress in Indonesia is the increase of private sector role in complying with the regulation supported by APHI (Indonesian Forest Concessionaires Association) and GAPKI (Indonesia Oil Palm Entrepreneur Association), for example in zero burning, maintaining water levels, and fire prevention. Inter-agency working groups to support peatland management established in Malaysia to bring together federal, state and local government agencies, private sector, CSOs and research organisations to enhance peatland planning and management. For example, the development of the Integrated Management Plan for North Selangor Peat Swamp Forest involved many consultations with more than 30 different stakeholders.	73%
	8.2 Promote integrated water resources and peatland management using a basin-wide approach and avoiding fragmentation	Significant progress has been made in promoting integrated water resource and peatland management. The concept of the basin-wide or landscape approach has been widely promoted in the region. Indonesia has introduced regulations in 2014 which require a peatland hydrological unit approach for management of peatlands throughout the country. The regulation was revised and updated in 2016 with additional sub-regulations developed to enhance its enforcement. All involved stakeholder need to comply with the regulation, including: raising water levels in all cultivation areas, blocking abandoned or boundary canals in peatland areas by government, private sectors, and local community; rewetting programme by BRG in 7 provinces, and GWL monitoring using automatic sensor system-SIPALAGA and SIMATAG. Malaysia has adopted a landscape or peat basin approach to peatland management plans with landscape wide plans to be developed in all key peatland landscapes – although not yet mandated by regulations. Brunei Darussalam, Thailand and Viet Nam have also started to look at the hydrological management aspects of peatlands. The restrictions on drainage and conversion of deep peat, peat domes and undisturbed peatland has been strengthened. Indonesia has regulated all water management in peatlands and requires a minimum water level of 0.4m below the surface to be maintained by all land managers. The blocking of drainage canals to raise water levels to rewet and recover degraded peatlands was first initiated in the region in Central Kalimantan, Indonesia in 2005, but use of this technique has now been widely applied in Indonesia, Malaysia, Thailand and Brunei Darussalam. The Directorate of Peatland Degradation Control of the Ministry of Environment and Forestry, Indonesia currently in October 2020 oversees and monitors 3.4 million hectares of peatland under private sector management to ensure adequate water levels are maintained. BRG was established in Indonesia in 2016 with the mandate to rewet 2 million hectares of degraded peatland to prevent repeated fires and rehabilitate the degraded peatlands by 2020.	60%
	8.3 Promote integrated forest and peatland management	Integrated forest and peatland management has been promoted in the region through the APMS with guidelines on integrated management planning being published in 2014. Integrated management plans have been developed for peatlands in Indonesia, Malaysia and Viet Nam. Sustainable forest management practices and reduced impact logging were promoted in peat swamp forests in Indonesia and Malaysia, but relatively few are continued due to the widespread conversion of peat swamp forests to oil palm and forest plantations. Most remaining forested peatlands in Thailand have been designated as conservation areas. Logging of peat swamp forests has been recently phased out in Brunei Darussalam. Most remaining peatlands in Cambodia, Lao PDR, Myanmar, Philippines and Viet Nam are in protected areas (with established management plans – but sometimes the plans do not specifically recognise the peatland management issues).	61%

FOOTNOTE

15 https://rspo.org/resources/peat/rspo-bmp-for-existing-oil-palm-cultivation-on-peat-volume-1-2018-

16 https://rspo.org/resources/peat/rspo-bmp-for-management-rehabilitation-of-peatlands-volume-2-2018-

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
	8.4 Manage agriculture in peatland areas in integrated manner	Zero Burning is strictly restricted by law for peatlands in Indonesia (2004), Malaysia (2003) and Thailand and has been mandatory for RSPO certification since 2007. ASEAN Guidelines on Zero Burning were adopted in 1999 and Controlled Burning in 2003 and these have been widely promoted since 2006. However, there are challenge in the implementation of zero burning regulations especially in remote regions where enforcement agencies have little capacity. Formal decisions have been made to stop new development of oil palm and forest plantations on peat in Indonesia (since 2011) and stop new oil palm plantations on peat in Malaysia (2019). Existing plantations are required to follow good management practices in Malaysia and Indonesia. Implementation of strict BMP guidelines is required for RSPO certification of oil palm since 2012 with no expansion of oil palm on peat in any AMS allowed since 2018. Some work has been undertaken to develop alternatives to land clearing using fire such as developing options for use of biomass from land clearing, however fire is still used for land clearing for agriculture in some regions and countries. Some action has been taken to develop guidelines for other types of agriculture on peat in Viet Nam (2013) and Malaysia (2014) but this has yet to be widely adopted. For managing agriculture in peatland areas, Indonesia has clear and strong policy to implement zero burning in land preparation since 2004. This is supported by the associations of oil palm and industrial tree plantations (APHI and GAPKI) with ISPO (Indonesian Sustainable Palm Oil) platform. In the last 15 years, Indonesia also has shown a strong commitment in law enforcement for zero burning implementation. For local community, zero burning technology has been developed in different ways, such as converting biomass fuels to be organic compost, charcoal briquette, and wood vinegar. Fire in agricultural activities is still occurs mostly in conflict areas between concession areas and abandoned land.	58%
	8.5 Promote integrated community livelihood and peatland management	Significant progress has been made in targeted sites to empower local communities to better protect and manage peatlands in Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The Friends of North Selangor Peat Swamp Forest in Malaysia have been active since 2012 in undertaking fire prevention patrols and rehabilitating large forest areas. In Indonesia programmes to enhance the improvement of community livelihood in peatland areas have been included in the Strategic Plan of MOEF, MOA, and BRG. The Indonesian government has supported establishment of Fire Care Community (MPA) groups with 11,119 members (738 groups) in 28 fire prone provinces in Sumatera, Kalimantan, Sulawesi, Jawa, Bali, Nusa Tenggara, Maluku and Papua; as well as, since 2017, establishment of 525 Peatland Care Villages (*Desa Peduli Gambut*)[17] near fire prone peatlands, which facilitates zero burning implementation at community level and field schools on sustainable peatland management including promotion of agroforestry, silvo-fishery, food processing, and ecotourism. In Myanmar, a local monastery has been protecting a calcareous mound spring peatland in the Inle lake Basin for many years. In Viet Nam, Green Contracts were established with 51 households in the buffer zone of U Minh Thuong and U Minh Ha National Parks to enhance protection of the peatlands in the national parks. Work has also been undertaken in 5 countries (Indonesia, Malaysia, Philippines, Thailand and Viet Nam) to develop options for alternative livelihoods for local communities, based on peatlands including options such as handicrafts, honey, fishery products, ingredients for local delicacies, ecotourism, etc. However, more work is needed to scale-up the community engagement to cover more peatlands especially in countries with large peatlands areas such as Indonesia or Malaysia or in developing clear national mechanisms for community empowerment and recognition of the rights on indigenous peoples and local communities.	59%
9. Promotion of Best Management Practices of Peatlands	9.1 Promote best management practices through documentation and demonstration sites	Good progress has been made in documentation of BMPs for sustainable peatland management and in establishment of demonstration sites. Pilot projects were developed in 8 AMS under the APFP and SEApeat project between 2010 and 2015. A network of BMP sites was identified by the SEApeat project in 2015; **7 in Indonesia** (Danau Sentarum National Park, Sebangau National Park, Harapan Jaya Village, Riau Province, Sumatra, Rasau Jaya, Mumugo, Riau, Jabiren Village, Pulang Pisau District, Central Kalimantan, Kalampangan, Central Kalimantan), **4 in Malaysia** (North Selangor Peat Swamp Forests, Southeast Pahang Peat Swamp Forests, Klias Peat Swamp Forest and Loagan Bunut National Park), **2 in Philippines** (Caimpugan Peatlands, Mindanao and Leyte Sab-A Basin, Leyte, Visayas) **2 in Viet Nam** (U Minh Thuong National Park and U Minh Ha National Park). Examples of BMPs for community engagement in peatland management were compiled in APFP-SEApeat Key Achievements booklet[18] in 2015.	70%

FOOTNOTE

17 Programme of BRG (Desa Peduli Gambut) – Riau (123), Jambi (44), South Sumatera (73), West Kalimantan (90), Central Kalimantan (147), South Kalimantan (37) and Papua (12); 300 villages with domestic government support, 176 villages with collaboration with civil society and 49 in collaboration with private sector.

18 http://www.aseanpeat.net/view_file.cfm?fileid=450

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
		BMPs have been documented and demonstrated through the APFP and SEApeat project between 2010 and 2015. BMP sites in Indonesia, include: Danau Sentarum National Park, Sebangau National Park, Harapan Jaya Village, Riau Province, Sumatra, Rasau Jaya, Mumugo, Riau, Jabiren Village, Pulang Pisau District, Central Kalimantan, Kalampangan, Central Kalimantan. Other BMPs from JICA Project of Village based Fire Prevention Programme are in Braja Yekti and Dayun villages in Siak, Riau and in Pangkalan II and Rasau Jaya II villages in West Kalimantan.	
10. Restoration and Rehabilitation	10.1 Develop appropriate techniques for the restoration or rehabilitation of degraded peatlands	The first work on restoration of degraded peat swamp forest in the region was started in the Pru Tho Daeng in Narathiwat Province, Thailand through the Royal Initiative Project, started in 1982. A guideline on peat swamp forests rehabilitation and planting in Thailand developed based on work at this site was translated from Thai to English[19] and promoted in the ASEAN region in 2005 and became the basis for initial forest rehabilitation trials in Central Kalimantan, Sumatra and Malaysia. Subsequently rehabilitation trials and pilot projects were successfully undertaken in Indonesia, Malaysia, Philippines, Thailand and Viet Nam to refine further the rehabilitation techniques. Enhanced natural regeneration techniques were also developed in these countries, focussing on rewetting drained peatlands and fire prevention. Case studies from Southeast Asia were included in the manual of BMPs for peatland conservation and rehabilitation which was compiled by a multi-stakeholder working group and published by RSPO in 2019. Restoration and forest rehabilitation on degraded peatland has been promoted in Indonesia starting from research level to field planting level. Research-based rehabilitation that includes species site matching, water management, and planting techniques have been implemented in some provinces, such as in Riau, South Sumatera, Jambi, West Kalimantan, and Central Kalimantan.	66%
	10.2 Rehabilitation burnt, drained and degraded peatlands	The BRG was established in Indonesia in 2016 with a target to rewet and rehabilitate 2 million hectares of degraded peatlands in seven provinces[20]. A plan was developed identifying 2.6 million hectares of priority peatlands for rehabilitation. To date the area rehabilitated or rewetted under the guidance of BRG is about 780,000 hectares primarily in community land. In parallel, the Directorate of Peatland Degradation Control of the MOEF has worked with oil palm and forest plantations to raise water levels in 3.2 million hectares of peatlands (including some conservation areas). Private sector forest and oil palm plantations have phased out more than 10,000ha of plantations and started restoration to peat swamp forest. In Malaysia the government has set a target of restoring 10,000ha of degraded peat swamp forest by 2025. More than 2,500 ha have been rehabilitated in Selangor and Pahang States to date. In other AMS, degraded peatland sites have been rehabilitated in Thailand and Philippines. Blocking canals, rewetting, Agroforestry system, Silvo-fishery as well as paludiculture have been applied for restoration and rehabilitation of the peatland.	63%
11. Peatland and Climate Change	11.1 Protect and improve function of peatlands for carbon sequestration and storage	Extensive assessments have been made to quantify the carbon stock in peatlands in Indonesia in 2005-2007 and at several sites in Malaysia in 2012-2014. Assessments of carbon stock in one site in Cambodia were made in 2016[21]. An overall initial estimate of 68 billion tonnes of carbon stored in ASEAN peatlands was made in 2015[22]. GHG emissions from peatlands have been extensively studied in Indonesia, Malaysia and Thailand using both chamber methods and Eddy Covariance towers. Carbon finance projects have been established at two large peatland sites in Indonesia (Merang-Kepahayan in South Sumatra Province and Katingan Peatlands in Central Kalimantan) and are in early stages of development in other sites in Indonesia as well as in Brunei Darussalam and Philippines. In July 2020, Brunei Darussalam National Council on Climate Change (BNCCC) launched Brunei Darussalam National Climate Change Policy. One of the strategies of this policy is to increase Brunei Darussalam carbon sinks through afforestation and reforestation programme with a target of planting 500,000 trees by 2035, including in peatland areas.	46%

FOOTNOTE

19 http://www.aseanpeat.net/aeimages//File/Publications/Thailand_Peat_manual_rev.pdf \

20 Riau, Jambi, South Sumatera, West Kalimantan, Central Kalimantan, South Kalimantan and Papua

21 https://www.researchgate.net/publication/319057281_Carbon_stock_of_peat_soils_in_mangrove_forest_in_Peam_Krasaop_Wildlife_Sanctuary_Koh_Kong_Province_southwestern_Cambodia

22 https://www.gec.org.my/view_file.cfm?fileid=2965

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
		Peatlands and climate change has been considered by Indonesian government as inseparable matters. Peatland have been identified as GHG emission source, particularly from peatland fire and land use land cover change and form a key part of the National Action Plan for Climate Change (RAN-GRK) which has a target of reduction in emission intensity of 26% from the business as usual scenario and up 41% with international support. Improving peatland function for carbon sequestration and storage has been conducted through research and field implementation at pilot sites. Assessment on peatland carbon storage and sequestration was conducted by MOA (BBSDLP) and MOEF supported by the national budget as well as international funding such as the Norwegian Government, including estimation of emission from peat decomposition for results-based payments; development of monitoring system and estimation of emission reductions from peat restoration (PRIMS). On site level, large scale emission reduction projects have been initiated in Indonesia including: The Katingan Peatland Restoration and Conservation REDD Project (covering 150,000 hectares in Central Kalimantan) and the Sumatra Merang Peatland Project in South Sumatra that targets restoration of more than 22,934 hectares of peatland forest.	
	11.2 Support incorporation of peatlands into climate change adaptation processes	Relatively little progress has been made in incorporating peatlands into national adaptation strategies. Some preliminary work was undertaken through the Global Assessment of Peatlands, Biodiversity and Climate Change in 2006-2008[23] as well as under the Asia Pacific Network (APN) on climate change (in 2009), to explore potential climate change impacts on peatlands. While it has been recognised that a number of methods for reducing emissions and preventing peatland fires and degradation are important for reducing potential impacts of climate change on peatlands. The Indonesian National Action Plan for Climate Change Adaptation (RAN-API) for 2013-2025 clearly states that peatlands are an essential ecosystem for adaptation measure in the plan. However, other AMS do not yet include peatlands in their national adaptation plans of action (NAPAs). An adaptation project in Lao PDR included consideration of water management in Peatlands in Beung Kiat Ngong Ramsar Site.	38%
12. Regional Cooperation	12.1 Promote exchange of expertise in addressing peatland management issues	A number of regional collaborative projects on peatlands have been developed with engagement of government agencies, private sector, research institutions, NGOs and local communities. One of most successful was the APFP and the linked SEApeat project which together supported collaborative action in eight AMS between 2010 and 2015. Other regional research initiatives include SUPA, MAHFSA and Sustainable Management of Peatland Ecosystems in Mekong Countries (Mekong Peatlands Project). The SEA Peat Network was established in 2005 and currently links 280 peatland specialists and agencies working on ASEAN peatlands both from within and outside the region. Other active networks include GPI, International Mire Conservation Group (IMCG) and International Peatland Society (IPS). More than 50 regional workshops, conferences and meetings have been organised during the APMS period including the International Peatland Congress organised in Malaysia in 2016 and first field excursion of IMCG in tropical Southeast Asia. Technical visits and exchanges have been regularly organised on a bilateral or regional level amongst countries in the region to facilitate exchange of expertise and common learning. Indonesia has been actively involved with regional collaborative projects on peatlands, such as: the APFP, SEApeat project which together supported collaborative action in eight AMS between 2010 and 2015; SUPA and MAHFSA. For research program, we have Networked ASEAN Peat Swamp Forest Communities (NAPC) Project funded by NICT-Japan, which aims to deploy Internet of Thing (IoT) based solution for peat swamp forest monitoring, targeting the environmental and agricultural issues and at the same time engaging with the peat swamp forest communities for social innovation aspects, a collaborative project of ASEAN scientist from Indonesia, Brunei Darussalam, and Malaysia. Exchange of expertise is also facilitated in some regional meetings, conferences, and workshops.	77%

FOOTNOTE

23 https://www.gec.org.my/view_file.cfm?fileid=1151

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
	12.2 Establishment of 'networks or centres of excellence' in the region for peatland assessment and management	A number of technical networks and centres of excellence have been established in the region including the RSPO Peatland Working Group, SEApeat Network, TROCARI (Tropical Catchments Research Initiative), and the ITPC. These have worked to enhance action and knowledge development at exchange at both country level and in the region. A number of peatland sites have been developed under regional and international conservation frameworks with nine ASEAN Heritage Parks[24], 19 Ramsar sites[25] and at least two Biosphere Reserves[26] and 2 World Heritage Sites[27] in the region containing peatlands. The centres of excellence for peatland research in Indonesia include the IPB University and University of Palangka Raya and University of Riau. Network of peatland protected areas include Ramsar sites of Berbak National Park-Sumatra, Sembilang National Park-Sumatera, Tanjung Puting National Park-Kalimantan, Rawa Aopa Watumohai National Park-Sulawesi, and Danau Sentarum National Park-Kalimantan, which have been designated as Ramsar sites and Biosphere Reserve of Tanjung Putting-Kalimantan, Giam Siak Kecil-Bukit Batu-Sumatera, and Berbak-Sembilang, Sumatera. Centres of excellence have been established in the Malaysia such as North Selangor Peat Swamp Forest (NSPSF), and Klias Forest Reserve where facilities for education or research have been established. A number of peatland sites have been developed under regional and international conservation frameworks such as ASEAN Heritage Parks (Kinabalu National Park, Malaysia), 2 Ramsar sites (Lower-Kinabatangan-Segama Wetlands and Tasek Bera).	70%
	12.3 Contribute to the implementation of other related agreements and regional cooperation mechanisms	Peatland issues have been linked to ASEAN frameworks on biodiversity and nature conservation through the ASEAN Centre for Biodiversity and ASEAN Heritage Parks as well as discussions under the ASEAN Conferences of Biodiversity. Linkages have also been made with ASEAN frameworks on Forestry and Agriculture Management as well as the ASEAN Working Group on Climate Change. However, less progress has been made on linkages to frameworks on water resource management, education and disaster management. APMS has been a central part of the implementation mechanisms for the AATHP with reports on progress being made at each meeting of the COM and COP as well as the related sub-regional Technical Working Group and Ministerial Steering Committee on Transboundary Haze Pollution. Actions related to peatlands in ASEAN strongly contribute to the implementation of a number of global conventions especially the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC), Ramsar Convention on Wetlands of International Importance and the UN Convention to Combat Desertification. Peatlands have been highlighted in NBSAPs, NDCs and in national reports to the conventions. Nineteen peatland sites have been designated as wetlands of international importance under the Ramsar Convention. AMS have been involved in and actively contributed to the regional cooperation mechanism of ASEAN frameworks through regular meetings, workshops, such as: ASEAN Centre for Biodiversity, ASEAN Heritage Parks, the ASEAN Conferences of Biodiversity, Forestry and Agriculture Management, ASEAN Working Group on Climate Change; and also to global framework of: the CBD and the UNFCCC, and the Ramsar Convention on Wetlands.	73%
	12.4 Enhance multi-stakeholder partnerships to support peatland management	Good progress has been made in building multi-stakeholder partnerships to implement the respective NAPPs. There has been good partnership between multiple stakeholders from civil society and the private sector through the RSPO. Multi-stakeholder coalitions have also been established at site or landscape level to support integrated management of peatlands. Multi-stakeholder partnership has been encouraged through Government policies on sustainable peatland management. All the programme related to peatland involving various stakeholders, including: government (national/provincial/district), private sectors, CSOs, local communities, and universities.	70%

FOOTNOTE

24 Tasek Merimbun National Park, Brunei Darussalam; Gunung Leuser, Kerinci Sebelat, Lorentz and Way Kambas National Parks in Indonesia, Kinabalu National Park, Malaysia; Inle Lake Wildlife Sanctuary, Myanmar; Agusan Marsh Wildlife Sanctuary, Philippines and U Minh Thuong National Park, Viet Nam

25 Koh Kapik and Associated Islets and Stung Sen (there are potential peatland areas in Stung Sen Ramsar Site but need further confirmation and survey) in Cambodia (2); Berbak National Park, Sembilang National Park, Tanjung Puting National Park, Rawa Aopa Watumohai National Park, and Danau Sentarum National Park, in Indonesia (5); Beung Kiat Ngong Nature Reserve in Lao PDR (1); Lower-Kinabatangan-Segama Wetlands and Tasek Bera in Malaysia (2); Inle Lake Wildlife Sanctuary in Myanmar (1); Agusan Marsh Wildlife Sanctuary in Philippines (1); Princess Sirindhorn Wildlife Sanctuary, Kut Ting Marshland, Ko Ra-Ko Phra Thong Archipelago, and Kuan Ki Sian of the Thale Noi Non-Hunting Area Wetlands in Thailand (4); and U Minh Thuong National Park, Tram Chim National Park, and Lang Sen Wetland Reserve in Viet Nam (3)

26 Inle Lake in Myanmar, and Giam Siak Kecil-Bukit Batu in Indonesia

27 Kinabalu National Park in Malaysia and Lorentz National Park in Indonesia

Focal Areas	Operational Objectives	Progress in implementation 2006-2020	Progress Score
13. Financing of the Implementation of Strategy	13.1 Generate financial resources and incentives required for the programmes and activities to achieve targets of the strategy	There has been a significant increase in the funds made available for peatland management in the ASEAN region since the start of the APMS. Prior to 2005, there were little or no regional projects addressing peatlands and few if any national projects specifically on peatlands other than UNEP-GEF-support for development of the APMS and some action related to research as well as allocation of resources for peatland fire-fighting. After adoption of the APMS in 2006, the first significant regional funding came in the form of the IFAD-GEF supported APFP from 2009-2014 and the associated EU supported SEApeat project (2010-2015). Subsequently with the establishment of the APSMPE in 2014 a USD 50 million tranche of support from EU, GEF, IFAD, Germany and other sources was committed to support APMS implementation. Unfortunately, it took a further five years for most of the projects to be initiated. In the meantime, there was a significant increase in allocation of resources at the national level in particular in Indonesia and Malaysia but also in some other AMS. Since regional funding scheme of APFP from 2009-2014 and the associated EU supported SEApeat project (2010-2015) have been completed, Indonesia has allocated large national budget for peatland related programme. National funding for peatland rehabilitation and restoration of BRG is approximately USD 14.5 million for 2020, which is allocated for rewetting, dissemination, community empowerment, degraded peatland rehabilitation in 7 provinces of Indonesia. Budget for forest and land fire control including in peatland area from Directorate of Forest and Land Fire Management is approximately USD 7.4 million for 2019 and USD 40.5 million for the last 5 years. The projected budget for the Peatland Directorate of MOEF is estimated to be USD225 million for 2020-2024. Indonesia has also received significant international funding support for sustainable peatland management, such as: USD 112 million from the Norwegian Government for programmes to reduce emissions through, land and forest fire control, peatland mapping, sustainable forestry, agriculture and plantations on peatland, plantations on peatland, and forest management; support from Netherlands for the Central Kalimantan Peatland Project; USD 35 million from Australia for the Kalimantan Forests and Climate Partnership (KFCP); and USD 40 million from USAID for the LESTARI project supporting action on peatlands and other ecosystems in 10 landscapes throughout Indonesia; Other regional and bilateral projects, such as: MAHFSA, SUPA, IMPLI, KFS, JICA and GIZ.	45%

** Notes:*

Score 1-10 based on no of AMS undertaking activity

Score % based on level of effort progress achievement (expert judgment) in those countries undertaking respective activity

Information on progress in each objective is according to literature analysis with information taken from APFP/SEApeat completion reports plus ATFP meeting reports and country papers, APMS review questionnaires and focus group discussion, collated literature, information collection by MAHFSA Programme, reports of other peatland related agencies including MOEF, BRG, WI, GEC, knowledge of review team, etc.

5.2 Regional Institutional Framework on Peatlands

5.2.1 Regional Implementation Mechanism

A) INSTITUTIONAL MECHANISM FOR LAND AND FOREST FIRE AND TRANSBOUNDARY HAZE

As guided under the framework of the AATHP[28], the regional level implementation mechanism related to land and forest fire and transboundary haze pollution in the APMS was revised and updated in 2013, as in **Figure 6** below:

Figure 6: Regional institutional arrangement in ASEAN in relation to land and forest fire, peatlands and transboundary haze pollution

The overall institutional mechanism for land and forest fire and transboundary haze, as specified in **Figure 6**, have evolved since the establishment of the APMS. In 2006, fire and haze were overseen by the ASEAN Senior Officials on Environment (ASOEN), HTTF reporting to the ASEAN Ministerial Meeting on Haze (AMMH). It was supported by the Sub-regional Fire-Fighting Arrangement (SRFA). With the entry into force of the AATHP, this was replaced by the ministerial-level COP of the AATHP supported by the Committee of the COP to AATHP (COM). Two sub-regional structures were established – the first being the MSC which groups AMS in the southern ASEAN region (Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand). This has focussed on addressing the large scale transboundary haze in the southern portion of ASEAN which is particularly linked to peatland fires. The second sub-regional mechanism established was the Sub-regional Ministerial Steering Committee on Transboundary Haze in the Mekong Sub-Region (MSC-Mekong) which groups Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam. The MSC-Mekong was established to address the growing problem of transboundary haze in the Mekong region which is particularly linked to land clearing by fire and burning of agricultural residues. The MSC and MSC-Mekong have met at least once a year together with their associated Technical Working Groups (TWGs) to deliberate on the progress and challenges in resolving the transboundary haze problems. Progress with work undertaken to address peatland management have been reported to the TWG and TWG Mekong on a regular basis in addition to the direct reporting to the COM of the AATHP. The AATHP specifies for the establishment of the ACC THPC to facilitate the structures and actions under the AATHP. The ACC THPC is still in the process of establishment, so in the interim, the function of the ACC has been provided by the ASEAN Secretariat with support on some issues by the ASMC. The delay in establishment of the ACC has necessarily affected the level of progress with the AATHP, but this will not be reviewed in detail here as there is another ongoing Review of the ASEAN Haze-Free Roadmap which will assess this matter in more detail.

B) INSTITUTIONAL MECHANISM FOR THE APMS

The Institutional mechanism to oversee and guide the implementation of the APMS, specified in the original APMS adopted in 2006 is shown in **Figure 7a**. Under this structure the APMS implementation was overseen by the ASOEN Haze Technical Task Force, reporting to the ASEAN Ministerial Meeting on Haze. Regional coordination was facilitated by the ASEAN Secretariat supported by the Global Environment Centre (a Malaysian non-governmental organisation which expertise on peatland management which was a Founding Partner of the APMI in 2003). The lead at the country level would be taken by the AMS coordinated by a NFP and supported by country partners or supporters such as donors or academic organisations. A Technical Advisory Group of international experts on peatlands was also envisaged in the APMS but was not formally established.

FOOTNOTE

28 ASEAN Agreement on Transboundary Haze Pollution. https://haze.asean.org/asean-agreement-on-transboundary-haze-pollution-2/

Figure 7a: Diagram to show the institutional framework to guide the implementation of the APMS as established at the adoption of the APMS in 2006

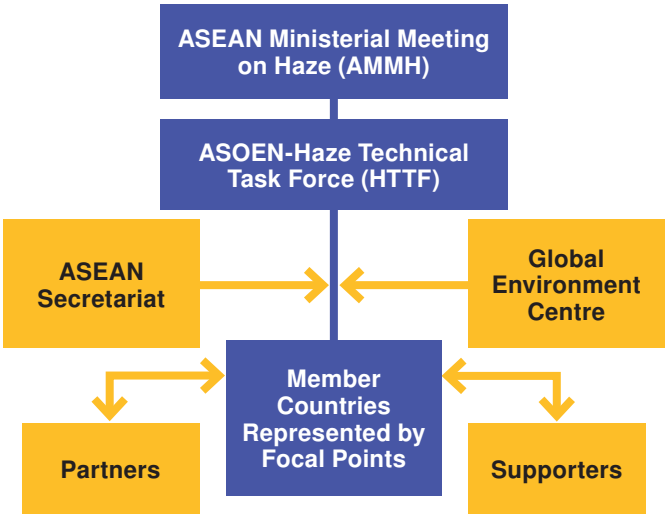
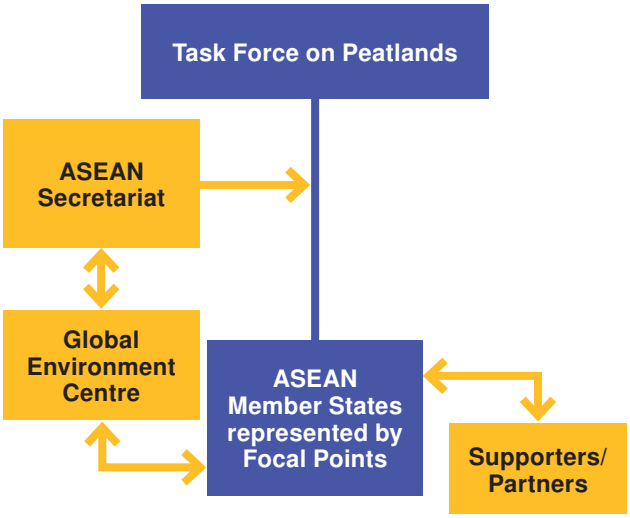


Figure 7b: Diagram to show the institutional framework to guide the implementation of the APMS as per the 2013 revision of the APMS



The institutional structure was adjusted in 2013 following the First Review of the APMS with the revised structure, as specified in **Figure 7b** being adopted by the AATHP COP. The main changes made in the structure were the establishment of the ATFP to comprise representatives from APMS Focal Points and peatland experts. In the adjustment of the structure approved by the COP, the role of GEC was also adjusted to provide technical and operational support not only at the regional level through ASEC but also directly to support the AMS in their actions at the country level.

i. ASEAN Task Force on Peatlands (ATFP)

This structure was recommended to replace the concept of a Technical Advisory Group of international peatland experts envisaged in the original APMS structure. The establishment of the ATFP was enabled by the significant increase in the capacity and level of activity on peatlands at the national level in AMS in the period 2006 to 2012. The ATFP also built on the successful operation of the Project Steering Committee (PSC) of the APFP which was established in 2006 initially as the Project Preparation Working Group for the project design and then morphed into the PSC in 2010. Even though the APFP focussed on four AMS (Indonesia, Malaysia, Philippines and Viet Nam), the PSC included representatives of all AMS. Subsequently the scope of the PSC was expanded in 2011 to oversee the related SEApeat project managed by GEC which complemented the APFP and channelled funds to additional AMS in the Mekong region.

The role of the ATFP is to monitor and guide the implementation of the APMS as well as report annually to the COM of the AATHP. Since the approval for its establishment in 2013, the ATFP has scheduled 5 meetings as described in **Table 6**. The Fifth meeting planned for April 2020 was postponed due to the COVID-19 pandemic. The list of current ATFP representatives is in **Annex 6**.

Table 6: Meetings of the ATFP

Meeting	Venue	Date
1st ATFP meeting	Philippines	June 2015
2nd ATFP meeting	Malaysia	February 2017
3rd ATFP meeting	Brunei Darussalam	April 2018
4th ATFP meeting	Myanmar	February 2019
5th ATFP Meeting	Cambodia	April 2020 (postponed to 1 December 2020 for an online meeting)

The ATFP has functioned as an important forum for the AMS to report annually on the progress in implementing the APMS as well as coordinating the development of regional initiatives with partners to support the APMS implementation. ATFP is relatively unique compared to other ASEAN meetings in that the meetings have generally been mainly open to observers from GEC and development cooperation partners supporting the implementation of the APMS. This has been very useful in that the development cooperation partners can listen to the annual reports from AMS on progress in implementation of the APMS as well as discussions on priorities and challenges. This has helped the partners in the formulation of programmes and activities to support the APMS implementation.

In terms of the functioning of the ATFP there have been a few challenges as follows:

- Financing of organising costs and participation in ATFP meetings
- Secretariat support for the ATFP and APMS

In general, the participation of officials from AMS to ASEAN meetings is covered by each AMS from their national budget and the costs related the hosting of the meetings is covered by the AMS in turns. Since ATFP is a new structure and specialised in nature, it has been a challenge for some AMS, especially those without a National Action Plan on Peatlands, to secure necessary resources to host or participate in ATFP meetings. Another related factor is that the APMS calls for the participation of national experts in addition to the APMS Focal Points in the meetings – which has been a further challenge for some countries. This has partly been addressed by organisation of back to back meetings funded by development cooperation partners or in one case by the ASEAN Haze Fund. This has absorbed much of the travel and some of the venue costs for the meetings. However, the lack of dependable funds for the meetings has led to uncertainty in setting the timing of meetings and ensuring full participation.

A second challenge has been the lack of any dedicated staffing in the ASEAN Secretariat to handle the ATFP and APMS implementation. The limited staffing in the Environment Division have many different obligations and are simultaneously handling a very large portfolio of activities. This necessarily limits the amount of time and effort that they can place on any one task such as the APMS or ATFP. In this regard, ASEAN Secretariat had been working closely with Global Environment Centre as the Technical and Operational Support Partner of the APMS. In addition, support has been provided through various regional projects to support the APMS implementation.

ii. Global Environment Centre (GEC)

The adopted APMS specifies the role of the GEC as follows:

"The GEC is a well-established organisation based in the ASEAN region with special expertise on peatlands and is the Coordinator of the SE Asian Peatland Network with over 400 members. It is a Founding Partner of the APMI and has provided technical and operational support to the APMI/APMS since its inception. GEC will continue to provide this technical and operation support for the implementation of the strategy as well as assist in generating resources to support its implementation."

Progress by GEC in these areas is given below:

a. Assistance in generating resources

GEC has actively assisted ASEC and AMS in identifying and securing significant support and funding to implement the APMS. Some of these initiatives are highlighted in **Table 7**.

Table 7: Funding to support the APMS identified or secured with assistance of GEC

Funder	Amount	Project name/Timeframe	Role of GEC
Canadian International Development Agency	CAD 3.9 Million (USD 2.937 Million)	Climate change Forest and Peatlands in Indonesia (2005-2007)	Concept and detailed design and implementation partner
ASEAN-Australia Development Cooperation Programme	AUD 369,000 (USD 264,000)	Improve Peatland Management and Reduce Land and Forest Fires and Associated Transboundary Haze Pollution in the ASEAN Region (2007-2008)	Concept development and project co-implementer
International Fund for Agricultural Development – Global Environment Facility (IFAD-GEF)	USD 4.3 Million	APFP (2010-2014)	Concept development, Detailed design, Regional Project Executing Agency
European Union (EU)	EUR 1.7 Million (USD 2.5 Million)	SEApeat project (2011-2016)	Concept development, Detailed design, Project Implementing Agency
EU and Germany	EUR 24 Million (USD 29.4 Million)	SUPA programme (2016-2022)	Concept development, Input to design and securing approval
IFAD-GEF	USD 4.76 Million	Sustainable Management of Peatland Ecosystems in Indonesia (2017-2021)	Concept design, Detailed design and support for supervision
IUCN-GEF	USD 2.9 Million	Sustainable Management of Peatland Ecosystems in Mekong Countries (2019-2022)	Concept design, securing country endorsements and help securing GEF approval. Implementation partner
IFAD	USD 3.5 Million	Measureable Action For Haze-Free Sustainable Land Management in Southeast Asia (2019-2024)	Input to concept and detailed design. Implementing partner
IFAD-GEF	USD 4.9 Million	Integrated Management of Peatland Landscapes in Indonesia (IMPLI)	Concept design, Input to Detailed design
IFAD-GEF	USD 9.4 Million	Sustainable Management of Peatland Ecosystems in Malaysia (SMPEM) 2020-2024	Concept design, Detailed design and support for project establishment and implementation
IFAD	USD 1 Million	Technical Assistance and Knowledge Exchange for Sustainable Management of Peatland Ecosystems in Malaysia (2019-2022)	Concept and detailed design and implementation

Funder	Amount	Project name/Timeframe	Role of GEC
IFAD-GEF	USD 6 Million	Strengthened Systems for Community-based Conservation of Forests and Peatland Landscapes in Indonesia (2023-2027)	Input to concept development
Total	**USD 71,861,000**		

In addition to the projects in **Table 7**, a large number of concepts and proposals were prepared for international funders (some of which are still pending approval) as well as national and local level funders and for the private sector which has generated further support for actions particularly at the site level.

b. Technical and Operational Support to the ASEC and AMS in implementing the APMS

With regards to technical and operational support to the AMS and ASEC in implementing the APMS, actions by GEC are summarised in **Table 8**.

Table 8: Summary of technical and operational support provided by GEC to AMS and ASEC for implementation of APMS 2006-2020

AMS	Technical and operational support provided by GEC
Brunei Darussalam	Assessment of peatland fire risk in Seria District of Brunei Darussalam
Cambodia	Training on peatland assessment and support for peatland assessment in Tonle Sap and coastal regions, support for public awareness and development of information materials on APMS. Support for development and implementation of Mekong Peatlands Project.
Indonesia	Support for design and implementation of numerous projects and programmes related to peatland management. Significant technical advice and funding support for implementation of capacity building, assessment and management activities. Support for government, private sector and civil society.
Lao PDR	Training on peatland assessment and support for peatland assessment in Vientiane and Champasak Provinces. Support for public awareness and development of information materials on APMS. Support for development and implementation of Mekong Peatlands Project
Malaysia	Support for design and implementation of numerous projects and programmes related to peatland management throughout the country. Technical support for formulation and mid-term review of the NAPP. Significant technical advice and funding support for capacity building, assessment and management activities. Review and enhancement of the National Programme on Peatland Fire Prevention and drafting of a revised SOP and new Masterplan for peatland fire prevention. Development and implementation of integrated management plans for peatlands. Numerous site-based projects in partnership with local communities and private sector to prevent fire and rehabilitate peatland landscapes.
Myanmar	Training on peatland assessment and support for peatland assessment in five regions of Myanmar. Support for public awareness and development of information materials on APMS and peatlands. Support for development of and implementation of Mekong Peatlands Project
Philippines	Support for capacity building and development of the NAPP. Training on peatland assessment and support for peatland assessment and management in Leyte and Mindanao regions.
Singapore	Support for enhancement of the hotspot monitoring on peatlands and collaboration in the development of training materials for the ASEAN Guidelines on Peatland Fire Management.
Thailand	Support for development of National Action Plan on Peatlands and implementation of pilot project on peatland fire prevention.
Viet Nam	Support for management on peatlands in U Minh Ha and U Minh Thuong National Parks including assessments, community engagement and ecotourism. Support for the development of NAPP. Support for public awareness and development of information materials on APMS and peatlands
Regional	Facilitated the formulation and establishment of the APMS and facilitated its first review. Helped to secure funding to support APMS implementation at regional level. Support and organisation of more than 30 regional workshops, training courses and meetings to build capacity and enhance collaboration among AMS. Developed a broad range of information, awareness and training materials related to the APMS. Promoted APMS at global level to appropriate international meetings and conferences. Helped in preparing reports on APMS progress and working papers on key topics as inputs to related ASEAN meetings. Participated in and supported meetings (including through drafting of reports and working papers, making presentations etc.) of the ATFP and other ASEAN meetings including AATHP COM/COP, MSC/TWG, MSC Mekong/TWG-Mekong, HTTF and SRFA. Support for enhancement of peatland fire warning and monitoring systems including FDRS for ASEAN region.

Although GEC has been able to support implementation of the APMS at the regional level and in all AMS over the past 15 years, there were some challenges – mainly related to the challenge to secure continuing funding to support action at the regional and country levels. One of the most active periods of GEC support for the APMS was between 2010-2016 when GEC had secured funding from IFAD-GEF and EU through the APFP and SEApeat projects. Although both funders rated the projects as extremely successful and recommended extensions and expansions of the level of funding – it took a further four to five years for these funds to be provided and the financing agreements with ASEAN

and the respective AMS to be signed. Although the total of the new funding secured was much larger than the earlier funds channelled through ASEAN Secretariat and GEC, the delay in the funds and the new disbursement mechanisms chosen by the funders led to further delays and gaps in the provision of support. During this financing gap, GEC was able to secure some smaller funding projects to support selected activities but not in all AMS. GEC nevertheless did continue its support for the APMS at the regional level, by supporting ATFP meetings and the development of information and working papers for the ASEC. New funds have been secured by GEC in late 2019 and early 2020 to support a range of planning and implementation actions, but these have been disrupted by the COVID-19 pandemic.

iii. Meetings with development cooperation partners

Coordination and planning meetings have been organised with partners, back-to-back with the ATFP meetings. The timing and focus of such partner meetings are given in **Table 9**. These meetings of partners have enabled the development of coordinated and synergistic initiatives at regional and country levels supported by various partners. In November 2019, a special joint meeting of APMS partners and ATFP was held in Bangkok, Thailand in the form of three back-to-back meetings of the PSC for three related projects namely the MAHFSA, SUPA and Mekong Peatlands Project. The Joint PSC Meetings were held with reference to the guidance from the 15th Meeting of the Committee under the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution (COM-15) held on 7 October 2019. The COM noted the increasing role of ASEAN (represented by the ATFP and ASEAN Secretariat) in overseeing the implementation of peatland-related projects/programmes with the advent of SUPA, MAHFSA and other upcoming projects/programmes and the need for the PSC to be streamlined for better coordination and cost-effective arrangements. Organising the three PSC meetings back-to-back in Bangkok saved significant time and funds compared to three separate meetings at different times and places.

Peatland Partners' Coordination Meetings serve as way of ensuring synergy and linkages with each other's activities coordinated through the ASEC. It has allowed ASEC together with Partners to review all the related programmes in a comprehensive and coordinated manner – which is key to better planning and complementarity in the implementation. In view of COVID-19 situation, such coordination and complementarity were presented to AMS in the form of Continuity Plans coordinated and circulated by ASEC to ATFP.

Table 9: Meetings of the APMS Partners

Meeting	Venue	Date	Partners present
Partner meeting 1	Philippines	Back-to-back with ATFP1 June 2015	GEC, IFAD, IUCN
Partner meeting 2	Brunei Darussalam	Back-to-back with ATFP3 April 2018	GEC, IFAD, EU, IUCN, GIZ
Partner meeting 3	Myanmar	Back-to-back with ATFP4 February 2019	GEC, IFAD, IUCN, EU, GIZ
Partner meeting 4	Thailand	3 Joint partner meetings with ATFP members functioning as PSC meetings November 2019	GEC, IFAD, IUCN, EU, GIZ
Partner meeting 5	Indonesia	Meeting in January 2020 at ASEAN Secretariat	GEC, IFAD, EU, GIZ

5.2.2 Regional Reporting and Monitoring

After the establishment of the APMS progress in the implementation was periodically reported by the AMS to the ASOEN HTTF and later the AATHP COM. After the COM endorsed the establishment of the ATFP to oversee the progress of the APMS, reporting became more systematic.

At the ATFP meetings, AMS reports on the status of development and progress in implementation of their respective NAPP to monitor and ensure their relevance to the regional strategy. The ASEC will give updates on progress of the APSMPE (2014-2020), mainly on relevant projects. Dialogue Partners, relevant regional and international agencies and individuals may be invited to attend to the open sessions of the ATFP meetings to share information on ongoing projects, and to promote collaboration and partnerships.

At the annual meetings of COM to AATHP, the ATFP Chair reports on the progress of APMS implementation, including progress of ongoing projects, outcome of completed projects and project proposals that require COM's approval. Highlights of the above progress will be subsequently reported to the COP to AATHP, particularly on matters that require the Ministers' endorsement. This mechanism has enabled relevant project results and guidance to be incorporated into regional and national planning frameworks.

According to Mid-Term Review (MTR) of the ASEAN Socio-Cultural Community (ASCC) Blueprint (2009-2015), the APMS implementation was recognised as a milestone recorded as sectoral and cross-sectoral achievement with outstanding work that contributed to ensuring environmental sustainability elements. The implementation of the APMI and APMS was chosen as one of four case studies of outstanding regional cooperation that were annexed to the MTR report of the ASCC Blueprint. Both the APMI and APMS had been recognised "*to continuously serve as beneficial mechanisms for regional cooperation in addressing the peatland management and transboundary smoke haze issue.*

They have been well resourced in terms of funding and manpower through a multi-stakeholders approach that involve public-private partnership in tackling the transboundary smoke haze issue. In addition, there have been concrete on-the-ground activities at local level to address land and forest fires problem."

5.2.3 Regional Information Exchange

The regular ASEAN meetings namely the ATFP, COM to AATHP and COP to AATHP are the official platforms to share updates and progress on APMS implementation through the various activities and projects at the regional, national and local levels. In addition, information exchange at regional level has also been done through workshops, peer-learning programmes, and other outreach programmes under the regional peat projects. This has enabled a wider coverage of stakeholders, at different levels, to learn and better understand the regional peatland management issues and possible ways to contribute to problem solving at their level and capacity.

5.3 National Action Plan on Peatlands

The APMS specifies that each AMS should prepare individual NAPP for the period 2006-2020, taking into account the thrust and objectives of the APMS.

In response, six AMS subsequently developed respective NAPP or incorporated peatlands into other plans and processes. Three AMS (from the Mekong sub-region) have yet to develop their NAPP as they are still in the process of undertaking inventories of their peatlands. The current status of development of NAPPs is given in **Table 10** below.

Table 10: Updated status of the NAPPs of AMS and recommendations for next step

COUNTRY	NAPP STATUS
Brunei Darussalam	Plan finalised and endorsed by Ministry of Development in 2015
Cambodia	Peatland assessment underway in preparation for NAPP development under Mekong Peatlands Project
Indonesia	Completed in 2006; revised in 2012. Now incorporated in long term Plan for Protection and Management of Peatland Ecosystem (RPPEG[29]) for 2020-2049.
Lao PDR	Peatland assessment underway in preparation for development of the NAPP with support from the Mekong Peatlands Project
Malaysia	Prepared in 2008-2010, endorsed by Cabinet in January 2011 and implemented since 2011. Approved for extension to 2030, included in the National Policy on Biological Diversity in 2016. Review and preparation of the extension of NAPP planned for 2020-2021 with support from IFAD-GEF funded SMPEM Project.
Myanmar	Significant peatlands have been identified at more than seven sites in five provinces/states. Further Peatland assessment underway in preparation for development of the NAPP with support from the Mekong Peatlands Project.
Philippines	Completed in 2009. Incorporated in national policies/plans Included in the updated National Inland Wetland Conservation Plan 2017-2021 (formerly National Wetlands Action Plan) that is pending adoption
Singapore	Not Applicable (No peatland identified). However, Singapore has been supporting regional action on haze and fire monitoring, weather prediction and research on peatlands as well as some support to selected AMS.
Thailand	Approved in June 2015 by Sub-Committee for Wetlands Management of Thailand (SWMT) under the Ministry of Natural Resources and Environment. Under implementation and reporting to ATFP.
Viet Nam	Drafted since 2006, Final Plan in local language prepared in 2014. Awaiting final government approval.

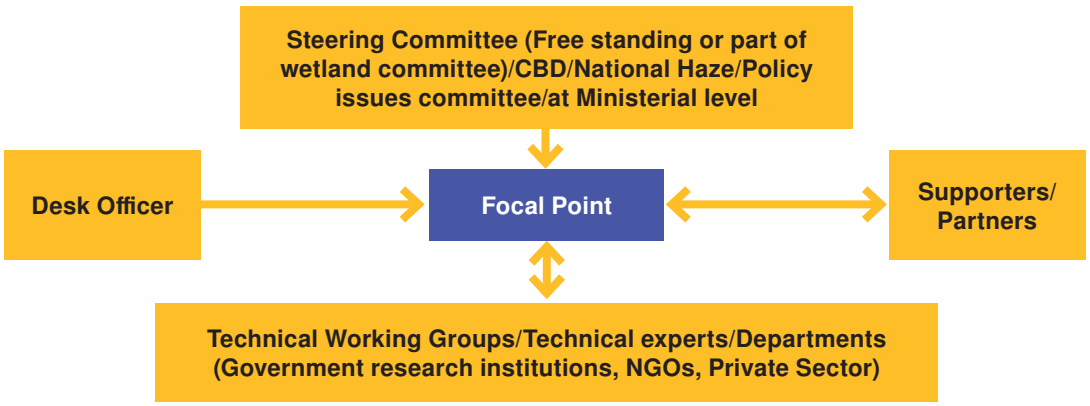
5.4 National Institutional Framework on Peatlands

5.4.1 Institutional Arrangements

The indicative institutional mechanism for country level implementation as specified in the APMS is given in **Figure 8**. This structure includes a National Steering Committee which may be free standing or incorporated into the functions of other related committees such as National Wetland Committee, National Biodiversity Committee or national haze committee. The Committee would give guidance to a NFP agency, which may be supported by technical working groups or experts as well as partners of supporters. It was stressed that each AMS should adapt this conceptual model to the national situation.

FOOTNOTE
29 Rencana Perlindungan dan Pengelolaan Ekosistem Gambut (RPPEG) 2020-2049.

Figure 8: Framework for national level implementation of the APMS as specified in the APMS document



In AMS, there is a very broad range of different ministries and agencies with some role or responsibilities related to peatland management. An administrative framework is needed to implement policies and decisions also enforce laws and regulations within each country. There have been jurisdiction aspects in dealing with managing natural resources of which may post challenges between federal/central ministries and local agencies. However, the ministries that are establishing and ensuring implementation of the national policies have been supporting the local agencies with finance and technical support in handling the peatland related challenges.

In Indonesia, ministries or agencies responsible for peatland restoration include the Directorate of Peatland Degradation Control (*Direktorat Pengendalian Kerusakan Gambut*/PKG) under MOEF; BRG; the Sub-directorate of Lowland under Directorate of Water Resources of Ministry of Public Works and Settlements (*Kementerian Pekerjaan Umum dan Perumahan Rakyat*/PU-PR); and the Ministry of Agriculture (MOA). MOEF is also responsible for the reduction of GHG emissions including minimising forest and land fire occurrences in Indonesia. BRG is the main coordinating and planning agency to support peatland restoration. It is tasked to accelerate the recovery and restoration of hydrological function and vegetation of degraded peatland in seven provinces in Indonesia. The institution works directly and reports to the President. Indonesia has showed high commitment in dealing with peatland issues and initiated effective peatland management practices as well as preventing and monitoring peat fire. These central ministries and agencies have been in communication and consultations with provincial, district and sub-district levels to undertake appropriate measures in rehabilitating and monitoring the vulnerable peatland areas.

In Malaysia, Ministry of Energy and Natural Resources (*Kementerian Tenaga dan Sumber Asli*/KeTSA), Ministry of Environment and Water (*Kementerian Alam Sekitar dan Air*/KASA) Ministry of Agriculture and Food Industries (*Kementerian Pertanian dan Industri Makanan*/MAFI) and Ministry of Plantation Industries and Commodities (*Kementerian Perusahaan Perladangan dan Komoditi*/MPIC) are the key ministries responsible for implementing peatland relevant policies, action plans and guidelines. They work in coordination with state governments (which have legal jurisdiction over land and natural resources) for cooperation on enforcing the policies and guidelines. Support from technical departments under the ministries has been coordinated to undertake appropriate measures and actions at local level to ensure prevention of peat fire. In order for overall coordination of peatland management and conservation effort of the country, a National Peatland Steering Committee and National Peatland Working Committee was established in 2011 but there have not been regular meetings since 2015. In some states, there are state level committees to oversee activities on peatlands such as under State Steering Committee on Wetlands and/or incorporated into state level executive committee's responsibility to have peatland elements included in environment portfolio. Malaysia is one of the only AMS in the region having a specific national committee for peatland.

In Philippines, a new division, i.e. Caves, Wetlands and other Ecosystems Division (CAWED) has been established within the Department of Environment and Natural Resources – Biodiversity Management Bureau (DENR-BMB) to oversee and coordinate work on wetlands, including peatlands. Peatland management concerns have been incorporated under the Technical Working Group on Inland Wetlands of the country.

In countries with a smaller area of peatlands there are not specific departments responsible for peatland management, but peatlands are managed by a range of different institutions from national to local levels. The institutions involved in peatlands matters are in **Annex 8**.

5.4.2 Specific National/Provincial Policies and/or Action Plans on Peatlands

As part of the review of the APMS, the status and nature of national or provincial policies and/or action plans in relation to the peatlands in the AMS have been assessed. Initial findings include the following:

AMS in the southern ASEAN region, with extensive peatlands generally have developed specific policies and action plans for managing the peatlands. The countries in northern ASEAN region, i.e. Cambodia, Lao PDR and Myanmar which generally have smaller peatlands (which are nonetheless important for biodiversity and conservation reasons), are mainly still in the stage of assessment and mapping of their peatlands. They currently do not have specific peat policies but peatland elements have been included in existing policies and plans such as wetland policy and action plan for biodiversity and protected areas. However, there has been a growing recognition in northern ASEAN region of the unique functions and sensitivities of the peatland ecosystems especially in relation to biodiversity and water regulation.

In **Philippines** for instance, despite the relatively small areas of peatland identified, recognition of the importance of peatlands has increased and three local governments have adopted "Peatland Protection and Conservation Ordinances" (Municipality of San Francisco, Agusan del Sur; Municipality of Talacogon, Agusan del Sur; and Sangguniang Bayan of Alangalang, Leyte). Peatland conservation and its sustainable use have been integrated into various plans, including Philippine Biodiversity Strategy and Action Plan (PBSAP), National Wetlands Action Plan in National Inland Wetlands Conservation Program, National Action Plan to Combat Desertification, Land Degradation and Drought, and Philippine Development Plan (PDP) in Chapter 20. Peatland elements have also been incorporated in climate change effort through Chapter 3 Ecological and Environmental Stability in National Climate Change Action Plan for 2011-2028, as well as incorporated into updated Master Plan for Agusan River Basin. A House Bill on peatland conservation and sustainable management has been filed to Philippine Congress and waiting for its deliberation.

The National Action Plan for Protection and Management of Peatland Ecosystem (RPPEG) in **Indonesia** has been updated for 2020-2049, guided by National Regulations and sub-regulations in provincial as well as in district levels. There are specific and comprehensive regulations and sub-regulations related to peatlands developed to govern protection and management of the peatland ecosystems in Indonesia. The most significant progress is in policy level on the issuance of Government Regulation No 71/2014 on Peatland Ecosystem Protection and Management, which was then renewed by Government Regulation No 57/2016. Since 2014, there had been several Presidential regulations and decrees and Ministerial regulations issued to better manage the peatland ecosystems, among them are: Presidential Instruction No 8 Year 2015 on Suspension of New Licence Issuance and Primary Forest and Peatland Government and Presidential Regulation No. 1 Year 2016 on BRG to restore two million hectares of degraded peatland areas in seven identified prioritised provinces. In addition, the Directorate of Peatland Degradation Control (PKG) have been undertaken actions to map all key Peatland Hydrological Unit (PHU, Kesatuan Hidrologi Gambut/KHG) for management and monitoring. There are Ministerial regulations of MOEF, MOA as well as PU-PR for managing the PHUs/KHG, monitoring water levels and rehabilitating peatlands. Monitoring technologies have been improved to enable real time reporting of peatland water levels and fire risk.

In **Malaysia**, KeTSA have been coordinating and monitoring the implementation of the NAPP and National Policy on Biological Diversity 2016-2025 in which peatland is one of vulnerable ecosystems and habitats that need adequate protection and restoration. There has been a national programme since 2009 on preventing peatland fire for tackling haze under coordination of KASA through installation and construction of infrastructures in seven States with fire-prone peatlands in the country. The peatland elements have been reflected on an Environmental Impact Assessment (EIA) Order approved for enforcement since 2015, under the Environmental Quality Act 1974. The Act is being reviewed since 2019 and expected to be updated by 2021. A national SOP for prevention of peatland fire was developed in 2015 and revised in 2019, and a draft Master Plan on peatland fire management was prepared in 2019. MOA generally overseeing agriculture, mapping and good practice for peatland, while MPIC specifically governs policy for main commodity crops planted in peatland (oil palm) for certification and sustainability.

In July 2020, **Brunei Darussalam** launched its National Climate Change Policy in which one of the strategies to increase carbon sink within the country is through reforestation programme by planting 500,000 trees by 2035, including peatland areas. Implementation of the APMS is being governed by the Forest Act, Chapter 46 Laws of Brunei Darussalam. Planning and management of peatlands are subject to the guiding principles of sustainable forest management as stipulated within the National Forest Policy 1989. The Policy emphasises environmental conservation and protection taking into account the need to conserve and maintain biodiversity heritage. The Policy also addresses the need to protect water catchment areas and to prevent erosion and flooding. The country's 30-year development framework, i.e. Brunei Darussalam Long-Term Development Plan a.k.a. Wawasan 2035, stated the national vision to mainstream biodiversity conservation in the government system. The target is to properly protect and conserve the natural environment and cultural habitat in the country, including the peatland area. As peatland has been recognised as ecologically sensitive area, it is mandatory to comply with the Environmental Protection and Management Order 2016 to measure, control and set standard for EIA for development projects. The National Biological Resources (Biodiversity) Policy and Strategic Plan of Action and Fifth National Report to CBD in 2015 recognised peatland ecosystem's roles and proposed for ecological restoration with stakeholder partnership.

In **Thailand**, the peatland elements have been incorporated into various frameworks such as the National Economic and Social Development Plan, Wetland Policy and National Forest Policy. The National Forest Policy stated that a substantial plan for tackling deforestation problem such as shifting cultivation and forest fire including on peatland must be determined. Suppression of forest fire and law enforcement must be clearly stated. All peatland management

have been practised in line with existing laws including the Constitutional Code (1997) which is the highest law with elements of sustainable management of natural resources and environment. Biodiversity conservation and ecosystem management in development and planning have been incorporated in national acts such as the National Parks Act 1961, the National Reserved Forests Act 1964 and the Wildlife Preservation and Protection Act 1992. Thailand has their 5-year rolling Development Plans which includes promotion of natural resources management. Land and natural resources is being managed by and under the authority of the provincial government, who has respective policies and regulations to govern the resources.

Refer to **Annex 9** for specific policies and/or action plans developed for peatlands by AMS.

5.4.3 Lead Agency and Key Stakeholders Working on Peatlands

Under the framework of AATHP, AMS have nominated their respective NFPs to ATFP, which oversee and coordinate implementation of the APMS (see **Annex 6**). The ATFP realises the objectives of the APMS through design, implementation and monitoring of relevant programmes and projects, and facilitate cooperation with relevant partners, and to report the progress of the APMS implementation to COM and COP of the AATHP. Peatland management has never been a stand-alone responsibility of any one government agency, there have been many ministries and agencies sharing the responsibility and playing respective roles to manage the peatlands sustainably.

In **Indonesia**, Directorate of Peatland Degradation Control (PKG) of the Directorate General of Pollution Control and Environmental Damage (*Ditjen Pengendalian Pencemaran dan Kerusakan Lingkungan*/PPKL), MOEF has been nominated as the NFP, with technical support from Directorate of Forest and Land Fire Management of Directorate General of Climate Change (*Ditjen Pengendalian Perubahan Iklim*/PPI) of MOEF, BRG and PU-PR. Other agencies that have been contributing and supporting the peatland management are: MOA to monitor and control zero burning implementation in peatland area, BMKG to provide and develop FDRS in peatland area, and National Institute of Aeronautics and Space (LAPAN) to monitor fire indicator in peatland area. Indonesian National Board for Disaster Management (*Badan Nasional Penanggulangan Bencana*/BNPB) and its local branches (*Badan Penanggulangan Bencana Daerah*/BPBD) have been dealing with land and forest fire including peat fires that are considered disaster after hitting alert level. Beside the government agencies, private sector and local community who are land managers of most of cultivated peatland areas have been engaged in sustainable management.

In **Brunei Darussalam**, the Department of Environment, Parks and Recreation (*Jabatan Alam Sekitar, Taman dan Rekreasi*/JASTRe), is the nominated NFP for the AATHP and related meetings under the Agreement. JASTRe also monitors early warning on haze and air quality situation in the country, working closely with ASMC for haze updates. Peatland management is mainly under the purview of the Forestry Department (FD). The FD is responsible to sustainably manage forests and its resources through the implementation of the Forest Act and National Forestry Policy, which includes peatland area. Other agencies supporting the peatland issues within the country are: Brunei Fire Rescue Department (BFRD), an agency responsible in providing support on suppression of forest fires in the country; and the Brunei Darussalam Meteorological Department (BDMD), an agency responsible to provide weather information and issue any weather advisory or warning if necessary.

Various government agencies and organisations have been involved with the management of peatlands in **Thailand**. Peatland management mainly placed under supervision of Ministry of Natural Resources and Environment (MONRE), particularly the Department of National Park, Wildlife and Plant Conservation (DNP). The Department is responsible to oversee, maintain and protect the peatlands in the reserved/protected areas, from being encroached and rehabilitates the degraded areas. The Forest Fire Control Division of DNP is responsible for peatland fire prevention and control and has worked with support from university and research institutes to establish an FDRS to support northern ASEAN region to undertake prevention measures from fires. The early warning system was developed with a prediction of five (5) days based on available weather information. Peatland management in Thailand is also supported by the Ministry of Agriculture and Cooperatives and its technical departments including the Royal Irrigation Department, which is responsible for regulating and managing water in the peatlands, and the Department of Land Development that is responsible to improve soil condition of peat soils to be cultivatable. The Ministry of Interior shares responsibility in fire prevention and suppression by organizing local fire-fighting volunteers when needed. In addition, they have been in cooperation with the Royal Forest Department in delivering training programmes to the fire-fighting volunteers. In addition, all government agencies nationwide, commercial aviation, and communication networks under the Ministry of Interior have to immediately report all discovered fires to the Royal Forest Department or its sub-units for responsive action.

Department of Environment and Natural Resources (DENR) is the leading agency in peatland management in **Philippines**. DENR is responsible for the conservation, management, and development of the environment and natural resources. Several agencies of the DENR support management of the peatland such as the Biodiversity Management Bureau (BMB) that actively works on biodiversity issues, formulates policies and regulations for the establishment and management of an Integrated Protected Areas System covering national parks, wildlife sanctuaries and biosphere reserves, including the peatland in Agusan Marsh and Leyte Sab-a Basin. Within the BMB, peatland matters are handled by several divisions such as National Parks Division, Biodiversity, Policy and Knowledge Management Division and CAWED. CAWED focuses on sustainable activities on wetlands, including peatland. CAWED supports

inventory, preparation and implementation of the peatland management plan. Ecosystems Research and Development Bureau (ERDB) has been mandated to undertake research in ecosystems and natural resources including carbon stock assessment of peatlands. Forest Management Bureau (FMB) of DENR has been mandated to support effective protection, development, and conservation of forest lands and watersheds including peatland area. Bureau of Fire Protection (BFP) of Department of Interior and Local Government capacitated its field fire suppression teams through a series of trainings on wild land fire suppression, including peatland fire. National Economic and Development Authority (NEDA) recognises the important ecosystem services that peatlands provide in water supply and storage, flood control, carbon storage, and ecotourism. As a national premier socio economic planning, NEDA has been incorporating the peatland elements into the development of action plans and activities. Bureau of Soils and Water Management (BSWM) undertakes special soil survey and investigation activity for possible impacts from converting peatland into agricultural purposes.

In **Malaysia**, KeTSA, KASA, MAFI and MPIC are responsible for implementing peatland related policies, action plans and guidelines. Support from technical departments under the ministries has been coordinated to undertake appropriate measures and actions at local level to ensure prevention of peat fire. KeTSA chairs the National Peatland Steering Committee (NPSC) and FDPM chairs the National Peatland Working Committee (NPWC). KeTSA facilitates the National Council on Biodiversity and Biotechnology, and coordinates and monitors the implementation of the NAPP and National Policy on Biological Diversity 2016-2025 of which peatland is one of key targets for enhanced protection and restoration. It also facilitated the decision by National Land Council in December 2019 to not allow further plantations to be developed on peatlands. KASA coordinates national programme on preventing peatland fire for tackling haze through installation and construction of infrastructures in seven states in the country. KASA is also responsible to ensure that the implementation of the national SOP for prevention of peatland fire developed in 2015 and revised in 2019, and a draft Master Plan on peatland fire management prepared in 2019 to be finalised. MAFI is responsible to oversee agriculture on peatlands, maps peat soil and land use on peatlands, and promote Good Agricultural Practices guidelines (MyGAP). MPIC is responsible for promoting the Guidelines for the Development of a Standard Operating Procedure for Oil Palm Cultivation on Peat prepared by Malaysian Palm Oil Board (MPOB) in 2011, incorporating peatland issues into the Revision of the MSPO Standards that is underway (2019-2021).

In **Cambodia**, the Department of Freshwater Wetlands Conservation of the Ministry of Environment (MOE) is the leading agency, and works with relevant departments and agencies, especially Department of Environment (DOE) that is responsible for management of environment protection and protected areas, and conservation work within the country. In Lao PDR, Department of Water Resources (DWR) of MONRE is the lead agency to manage and conserve wetlands and peatlands, and is being supported by Department of Land Management on land use management and Department of Agriculture to guide agricultural management. Whilst in Myanmar, Environmental Conservation Department (ECD) of Ministry of Natural Resources and Environmental Conservation (MONREC) is the NFP for the ATFP, with technical support by Forest Department, Ministry of Agriculture, Livestock, and Irrigation (MOALI), Ministry of Union Government Office through General Administration Department on land management and rural development, and Inle Lake Management Authority that is responsible for managing the largest peatland in the country.

More information on the main institutions responsible and supporting the peatlands in AMS are given in **Annex 8**.

5.4.4 Expertise Working on Peatlands

Table 11 below shows a preliminary analysis of the indicative presence of national experts in AMS by sectors in relation to peatlands, based on knowledge of the review team members and review of technical publications as well as feedback from AMS.

Table 11: Presence of national experts in AMS by sectors in relation to peatland matters

Country	Peatland management	Peatland fire control	Peatland and Climate change	Development on peatland	Peatland Assessment	Other (Peatland Rehabilitation)
Brunei Darussalam	Yes	Yes	Yes	Yes	Yes	Yes
Cambodia	Yes	No	Yes	No	Yes	No
Indonesia	Yes	Yes	Yes	Yes	Yes	Yes
Lao PDR	Yes	No	No	No	Yes	No
Malaysia	Yes	Yes	Yes	Yes	Yes	Yes
Myanmar	Yes	No	Yes	Yes	Yes	No
Philippines	Yes	Yes	Yes	No	Yes	No
Singapore	Yes	Yes	Yes	No	Yes	Yes
Thailand	Yes	Yes	Yes	Yes	Yes	Yes
Viet Nam	Yes	Yes	Yes	Yes	Yes	Yes

In Indonesia, there is a national organisation called the Peatland Society of Indonesia (*Himpunan Gambut* Indonesia/HGI). More than 400 experts have registered as HGI members that are from universities, ministries and private sectors. The experts and researchers have been actively producing peatland related publications, covering topics on characteristics, development of peat, assessment, peat fire control, peatland and climate change, management and rehabilitation, and utilisation of IoT in peatland management.

There are many experts in Philippines with background of peatland management, peatland fire control, climate change and peatland assessment, from government agencies, research institutes and educational institutions. Philippines have many experts especially in biodiversity in peatland assessment. However, Philippines lacks expertise in the sustainable development on peat and peatland rehabilitation.

5.4.5 Stakeholder Engagement and Partnership

An initial analysis of stakeholder engagement in peatland management by AMS indicates a trend to growing engagement of a range of government agencies from different sectors (e.g. forestry, agriculture, environment, water management, community development), private sector (plantation, forestry and tourism sectors), academia/research, CSOs and communities.

Various activities related to peatland have been actively undertaken in Thailand through stakeholder engagement and partnership. Regional Community Forestry Training Center or RECOFTC, a regional organisation that collaborates with government agencies and civil society in capacity development, undertake research, implement innovative pilot projects, raise awareness on community forestry, and involve in policy processes. RECOFTC has also developed a community-based carbon monitoring web-based application for the local community in Kuan Kreng Peatland Landscape, as part of restoration activities. RECOFTC also developed a guideline on SMART patrolling and forest fire prevention in peat swamp. The guideline published in local language and currently applied on the ground. To support livelihood option, beekeeper activity was introduced to the community. Three community-based learning centers has been developed in Kuan Kreng Landscape. Pikulthong Development Study Center was established to provide support on agriculture, forestry and environment to local communities. Princess Sirindhorn Research and Nature Study Center was established to support conservation, research and awareness of peat swamp forest. Other government agencies and NGOs have also supported the reforestation of peatlands and environmental education.

The government of Brunei Darussalam encourages collaboration with other countries and with international organisations to enhance its capacity and capability in managing its biodiversity in many aspects in particular peatland related research. The Heart of Borneo (HOB) biodiversity conservation project is an initiative led by government and supported by NGOs to strengthen collaboration of three countries namely Malaysia, Indonesia and Brunei Darussalam in the Borneo Island. Forestry Department has conducted several research projects in collaboration with local and international agencies, in particular to understand the role of PSF for better management, protection and conservation. Partnership with Singapore – MIT Alliance for Research and Technology (SMART) had been undertaken in carbon exchange on peat studies. Research on hydrology and fire risk after the construction of canal blocking in Badas PSF had also been undertaken by collaboration between Forestry Department, SMART, University of Brunei Darussalam (UBD), Wetlands International, Stanford University, Nanyang Technological University and Massachusetts Institute of Technology. The research activities on peat swamp forests and the results obtained support and promote the conservation of the country's peat swamp forests and the biodiversity within.

In Philippines, DENR through Conservation and Development Division (CDD) engage the peatland community by facilitating trainings such as Basic Tour Guiding, Enterprise Development and Financial Management and Water Hyacinth Handicraft Making in line with ecotourism programme implementation specifically in Agusan Marsh Wildlife Sanctuary. Through the capability building, the local communities were capacitated to be able to produce products for their sustainable livelihood. Through the implementation of the Ecotourism Development, peatlands are included as ecotourism destination particularly the Caimpugan Peatland. Ecotourism activities are based on the Ecotourism Management Plan. The CDD also facilitates local municipality to identify and promote peatland as ecotourism destinations. University and educational institute is actively undertaken and involve in peatland management in Philippines. Visayas State University and an international NGO namely International Institute for Rural Reconstruction (IIRR) empower local women in Leyte Sab-a peatland area in restoration effort. The effort includes deepening knowledge of the community about peatland, link to climate change, its vulnerability to fire and the various ways to restore the degraded area. IIRR also engaged food security and resilient livelihoods, community driven to managed risk reduction and building collaborative leadership through global learning with all the stakeholders relevant to peatland in Leyte Sab-a.

Peatland management in Indonesia has been conducted in multi-stakeholder approach, involving key stakeholders of central government, local government, private sector (plantation, forestry), universities, research centers, CSOs and local community. Central Government played a very important role in policy formulation and inter-sectoral coordination on peatland management at national level, including peatland inventory and mapping, peatland development, reduction of GHG emission from peatland, and peatland restoration. Local Government played a role in policy formulation and implementation at local (provincial/district) level and stakeholder coordination at local level. Private sector played a role

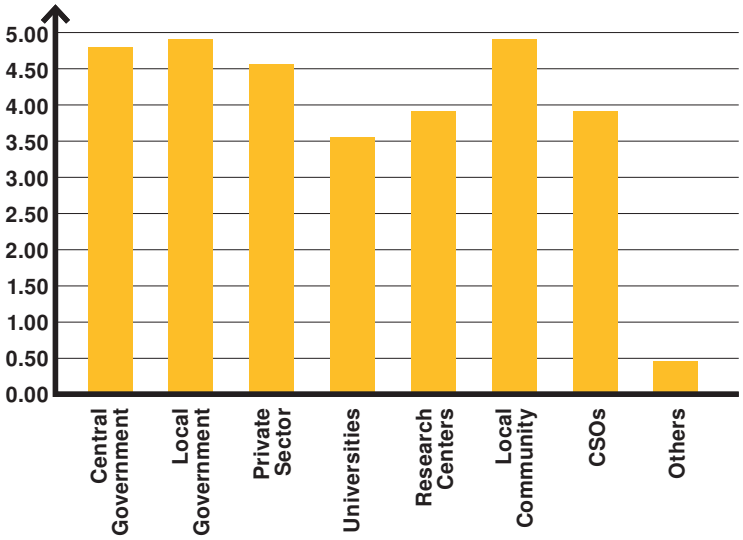
in implementation of government policies related to sustainable plantation and forest plantation in their concessionaires areas, including zero burning implementation, such as: restoration of peatland hydrological function through construction of canal blockings in the concession areas by concession holders (pulpwood industrial plantation and oil palm plantation) and rehabilitation of vegetation in the pulpwood industrial plantation areas by concession holders, including improvement of community livelihood. Universities and research centers played a role in enhancing capacity of human resource in sustainable peatland management, development of innovation and technology for peatland management, and dissemination of research results. CSOs played a role in facilitating and empowerment of local stakeholders, including local community in implementation peatland management at site level. Last but not least, the local community is very important as the spearhead in the field. Therefore, efforts to enhance the capacity of local community in sustainable peatland management are inevitable.

For the engagement of stakeholders in Mekong countries, there have been support from international development partners such as IUCN, Birdlife International, GIZ and GEC through projects. There have been research institutions and universities working together with local communities to undertake studies related to biodiversity conservation and socio-economic to assist local livelihoods.

Based on stakeholder analyses undertaken as part of the APMS review, for Indonesia, seven (7) different stakeholder groups have been identified that are working on peatland, namely: central government, local government, private sector (plantation and forestry), universities, research centers, CSOs, and local community. The analyses revealed that local government and local community (both scored 4.91) play a **Very Important** role in sustainable peatland management, followed by central government (scored 4.82) and private sector (scored 4.55) playing a **Fairly Important** role, whereas other stakeholders such as research centers and CSOs (both scored 3.91) and universities (scored 3.55) play an **Important** role. In addition, there was a suggestion to include media and donor as additional stakeholders to be engaged as media plays a significant role on public awareness and donor provides resources to implement activities/projects (**Figure 9**).

There are significant changes related to stakeholder engagement and partnership during APMS implementation in Malaysia. Relatively, comprehensive stakeholder engagement and partnership in Malaysia have been led by CSOs and NGOs. This work referred to wider scope to include conservation and protection of peatland areas with collaboration of multi-stakeholder with collaboration with government agencies, corporate, CSOs, academia, and local community. There has been available documentation of this multi-stakeholder partnership that have promised viability and sustainability of programme that linked to a long-term plan (e.g. North Selangor Peat Swamp Forest). Federal government recognised the importance of multi-stakeholder collaboration related to conservation and protection of natural resources since implementation of 10th Malaysia Plan (2011-2015) which specifically mentioned wider participation from private sector, NGOs and public, looking into conserving forest cover and biodiversity. In 2011, Malaysia adopted the NAPP, which had direct objective on multi-stakeholder cooperation for peatland management in the country. This element was then included into the National Policy on Biological Diversity (2016-2025).

Figure 9: Importance level[30] of stakeholders in Indonesia involved in sustainable peatland management



FOOTNOTE

30 Score of importance level: 5= very important, 4= fairly important, 3= important, 2= slightly important, and 1= not at all important (Importance level = total score/total responses). Only one response to suggest media and donor as "Others" with score 5

5.4.6 National Monitoring and Evaluation

The Forestry Department in Brunei Darussalam has established a task force called Forestry Department's Disaster Management Committee in 2017 to ensure the safety and well-being of the forest reserves by being responsible for all aspects including fire prevention, mitigation, preparedness, response and recovery through policies, strategies and practices which are guided by National Disaster Management Centre (NDMC), the lead government agency in disaster response in Brunei Darussalam. In addition, the Department conducts routine patrol and monitoring at the Forest Reserve and additional efforts during dry season.

In Philippines, there are no system developed yet for national monitoring and evaluation in peatland management. However, existing biodiversity monitoring and activities has been utilised to gather information related to peatland. The monitoring system applied is Biodiversity Monitoring System (BMS). Since the Caimpugan peatland in Agusan Marsh Wildlife Sanctuary is included in the BMS, where resource use indicator species for conservation are being monitored and recorded using the transect walk and Focus Group Discussion with the community. There are also regular meetings of the Technical Working Group (TWG) on Inland Wetlands. The exchange of information is very important in order to know the extent of activities in research, monitoring, rehabilitation efforts and other initiatives on peatland. This is an effective strategy that avoids duplication of work and effective utilisation of resources, effort and time.

In Thailand, there are no particular national monitoring and evaluation for peatland management in Thailand. However, Thailand is a member to the ASEAN Technical Working Group on Transboundary Haze Pollution in the Mekong Sub-Region (TWG Mekong). Thailand will update all activities related to peatland management including monitoring, fire prevention and rehabilitation in the meetings annually. Several peatland areas have been listed as wetlands of international importance. The national wetland management committee has been established and is responsible for national strategic plan to monitor and evaluate the wetland management.

In Malaysia, there are two common level of Monitoring and Evaluation, Federal and State government. Federal government at the ministry level will play as big role for policy plan with adoption. For example, the NPSC chaired by NRE (KeTSA now) and NPWC chaired by Forestry Department Peninsular Malaysia (FDPM) established in 2011, have been involving relevant state government agencies which formed the State Steering Committee led by state decision authority with assistance of State Forestry Department. In any policy adoption in Malaysia, there will always involve same implementation model. The State Steering Committee for the adopted policy will be the main coordinating platform at the state level. Additional working group (WG) can be established based on need, such as research, inter-agency coordination and others, to smoothen the progress of implementation at local level.

In Indonesia, monitoring and evaluation of peatland condition and management are conducted through systems developed by MOEF and BRG. The MOEF has launched the Monitoring System on Ground Water Level of 0.4m (SIMATAG) since 2019 using mobile application to monitor the GWL to maintain the GWL on 0.4 m or less in concession areas as well as community land with 10,690 monitoring points covering 3.4 million ha as of end October 2020. Indonesia has also identified peatland degradation in protection area approximately 1,516,758 ha (degradation level from moderate to very heavy levels) and in cultivation area approximately 609,432 ha (degradation level from moderate to very heavy levels). Peatland condition is also monitored by the SIPALAGA (Peatland GWL Monitoring) of BRG supported by BPPT (National Agency for the Assessment and Application of Technology). As per December 2018, BRG had deployed 142 units of GWL monitoring equipment in 7 restoration priority provinces (Riau-47 units, Jambi-13 units, South Sumatera-20 units, West Kalimantan-13 units, Central Kalimantan-42 units, South Kalimantan-5 units and Papua-2 units). SIPALAGA has a function from data recording of GWL to telemetry based real-time data publishing at the website. The system records GWL, peat moisture content, and rainfall every 10 minutes daily. It is expected to support historical/series data and information of GWL and related parameters.

6. SWOT AND PEST ANALYSIS

6.1 SWOT Analysis

A preliminary analysis on strength, weakness, opportunity and threat/challenge (SWOT) in relation to peatlands was undertaken in June-July 2020 for each AMS, based on inputs provided in response to the questionnaires and review of documents. Follow-up discussions were held in July-August 2020 with the APMS focal person and/or ATFP NFPs to verify the preliminary analysis. With verification and agreement from AMS, the analysis is summarised here.

6.1.1 Situation in Different Sub-Regions of ASEAN

For the purpose of analysis, the AMS have been divided into two main groups:

Group A: AMS with smaller but unique peatland ecosystems with biodiversity and nature conservation as a key driver (Cambodia, Lao PDR, Myanmar, Philippines and Viet Nam)

Group B: AMS with larger peatland area with peatland management and fire prevention as a key driver (Brunei Darussalam, Indonesia, Malaysia and Thailand)

These different groups of AMS have different characteristic and different drivers for peatland management. This is elaborated further below:

Group A: AMS with smaller but unique peatland ecosystems with biodiversity and nature conservation as a key driver (Cambodia, Lao PDR, Myanmar, Philippines and Viet Nam)
AMS in northern and eastern ASEAN tend to have relatively smaller peatland ecosystems which may occur as portions of larger wetland ecosystems. These AMS may not traditionally have a specific local terms or definitions for “peat” and, thus may not yet have developed specific peatland policies. Some of these countries may have had more extensive peatlands in the past – but they were not recognised as being of significant ecological importance and many were degraded or lost. In Viet Nam for example – many peatlands were completely dug up to extract peat for use as organic fertiliser or for soil improvement, while others were severely degraded in fires – leaving only a relatively few natural peatlands. In Philippines, peatlands were designated as alienable and disposable lands (as they were generally flat and deemed appropriate for agriculture).

However, remaining peatlands in this sub-region of ASEAN are often unique and are of regional and international significance for biodiversity and nature conservation. Such unique peatlands include peatlands within mangrove forests in coastal area of Cambodia; calcareous mound springs in northern Myanmar; floodplain and lowland peat mosaics in southern Viet Nam and Beung Kiat Ngong in Lao PDR; as well as lake and marsh basin peatlands in Inle Lake Basin in Myanmar and Agusan del Sur of Philippines.

In many cases, these areas have been managed and monitored under framework of National Biodiversity Strategy and Action Plans (NBSAPs) as wetlands and/or protected areas. Some of these areas do have management plans especially those located within wildlife reserves and national parks.

These AMS are generally still in the process to conduct more assessments and ground survey to identify and describe peatland areas within their countries. Lack of information on ecology, biodiversity and natural resources in the peatland ecosystems has been a challenge in managing the peatland in sustainable manner; and smaller sites are vulnerable to disruption of hydrology, peat mining or fire. Therefore, further studies are needed in order to support planning and utilisation of the resources, and to avoid conflict and degradation. Integrated management approaches are highly recommended as the peatlands may lie within larger wetland ecosystems. In general, there are different stakeholders have been developing and utilising the peatland areas and/or its resources, e.g. non-timber forests products (reeds and sedges for traditional handicrafts and ingredients for local delicacies), floating mats for agriculture and aquaculture, extraction of peat materials for horticulture planting medium and to generate fertiliser etc.

Through the improvement of knowledge and understanding the importance of the peatland ecosystem in these countries, government officials and local communities will become more aware of peat functions and values to the society and environment. Communication, education and public awareness (CEPA) programmes are needed to educate targeted stakeholders in order to improve protection and management of the limited peatland ecosystems. Such actions can be taken with multiple stakeholder engagement including media, research institutes, private sector, local communities and local government.

Group B: AMS with larger peatland area with peatland management and fire prevention as a key driver (Brunei Darussalam, Indonesia, Malaysia and Thailand)
AMS in the southern portion of ASEAN tend to have more extensive peatlands covering a larger portion of their countries. These AMS have a longer history of assessing and managing peatlands. One of the common challenges facing these countries is the degradation of peatlands leading to extensive fires and transboundary smoke haze. One of the main focuses of peatland management in these AMS has been promoting sustainable peatland management and preventing peat fire and haze. These AMS tend to have peatland-related policies or regulations, or at least a NAPP. There is a longer history of peatland research and management and technical working groups or task forces have been formulated to enhance peatland management or prevent peatland fires. Standard operating procedure in suppressing and controlling the peat fires have developed and being referenced. Over the past 10 years, there has been a change in focus from peatland fire-fighting to fire prevention.

These countries have been actively working together at the sub-regional levels to come with common strategies on peatland fire prevention and control (such as through the MSC/TWG on Transboundary Haze Pollution). Integrated management of peatland with emphasis on landscape approach or PHU have been introduced. FDRS has been combined with patrolling and early detection programmes. In Indonesia, a multi-stakeholder, integrated patrolling programme combines army, police, local community and other stakeholders while in Malaysia and Thailand, community-based fire patrolling assists local government in preventing fire.

Peatlands in these AMS have been developed in the past for agriculture, forestry and plantations but recently integrated peatland and water management frameworks have been introduced. Common management measures include canal blocks, tube-wells, water level monitoring system and developing BMPs for peatland utilisation. Significant areas in these AMS have been designated for conservation. There are still challenges in scaling-up the peatland restoration and management, and developing economically alternative options such as paludiculture.

6.1.2 SWOT Analysis

A generalised SWOT analysis is given below to lay out the main strengths, weakness, opportunities and threats in relation to the implementation of the APMS.

Strengths
There has been significant achievement by AMS in APMS implementation. Generally, all the AMS have provided their commitment in APMS implementation. Peatland elements have been mainstreamed into existing national policies and/or development plans/action plans. Each AMS has also established institutional framework to govern peatland issues. Even though knowledge regarding peatland is still low in certain countries, the awareness has been enhanced compared to before the establishment of the APMS.

Indonesia, for example, has shown very strong commitment in implementing sustainable peatland management. Significant progress has been made in the policy level, with the suspension of new licence issuance for development on primary forest and peatland, which was first issued in 2011 and then made permanent in 2020. The issuance of the Government Regulation No 71 in 2014 on Peatland Ecosystem Protection and Management, which was then renewed by Government Regulation No 57 year 2016 has been a very key step in ensuring sustainable peatland management. The establishment of the Peatland Directorate of the MOEF in 2014 and the establishment of the BRG were key milestones. Indonesia has since implemented one of the most ambitious peatland management or restoration programmes worldwide through the mapping of 24 million ha of PHUs in the country and establishing a long-term strategy till 2049. It has also launched a plan for rewetting and restoration of 2 million ha of peatlands.

In Malaysia, progress has been made in adopting policies to stop further development of plantations in peatland areas and to develop integrated management frameworks for key peatland landscapes, multi-stakeholder partnership approaches have been introduced for peatland management involving federal, state and local governments together with private sector, CSOs and communities to better manage peatlands and prevent fires. The national programme on peatland fire prevention has invested significantly in reducing the risk of peatland fires in key fine prone sites.

The strong institutional framework is also supported by active involvement of research organisations, education institutes and non-governmental agencies. Various scientific and biodiversity research related to peatland have been undertaken. Research in relation to carbon sequestration was also conducted to facilitate support for peatland management and restoration in climate change mechanisms.

Active participation by private sector can be seen from the development of BMPs and internal regulations for oil palm development on peatland. The RSPO barred its member organisations from further development on peat and set key standards for best management practices for existing peatland plantations. Such approaches have also been integrated into government led schemes such as ISPO and MSPO. The plantation companies are also committed to adhere to zero burning policies and hydrological management rules. The private sector is also actively involved in peatland conservation through their CSR programmes, hence various funds by private organisation have been documented during the implementation of APMS.

Various laws and action plans have also been developed by AMS. Philippines have so far enacted three local ordinances that are designed to protect peatland. Based on Ecotourism Management Plan, Caimpugan Peatland particularly was identified as ecotourism attraction site that could contribute to economic development. Many of the peatland areas are promoted to conservation area, wetland importance or Ramsar site. In the Mekong region, a significant number of peatlands have been recognised within the protected area system and additional management measures introduced. Peatland rehabilitation approached were demonstrated well in Thailand, Viet Nam, Philippines as well as Indonesia and Malaysia.

Weaknesses

Despite strong peatland management framework at regional level, the APMS is unevenly implemented at national and local level in AMS. There is still weak inter-sectoral coordination at national level and conflict of interest among institutions in some countries in terms of specific capacity, role limitation and varies concern in peatland ecosystem management. There are also lack of capacity in monitoring the implementation progress of the APMS at national level especially in countries with smaller peatland areas.

Several countries integrate peatland into broader national strategies, policies and planning processes, however with minimal focus on peatland issues such as rehabilitation and addressing unsustainable practices. Although many peatland areas have been converted into national park and conservation area the areas protected do not meet the international targets under the CBD and there are still minimal action plans or research linked to climate change adaptation in place.

Further weakness is lack of consistent budget at national level, which greatly limits the impact of APMS in the medium and long-term. Inventory and assessment of peatland are showing slow progress in most AMS especially AMS with smaller peatland areas due to this limitation. There are limited available national data on peat soils including the distribution and land use, particularly for AMS in the northern ASEAN region. Lack of manpower and technical capacity to implement APMS is also a common issue in AMS. Therefore, more collaboration with third party in order to support national agency are very important. The lack of budget also affected the capacity and preparation of suitable tools in preventing and controlling peatland fires.

At the local level, BMPs of sustainable peatland management are not well documented. The level of knowledge transfer among AMS are still low. Although many research and technology advancement have been achieved in several countries, the results and findings are not distributed widely especially related in monitoring and early warning system for forest fire or peatland restoration techniques. In addition, there is also lack of information being provided by AMS to regional and/or international platforms, such as weather data that are contributing to the early warning system e.g. hotspot and FDRS for the ASEAN region.

Land conflict is a common issue in AMS, which also leads to different interests by different stakeholders and complicates the peatland management implementation. In some countries, peatlands are classified as “Alienable and Disposable”. Due to lack of knowledge in peatland properties, the peatlands have been identified as normal land type in land use resulted in inadequate management and caused irreversible impact in degrading the peatland ecosystem. Less attention given to peatlands might also be due to limited documents published in the local language. In contrast, achievements made in peatland management may remain at the local and national levels when it is published only in local language, and will not able to reach the broader ASEAN or global community.

Recognising and strengthening the link of local communities to peatlands is critical in transforming the management approaches. Although there has been a significant increase in the community’s awareness since the establishment of APMS, awareness in sustainable management practices, fire prevention and addressing the effects of climate change is still low in many countries. Therefore, peatland degradation and fire problem keep recurring annually. Participation by stakeholders and local community in integrated peatland management needs to be strengthened.

Since peatland management attracts a lot of attention at global level, many regional and international stakeholders are involved in programmes related to peatland. Various responses from regional and international stakeholders showed a lack of acknowledgement of and exposure to the APMS even though the activities that they support are still aligned with the objectives of APMS. The same may be true for agencies from AMS working in different sectors such as agriculture, plantations or economic development that may not be familiar with the APMS framework.

Opportunities

Given the significant advances made in peatland management by some AMS like Indonesia in recent years – there are a lot of opportunities for sharing experiences. Information sharing is suggested on sustainable peatland management, new and updated strategy for peatland management, mainstreaming of peatland ecosystem management based on PHU, funding mechanism, strengthening multi-stakeholder collaboration, and enhancing the role and function of local government agencies. This would enhance technology transfer and capacity development, which fulfil several focal areas in APMS.

There are opportunities in mainstreaming peatland management into AMS’ national development processes through financial instruments, policy governance and institutional framework. It is also important to scale up gender mainstreaming in peatland management, especially at local level.

There are also opportunities for private sectors' contribution, such as the option to participate in updating peat map in their concessions (peat depth, water levels, etc.), and to promote and implement sustainable peatland practices in their concessions and consider co-benefits and in-situ and ex-situ conservation. Other opportunities may be applied to multiple stakeholders such as incentives for zero burning practices and sustainable peatland management. Paludiculture and integrated farming should be introduced as alternatives to increase the economic value of peatland. From an economic perspective, many peatland areas are promoted as eco-tourism and important wetland areas to encourage visitors and generate revenue, such as peatlands in Koh Kapik Ramsar Site and Botum Sakor National Park in Cambodia, Inle Lake in Myanmar or Princess Sirindhorn Wildlife Sanctuary in Thailand.

As for academician/researchers, more research is needed on zero burning technology for local communities, climate change impacts and adaptation approaches, carbon stock and new mapping and monitoring technologies. Study on peatland's biodiversity also need to be enhanced. Guidelines for appropriate cultivation techniques for crops on rewetted peatlands are in demand. Research and Development must be focused on applied researches for greater impact to the community on the ground. Education institutions need to develop comprehensive curriculum that supports sustainable management of peatland ecosystem, as well as increase competency of teachers/lecturers and research centers to expand the capacity of research, so that it can be used as reference by the policy makers.

In terms of funding, there are growing opportunities for support from the global supply chains of various peatland related commodities such as oil palm. There are a number of new initiatives and financing mechanisms to encourage application of BMPs for existing plantations and encourage the conservation of remaining peatlands rather than their conversion to further plantations. Given the immense global importance of peatlands in the region for carbon storage, there are growing opportunities to secure investments for peatland conservation and emission reduction from climate-related financing.

Threats/Challenges

Significant threats to peatlands are related to climate change and extreme droughts linked to conditions such as El-Niño and the Indian Ocean Dipole. The traditional dry season in northern ASEAN region occurs during November till May, while for southern ASEAN region, the traditional dry season occur around February to April and June to August. The dry season worsen with El Niño and increased the likelihood of forest fire occurrence. Climate change will lead to higher temperatures and lower dry season rainfall throughout ASEAN. This will lead to more frequent peat fires. Peat fires not only destroy the ecosystem but also contributes to the increase of GHG emission and lead to loss of peatland biodiversity, and can potentially result in transboundary haze pollution affecting the health of people in the region. In addition, it gives a negative impact on the economy. Huge budgets need to be spent for fire-fighting activities. Regional SOP and early warning system have been developed to prevent and minimise the land and forest fire impacts in this region. However, the awareness and knowledge to take advantage of this system is still low.

Climate change is also predicted to lead to more extreme rainfall events during wet seasons and strengthened storms and typhoons. AMS like Philippines are particularly prone to disasters especially typhoon due to its geographical location. It is among the 5 most vulnerable countries to climate change. Peatlands which have been over-drained will rapidly subside and this will disrupt their natural flood mitigation properties and lead to increased flooding in the peatlands and adjacent areas. This is a threat to sustainability of peatlands activities in the country as subject to unpredictable climate related events. Many of the sustainability activities may be affected by storms and floods included areas replanted by the local community groups. The need for adaptation to climate change has not been widely recognised among AMS, few of which have developed National Adaptation Plans. This is linked to the fact that little research has been undertaken related to climate change related impacts on peatlands in the region.

Apart from threats by climate change, illegal activities on peatlands including hunting of wildlife or logging, both will lead to loss of biodiversity in the long run. It could also increase the risk of forest fires. Another challenge in peatland management comes from limited information on peatland condition/characteristic (depth, border delineation, soil moisture, etc.). This lack of information can lead to misunderstanding in the direction of peatland management implementation.

Low impact cultivation on peatlands is a big challenge when stakeholders prefer to cultivate traditional crops with known or high economic values, and are not aware of the longer term negative impacts or the viable alternatives. Development of agriculture in peatland is a traditional option in many parts of the region. Irreversible peatland subsidence due to drainage, as in the case in Beung Kiat Ngong and other peat swamps in Champasak, Savannakhet, and Vientiane (Lao PDR), is a threat that will bring more damage when the flood comes. Therefore, coordination among all stakeholders within the same peatland landscape needs to be strengthened, to ensure sustainable and effective peatland management implementation.

Another threat is the low understanding of sustainable peatland management, that peatland is not put as a priority when it comes to national development, amidst the importance of economic needs. Bureaucracy at the national level also contributes to the challenges to distribute the funds for programmes related to peatland management, which can lead to a lack of funds for future APMS implementation. Low transparency and clarity in the national institutional framework also caused difficulties in identification of relevant agencies by regional/international funders. Therefore, regional funders will only be focusing more on the continuation of the existing programmes. Regular changes of national legal and institutional frameworks that regulate and manage peatland matters will also affect the smooth implementation of APMS.

Unforeseen threats also come from pandemics such as the current COVID-19 that will directly and indirectly affect the chain in peatland management and APMS implementation. Destruction of peatland ecosystems will affect the natural balance and may lead to the development of more diseases and pathogens. Significant solutions to global health problems such as anti-cancer drugs isolated from peat swamp forest trees in Malaysia have been jeopardised when the only known stand of the trees containing the bioactive compounds were destroyed by logging and land clearing.

6.2 PEST Analysis

In general, all AMS support the extension and enhancement of the APMS as well as further developing, extending and implementing respective NAPP. The feedback is summarised using PEST (political, economic and environmental, social and technological) analysis, as below:

Political will

AMS through the AATHP and ASEAN Summit have regularly reiterated their collective commitment to sustainable management of peatlands and their associated biodiversity and preventing peatland degradation, fires and haze. Cambodia, Lao PDR and Myanmar will be developing respective NAPP through support of the ongoing Mekong Peatlands Project; Malaysia and Philippines plan to extend and update their NAPPs through support of SMPEM and SUPA Programme; and Indonesia with the support of national budget and SMPEI project had developed a long term Protection and Management of Peatland Ecosystem Plan for 2020-2049 to guide subsidiary provincial and local plans to be developed for medium term (rolling five year plans). Similarly, State Action Plans for Peatlands (SAPP) are to be developed and initially implemented in four participating states in Malaysia. The AMS indicate their support to strengthen governance of peatland utilisation and conservation, and improve enforcement. AMS have also indicated that they strongly support the APMS and look forward to its further development.

Regionally, AMS share the same objective to achieve ASEAN Vision 2020 for a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of its natural resources, and the high quality of life of its peoples. Under ASEAN umbrella, peatland management is governed by the AATHP with its frameworks such as COP to the AATHP, MSC and TWG, both for southern and northern ASEAN sub-regions.

Generally, most AMS have incorporated peatland elements into their NBSAP or National Wetland Policies. The importance of habitat and biodiversity management within peatland area and the protection of ecological functions and services processes are recognised internationally through the CBD. Some AMS such as Indonesia, Malaysia and Viet Nam have also included peatland elements into Nationally Determined Contributions (NDC) under the Paris Climate Agreement of the UNFCCC as one of the key indicators for reducing GHG emissions.

Regulatory frameworks and legislation need to be in place to ensure sustainable peatland management is well implemented. Therefore, national institutional arrangements and mechanisms at national and local levels are key to the implementation of sustainable management of peatlands. These have been possible with several frameworks such as NAPP, national land laws and provincial/municipal policies or regulations. Six (6) AMS have developed their NAPPs as a guiding document on peatland management and to gain awareness of the importance of peatland ecosystems. Every AMS has nominated NFP for Peatland that have been facilitating and updating all activities being undertaken with support from stakeholders.

Environmental and economic benefits

Integrated management plans or management according to PHU (similar to landscape approach) as well as involvement of multi-stakeholder (government agencies, CSOs, private sector, academia and local communities) is widely proposed. Management of peatland should be through smart partnership with zoning system for sustainable peatland utilisation. Protecting peatland ecosystems needs to be balanced with economic value of managing the ecosystems. Ecosystem services need to be further appreciated and recognised.

Peatlands provide livelihood opportunities to local communities and national economies. The peatlands provide source of food, medicines, timber, amenity and shelter. Assessment made to peatland community found that several traditional handcrafts have been produced through creativity by using wood and leaves for weaving (**Figure 10**).

Figure 10: Traditional handicrafts from local community living in and adjacent to peatlands

Intact peatlands provide economic benefits through environmental services such as carbon storage, water



regulation, biodiversity maintenance and eco-tourism. Nowadays, conservation areas have become more important for tourist attractions because they have the diversity of flora and fauna, cultural and unique life of local people. Many peatland areas especially in northern ASEAN region have been promoted to National Park or Ramsar site and contribute to the country's tourism industry.

Rehabilitation activities at degraded peatland areas have been encouraging the community–based nursery establishment. Seedling buy-back concept was introduced to trade the tree saplings at these community nurseries. Through this concept, the rehabilitation work has been assisting the locals with to generate household's income. The communities collect and raise the seedlings and/or wildings which then sell to the government or interested stakeholders for tree planting activities at the rehabilitation sites (**Figure 11**).

Figure 11: Community-based nursery established to support peatland rehabilitation

Social awareness and engagement

Public awareness on importance of peatland ecosystems should be enhanced. Local communities should be educated and engaged in the activities on peatlands in particular those who live in the peatlands or are depending on the peatland resources. On the ground activities with hands on practical behavior change is important, especially changing the traditional practice of using fire for land clearing and preparations prior to planting – this is not only risking spread of uncontrolled fire that will destroy land and threaten human lives, but also putting the entire peoples' health at risk from long term smoke haze. Community empowerment through community-based fire patrolling programme is an important model for engaging the local community in peatland fire prevention and sustainable use of peatlands. Incentive system could be developed for villages that have applied zero burning practices.

It is important to increase the knowledge, skills and understanding of all stakeholders to promote the actions needed for responsible peatland management. Stakeholders involved include government agencies, research institutes, education sector, private sector, NGOs/CSOs, local communities and individuals. There is a need to understand different interests by the stakeholders especially those that sharing the same geographical landscape.

Since the development of APMS in 2006, many CEPA activities have been undertaken to promote benefits of the peatland ecosystems and its management. Peatland Ranger Programme is an environmental education programme with a mission to educate school children on the importance of environmental protection on peat swamp forest in Malaysia. Many trainings with school participation, workshops, and annual camp for youth groups to introduce them the tropical peatlands ecology.

The engagement also became more creative with some awareness materials produced in innovative and creative forms such as comics and cartoon as well as accessible online and reader-friendly (**Figure 12**). This approach is more friendly and suitable for all ages.

Figure 12: Several comics published with regards to peatland awareness for community

Technology support and exchange

The regional level exchange visits and peer learning programmes had been useful and supported local authorities and local communities to learn from peer groups within the region, which have led to significant replication. The local government officials and local communities from Philippines undertaken peer learning programmes to Central Kalimantan, Indonesia and Nakhon Si Thammarat, Thailand replicated the integrated good practices learned when they returned home to their communities. The communities with the assistance from Local Government promoted the Buying Living Tree Scheme which then integrated to the National Greening Programme; established floating gardens technology and applied Sorjan farming technique to cultivate degraded peatland with increased agricultural yields.

APMS promote exchange of expertise in addressing peatland management issues regionally. Regional Haze Training Network and ASEAN Haze Fund developed under the umbrella of the AATHP had supported some of the training programmes organised within the region.

In addition, more scientific research studies in peatlands are needed to support policy makers to make sound decisions when formulating policies and developing action plans. Considering that peatlands are critical for both climate mitigation (as the largest terrestrial carbon store in ASEAN) and adaptation – peatlands need to be incorporated into climate change strategies of AMS. Linkage with the United Nations Sustainable Development Goals (UN SDGs) are also needed.

Peatland management should be based on rigorous and verifiable scientific knowledge and practical experience. It is best integrated with regular monitoring action to provide feedback on changes in relation to baseline values and information for improving management decisions. Establishment of APMS has enhanced the use of technology in peatland management in many areas such as research, prevention, monitoring and evaluation, and reporting.

Since the establishment of APMS, peatlands have gained wide attention from researchers at national, regional and international levels. Peatland assessment has been undertaken using latest technology from Light Detection and Ranging (LiDAR), thermal, optical and radar satellite to support ground investigation at larger scale. Research publications using remote sensing technology were published to measure peatland depth, carbon storage, area delineation, burned mapping also other peatland assessment and monitoring purposes.

Real-time monitoring activity on peatland has become simpler with the help of technology. Several important peatland areas have been monitored using drone at local level such as in Agusan Marsh Wildlife Sanctuary or North Selangor Peat Swamp Forest for any illegal activity and fire prevention measures or in Leyte Sab-A basin to map the surface terrain of the peatland to identify domes and hydrological flow. Monitoring activities also integrate with hotspot information and ground patrolling. Thermal hotspot information is often used in ASEAN used as an indicator of fire occurrence and detection in many countries. In addition, mobile phone applications have been built to disseminate early warning information to land managers to support decision making process in fire prevention and preparedness on fire-fighting and control.

Regionally, there has been much progress to develop a peatland fire prediction and early warning system (including FDRS), as listed an Action of the APMS to reduce and minimise occurrence of fire and associated haze. The FDRS was developed with technical support from Canada with the aim to monitor forest and vegetation fire risk and supply information that assists in fire management. This system has encouraged more information sharing activities and regional cooperation between AMS. APMS has played a role in enhancing and promoting the system to AMS. This has encouraged the development of several other FDRS regionally with Indonesia established their FDRS with incorporation of soil moisture elements in their algorithm. In addition, Thailand also developed a FDRS to support five Mekong countries with the input from MODIS data.

7. ASSESSMENT OF APMS VERSUS KEY CRITERIA

Analysis of the information collated through the APMS Review was made against five criteria – namely:

- Appropriateness/relevance
- Effectiveness
- Efficiency
- Impact
- Sustainability

7.1 Appropriateness/Relevance

The assessment has indicated that the APMS is still very relevant to the ASEAN and international frameworks and plans as described in **Table 12**.

Table 12: Relevance of APMS to ASEAN and international frameworks

Framework	Relevance of APMS
ASEAN Frameworks	
ASEAN Vision 2020 and its medium-term plans	ASEAN Vision 2020 specifically calls for "…a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of its natural resources, and the high quality of life of its peoples…" The APMS clearly contributes to the achievement of this vision.
ASEAN Socio-Cultural Community Blueprint 2020	Under the "Sustainable" characteristic, the first key result area of the Blueprint is Conservation and Sustainable Management of Biodiversity and Natural Resources; and the strategic measures relevant to the APMS in this regard are: - Enhance policy and capacity development and best practices to conserve, develop and sustainably manage marine, wetlands, peatlands, biodiversity, and land and water resources; and - Strengthen regional cooperation on sustainable forest management in the context of forest fire prevention and control, including through the implementation of the AATHP, to effectively address transboundary haze pollution. The APMS is clearly relevant to the Blueprint.
ASEAN Economic Community Blueprint 2025	ASEAN recognises the importance of sustainable economic development as an integral part of the region's growth strategy. Protection of the environment and natural resources supports economic growth and vice versa (Section B.8. Sustainable Economic Development). Under the section on Tourism (C.6. point ii), in particular, among the key measures to achieve a more sustainable and inclusive pattern of ASEAN tourism are: - Ensure safety and security, prioritising protection and maintenance of natural and cultural heritage; and - Increase responsiveness to environmental protection and climate change. Under the Section D. A resilient, inclusive, people-oriented and people-centred ASEAN that engages and strengthens multi-stakeholder relationship include the role of private sector (D.2.), public-private partnership (D.3.), narrowing development gap (D.4.), and contribution of stakeholders on regional integration efforts (D.5.). The APMS has contributed to the protection of the environment and the reduction in transboundary haze which has had a direct economic and health benefit to those in the ASEAN region.
ASEAN Agreement on Transboundary Haze Pollution (AATHP)	The APMS is very relevant to the AATHP, as the objectives of the APMS are in line with the objective of AATHP, which is to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, through concerted national efforts and intensified regional and international co-operation. - General Objective 2: Address Transboundary Haze Pollution and Environmental Degradation – To reduce the incidence of peatland fires and associated haze in the region, and to enhance prevention, control and monitoring through collective efforts among the AMS; - General Objective 4: Promote Regional Cooperation – To promote and enhance regional cooperation through information exchange and sharing, research and partnership in implementation of activities as well as in generating resources. Progress with the APMS is reported directly to the COM and COP of the AATHP through the ATFP.
ASEAN Haze-Free Roadmap	The APMS is very relevant to the Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation (2016-2020) (ASEAN Haze-Free Roadmap) as the "Sustainable Management of Peatlands for Peatland Fires Prevention" has been stated as one of the eight (8) strategic components in the Roadmap and so the APMS is directly aligned with the roadmap implementation. Strategy 2 of the Roadmap: Sustainable management of peatlands through implementation of the APMS to prevent large-scale peatland fires.
ASEAN Heritage Parks	Nine (18%) out of forty-nine ASEAN Heritage Parks contain peatlands including: Tasek Merimbun National Park, Brunei Darussalam; Gunung Leuser, Kerinci Seblat, Lorentz and Way Kambas National Parks in Indonesia; Kinabalu National Park, Malaysia; Inle Lake Wildlife Sanctuary, Myanmar, Agusan Marsh Wildlife Sanctuary, Philippines; and U Minh Thuong National Park, Viet Nam. There is considerable future scope for declaration of additional AHPs containing peatlands and enhancing management of peatlands within existing AHPs.

Framework	Relevance of APMS
Global Frameworks	
UNFCCC	The APMS is very relevant to the UNFCCC as peatland globally are the most important terrestrial carbon store on the earth, storing 25% of soil carbon and 50% more carbon that the biomass of all the world's forests combined. In ASEAN, peatlands are also the largest terrestrial carbon store. Management of peatlands is also critical to reducing GHG emissions as well as adaptation to climate change. All the AMS are parties to the UNFCCC. Peatlands have been recognised in national reports and strategies related to the UNFCCC in Malaysia and Indonesia.
Paris Climate Agreement (PA)	The APMS is very relevant to the Paris Climate Agreement (PA) which calls for significant reduction in emissions between 2020 and 2030 to limit the increase in global temperatures to 1.5 degrees Celsius. Emissions from drainage and fires from peatlands in the ASEAN region are estimated to generate between 1.5 to 2 billion tonnes of CO2 per annum equivalent to about 5% of global anthropogenic CO2 emissions. Malaysia and Indonesia have both highlighted the importance of reducing peatland emissions as part of their NDC under the PA. Viet Nam has committed to achieve a 45% forest cover by 2030 including for Melaleuca forests in peatlands. Philippines is also piloting climate mitigation actions in peatlands.
Convention on Biological Diversity (CBD)	The APMS is very relevant to the CBD as peatlands in ASEAN have unique biodiversity as the ecosystem and species levels. There are more than 250 species of freshwater fish restricted to peat swamp forests in Southeast Asia including the smallest vertebrate species in the world and a broad diversity of plants, mammals, and invertebrates. Peatlands have been highlighted in national reports to CBD as well as the NBSAPs from several AMS. The Malaysian National Policy on Biological Diversity (2016-2025) specifically mentions the need to extend the Malaysian NAPP for a further 10 years to 2030. Philippine Biodiversity Strategy and Action Plan 2015-2028 (PBSAP) includes reference to biodiversity conservation in peatlands and the importance of it being mainstreamed. U Minh Thuong and U Minh Ha National Parks where peatland ecosystems are protected were highlighted in the Viet Nam National Report to CBD in 2013. Coastal peatland in mangrove ecosystem is being governed under Cambodia National Biodiversity Strategy and Action Plan (2002). While Beung Kiat Ngong peatlands are being governed under Lao PDR National Biodiversity Strategy and Action Plan (2016 - 2025). The Indonesian Biodiversity Strategy and Action Plan (IBSAP) 2015-2020 includes a priority for the management of essential ecosystem area, which include: karst ecosystem, wetland ecosystem (peatland, mangrove, lake, riparian, swamp). Addressing challenges of safeguarding biodiversity, ecosystem services and mainstreaming biodiversity in all sectors has been a national priorities for CBD in Thailand. Several peat swamp area with diverse biodiversity have been designated as protected areas such as Sirindhorn Peat Swamp Forest Nature Research And Study Centre in Narathiwat Province. The APMS is relevant to seven out of the twenty Aichi Targets for the CBD Strategic Plan for Biodiversity 2011-2020 as follows: • Target 1. Awareness of the values of biodiversity increased by 2020 • Target 2. Biodiversity integrated into national and local development and poverty reduction strategies and planning process • Target 4. Government/business/stakeholders taken steps to achieve/implement plans for sustainable production and consumption within safe ecological limits • Target 5. The rate of loss of all natural habitats is at least halved by 2020 • Target 7. By 2020, areas under agriculture, aquaculture and forestry managed sustainably, ensuring conservation of biodiversity • Target 11. By 2020, at least 17% of terrestrial and inland water, especially areas of particular importance for biodiversity and ecosystem services are conserved/managed effectively. • Target 14. By 2020, ecosystems that provide essential services are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable • Target 15. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced • Target 20. By 2020, the mobilisation of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources should increase substantially from the current level
UN Environment Assembly (UNEA)	A resolution on the Conservation and Sustainable Peatland Management was proposed by Indonesia and adopted by UNEA in UNEA-4 Assembly in March 2019. The APMS is a key framework to support the implementation of this resolution.
Ramsar Convention on Wetlands of International Importance	The Ramsar Convention of Wetlands of International Importance (Ramsar Convention) is the main global convention for wetland conservation and wise use. Most of the AMS are parties to the Ramsar Convention. Peatlands are the most extensive wetland systems in the ASEAN region covering nearly 23 million hectares (Ha). The Ramsar Convention through various decisions has strongly emphasised the importance of peatlands as well as the need for regional collaboration to address common issues. A total of 19 peatlands in ASEAN have been declared as Ramsar Sites (Koh Kapik and Associated Islets and Stung Sen[31] in Cambodia (2); Berbak National Park, Sembilang National Park, Tanjung Puting National Park, Rawa Aopa Watumohai National Park, and Danau Sentarum National Park,

FOOTNOTE

31 There are potential peatland areas in Stung Sen Ramsar Site but need further confirmation and survey

Framework	Relevance of APMS
	in Indonesia (5); Beung Kiat Ngong Nature Reserve in Lao PDR (1); Lower-Kinabatangan-Segama Wetlands and Tasek Bera in Malaysia (2); Inle Lake Wildlife Sanctuary in Myanmar (1); Agusan Marsh Wildlife Sanctuary in Philippines (1); Princess Sirindhorn Wildlife Sanctuary, Kut Ting Marshland, Ko Ra-Ko Phra Thong Archipelago, and Kuan Ki Sian of the Thale Noi Non-Hunting Area Wetlands in Thailand (4); and U Minh Thuong National Park, Tram Chim National Park, and Lang Sen Wetland Reserve in Viet Nam (3). There are a large number of other candidate peatland sites in the region suitable to be declared as Ramsar sites. In terms of the requirements under the Ramsar Convention for countries to develop wetland policies – such policies have been developed in Indonesia, Malaysia, Philippines and Thailand with specific reference to peatlands.
UN Convention to Control Desertification (UNCCD)	The UNCCD has been ratified by all 10 AMS. The convention provides a framework for international cooperation to address land degradation and desertification. Peatland degradation is one of the most important land degradation issues in the ASEAN region. The APMS is in line with the 10-year Strategy of the UNCCD (2008-2018) which aims "to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability". The APMS remains relevant to the UNCCD 2018–2030 Strategic Framework which aims to contribute to (i) achieving the objectives of the Convention and the 2030 Agenda for Sustainable Development, in particular regarding SDG 15 and target 15.3: Agenda for Sustainable Development, in particular regarding SDG 15 and target 15.3: "by 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world" and other interrelated SDGs, within the scope of the Convention; (ii) improving the living conditions of affected populations; and (iii) enhancing ecosystems services. Philippines has made specific reference to peatlands in the Philippine National Action Plan (NAP) for UNCCD 2010-2020 and the Aligned Philippine National Action Plan to Combat Desertification, Land Degradation and Drought (NAP-DLDD) for Year 2015-2025.
UN Disaster Risk Reduction (UNDRR)	Sendai Framework for Disaster Risk Reduction 2015-2030 – contains aspects of ecosystem-based approaches where peatlands is relevant. The Sendai Framework aims to achieve substantial reduction of disaster risk and losses in lives, livelihoods, health, cultural heritage, socio-economic and ecosystems. It highlights the ecosystems and ecosystem-based approaches which peatland conservation as one of the strategies in ecosystem-based approaches in relation to reduction of disaster risk specifically flooding and land and forest fire. **UN Sustainable development Goals (SDGs)** The APMS is relevant to nine of the seventeen UN SDGs as follows: • Goal 1. End poverty in all its forms everywhere • Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture • Goal 3. Ensure healthy lives and promote well-being for all at all ages • Goal 5. Achieve gender equality and empower all women and girls • Goal 6. Ensure availability and sustainable management of water and sanitation for all • Goal 12. Ensure sustainable consumption and production patterns • Goal 13. Take urgent action to combat climate change and its impacts • Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss • Goal 17. Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development

7.2 Effectiveness

The review has assessed effectiveness based on review of progress as recorded in national reports to ATFP and other relevant ASEAN meetings, other documentation of progress and documents that were provided by AMS and ASEC.

INITIAL ASSESSMENT

- The APMS has been effective in stimulating the development of NAPPs and associated national implementation programmes in countries with significant peatland areas.
- NAPPs have been developed in six AMS which collectively include more than 90% of the documented peatlands in ASEAN.
- Five out of the six NAPPs follow the basic matrix framework of the APMS – indicating the core role that the APMS has played in their development.
- The NAPPs have played an important role in the development of national programmes and specific actions for peatland assessment and management.
- In other countries with more limited peatland area and no history of peatland action, the APMS has helped to stimulate measures to identify and assess the presence and status of peatland in the AMS.
- There were four countries in ASEAN (Cambodia, Lao PDR, Myanmar and Philippines) with no clear understanding of the extent of peatlands, prior to the adoption of the APMS – where the APMS has stimulated or supported action to identify peatlands.

- The ATFP established under the APMS after the mid-term review in 2013 has organised four meetings to date to bring together AMS and partner organisations to review progress in implementing the APMS and NAPPs and also served as a forum to develop collaborative actions with international and regional partners.
- The APMS has served as a framework to attract international funding from a range of donors including CIDA, EU, GEF, International Climate Initiative, Germany (IKI), IFAD which together with the AMS have committed more than USD 150 million for the implementation of the APMS since 2015.
- The APMS has acted as a framework to stimulate and demonstrate the active engagement of multiple stakeholders (including national, provincial and local governments, private sector, research institutions, civil society and local communities) in sustainable peatland management and delivery of the APMS.

7.3 Efficiency

An analysis of efficiency and cost effectiveness of the actions taken has been based on feedback from a variety of stakeholders and also an analysis of AMS and ASEC documentation and other information available to assess level of resources had been utilised to achieve the APMS objectives.

ASSESSMENT

- Emphasis of the APMS of building national capacity through regular exchange and sharing of experience and building local capacity has been cost effective in stimulating and fast-tracking peatland work and attracting finance from multiple source.
- The APMS has provided a framework for peer-to-peer learning among different stakeholders in AMS. Such exchanges have involved local communities, peatland managers, plantation sector managers, government national focal points, researchers, and CSOs. These exchanges have assisted stakeholders in rapidly understanding solutions to peatland management and overcoming barriers in a cost-effective manner, avoiding duplication and "re-inventing the wheel".
- Although the APMS is led by the governments of the AMS, it has supported and promoted solutions involving local communities, researchers and the private sector – harnessing the innovation and resources of these sectors.
- The APMS has focused on building the capacity of national and local institutions and enhancing the collaboration and partnerships rather than creating new institutions or entities.
- It has focused as far as possible on using the expertise of organisations within the region rather than relying on international consultants and experts.
- It has shared its experiences with a broad range of stakeholders in the AMS as well as the international community and has been recognised by international organisations for the achievements.
- It has helped developed cost effective approaches to peatland degradation and fires in particular developing and promoting the rewetting and rehabilitation of peatlands as a solution to the major regional problem of peatland fires and associated national and transboundary haze.

7.4 Impact

The review process has assessed the degree of progress towards enhancing sustainable peatland management and reduction in extent and severity of transboundary smoke haze linked to peatland management. The review has started to assess the impacts of the APMS and contributions to the ASEAN goals.

ASSESSMENT

- The APMS has acted as a key framework and tool for the implementation of the AATHP.
- The APMS has promoted a focus on prevention of peatland fires rather than the earlier approach on fire-fighting.
- The APMS has promoted use and enhancement of the FDRS to AMS which has now been broadly accepted and used by most AMS.
- The adoption of ASEAN Guidelines on Peatland Fire Management and a shift from peatland fire-fighting to prevention approaches is also linked to the work under the APMS.
- The APMS has stimulated the establishment of NAPPs in six AMS covering more than 90% of the known peatlands in the ASEAN region.
- The integrated management approach for peatlands has been stimulated by the APMS through workshops and exchanges and the development of guidelines on integrated peatland management.

- The rehabilitation of peat swamp forest has been facilitated by the exchange of expertise and demonstration projects under the APMS.
- There have been significant enhancements in institutions and polices related to peatlands over the past 15 years linked to the APMS.
- The capacity and expertise on peatlands in most AMS has significantly increased over the past 15 years linked to collaborative research and training supported or stimulated by the APMS.

7.5 Sustainability

The review process has reviewed the trends and effectiveness of resource allocation for the implementation of the APMS as well as establishment of institutions and expertise for peatland management.

ASSESSMENT

- All countries have designated NFPs for the APMS and have participated actively in the meetings and activities of the ATFP.
- Six AMS have developed NAPPs to guide their work on peatlands.
- Most of the AMS have indicated the intention to extend their NAPPs beyond 2020 or develop a NAPP or equivalent framework (where they do not have one).
- The APMS is a core part of the implementation mechanism for the AATHP which in turn has high political support in the ASEAN region.
- The APMS is linked to and supporting the implementation of a number of ASEAN medium term strategies including the ASCC Blueprint (2009-2015), ASCC Blueprint 2025, and the Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation (2016-2020) (Haze-free Roadmap).
- There has been a major increase in allocation of domestic resources for peatland management.
- There has been an increased level of interest and support from international donors for peatland work in the region.
- There has been an increase in expertise in peatlands in the region and growing amount of scientific research from national institutions.
- ASEAN institutions working on peatlands have built more links and collaboration with other similar institutions in the region and internationally.
- The work in ASEAN under the APMS has been recognised internationally.

8. PRIORITIES AGAINST FOCAL AREAS FOR 2021-2030

As part of the APMS Review, each ATFP NFP was asked to provide feedback on the future national level priorities in relation to the 25 operational objectives of the APMS that could be considered in any future framework to follow the APMS 2006-2020. The top priorities, based on the number of countries selecting them as priority are:

- Further action to determine the exact extent and current status of peatlands at national level (9 AMS)
- Public and stakeholder awareness and participation (8 AMS)
- Peatland fire prevention (7 AMS)
- Development of policies and regulations for peatland management (7 AMS)
- Biodiversity Conservation (6 AMS)
- Integrated management of peatlands (6 AMS)
- Peatland restoration (6 AMS)
- Regional Cooperation (5 AMS)
- Best management practices (5 AMS)
- Financing the Action (5 AMS)

Details of the priorities are listed in **Table 13** below.

Table 13: Priorities for the period 2021 to 2030 as identified by feedback by ATFP National Focal Points and other national stakeholders in response to the APMS Review

Focal Areas/ Operational Objectives	Future Priorities	
Focal Area 1. Inventory and Assessment		
1.1 Determine the extent and status of peatlands in the ASEAN region	**Brunei Darussalam** - Recognition of the Brunei's PSF **Cambodia** - High priority to identify and map all peatland areas in the country **Indonesia** - To accelerate inventory on peatland ecosystem characteristics at scale of 1:50.000 based on Peatland Hydrological Unit (KHG) **Lao PDR** - High priority to identify and map all peatland areas in the country **Malaysia** - High priority to determine extent and status of peatland in Malaysia; information (spatial data/maps/dataset) to be accessible for sharing for better management	**Myanmar** - High priority to identify and map all peatland areas in the country **Philippines** - High priority to increase capacity of trained personnel to conduct assessment **Thailand** - High priority to determine the extent and status of peatlands in the country **Viet Nam** - High priority to identify and mapping all peatland areas in the country
1.2 Assess problems and constraints faced in peatland management	**Indonesia** - To recover hydrological function and rehabilitation as well as improve local community livelihood **Philippines** - High priority to assess problems and constraints. Profiling and assessment of peatland area and inclusion of peatland in Permanent Protected Area	**Viet Nam** - High priority for monitoring and evaluating peatland management and use
1.3 Monitor and evaluate peatland status and management	**Indonesia** - Monitoring on canal, land cover, GWL, hotspot, burned scar, pyrite and quartz layers **Malaysia** - Medium/high priority to identify problems and constraints; different perception by different stakeholder on peatlands (plantation, agriculture, etc.)	**Thailand** - High priority to Monitor and evaluate peatland status and management

Focal Areas/ Operational Objectives	Future Priorities	
Focal Area 2. Research		
2.1 Undertake priority research activities	**Indonesia** - To study on commodity site matching for each PHU, inc. oil palm/acacia adaptive to flooding - To study on environmental services from peatland **Malaysia** - Medium/high priority to monitor and evaluate the peatland including develop an integrated management and monitoring system, and with sufficient budget to operate the system	**Philippines** - High priority for research. Support needed to local academe (financial, equipment, infrastructure) to conduct scientific R&D activities - Research and Development in peatland for Carbon Storage, Assessment of Flora and Fauna population and extensive Hydrology Study, Flood Risk - Assessment and Impact including Mitigation Measures. - High priority in the conduct of scientific R & D on drought and fire risk assessment. **Thailand** - High priority to undertake priority research activities on biodiversity, carbon storage, adaptation and mitigation to climate change
Focal Area 3. Awareness and Capacity Building		
3.1 Enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze through implementation of a comprehensive plan	**Brunei Darussalam** - Encourage awareness and participation from community level **Indonesia** - To establish Desa Mandiri Peduli Gambut (Peatland Care Independent Villages) - To establish working group on peatland management and protection (TK-PPEG) in each village with BUMDes (Village Enterprises) support **Lao PDR** - High priority to enhance public awareness for local communities on the importance and sustainable use of peatlands **Malaysia** - High priority to enhance CEPA programmes to improve public awareness especially at local peat-dependence communities and through educational events with young generation	**Myanmar** - Capacity building on remote sensing and GIS application for peatland identification and mapping is essential - Education and awareness raising on importance of peatlands is also essential **Philippines** - Medium/High priority to scale up awareness to various institutions, stakeholders and community especially policy makers, need more local experts - To enhance CEPA programmes to improve public awareness especially for local communities and through educational events with young generation **Thailand** - High priority to enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze through education programme for communities/youth in and around the peatland area **Viet Nam** - High priority to raise community awareness about peat conservation, development and sustainable use
3.2 Build institutional capacity on management of peatlands	**Lao PDR** - High priority to enhance capacity of government staff and relevant agencies at national and local level on peatland assessment and management.	**Malaysia** - High priority to enhance competency and capacity of institutions/agencies to monitor and manage the peatlands, also enhancing enforcement, with financial support to prevent fire on prone area
Focal Area 4. Information Sharing		
4.1 Enhance information management and promote sharing	**Brunei Darussalam** - Encourage exchange knowledge through peat symposium **Indonesia** - To integrate information system of Management and Protection of Peatland Ecosystem (SIPPEG) - To promote information dissemination to site level community - To include multi-stakeholder approach in information sharing	**Malaysia** - Medium priority on information sharing as there are existing platforms for sharing - Sharing information through publications, information centre, websites, workshops, conferences and field advisory, need media engagement - Being coordinated and facilitated through State Steering Committee, National Peatland Working Committee and National Peatland Steering Committee, National Steering Committee on Wetlands **Philippines** - Medium/High priority to share peatland management related information (i.e. peat area, drought monitoring) - Need continuity effort through publications, information centre, websites, workshops, conferences and field advisory, need media engagement **Viet Nam** - Medium priority on information sharing as there are existing platforms

Focal Areas/ Operational Objectives	Future Priorities	
Focal Area 5. Policies and Legislation		
5.1 Develop or strengthen policies and legislation to protect peatlands and reduce peat fire	**Indonesia** - To strengthen implementation of peatland management plan (RPPEG) in provincial and district level **Lao PDR** - To develop specific regulations for peatlands and integrate peatlands into other relevant policies and legislation. **Malaysia** - High priority to strengthen implementation of policies and action plans in relation to peatland management – NAPP 2021-2030 and NPBD 2016-2025, National Policy on Wetlands (being finalised) - Need close coordination between national and state levels for acceptance and implementation (policy development at federal vs adoption at state level) and state agencies with plantation sector (e.g. Sarawak companies with NREB) - Strengthen peatland issues in the EQA - To strengthen enforcement and reference to existing guidelines (SOP by DOE and Bomba)	**Myanmar** - To establish a Peatland Task Force - To enhance understanding of peatlands and mainstream the peatlands elements onto policy and institutional frameworks - To assess effectiveness of current regulations and policies to mitigate/manage impacts on peatlands **Philippines** - High priority to develop and strengthen policies and legislation - Mainstreamed peatland in the Work and Financial Plan of the concerned agencies **Thailand** - To strengthen regulations, rules, or agreement with communities in and around peatlands in order to protect peatlands and reduce peat fire **Viet Nam** - High priority to complete policies for effective management of peatland management and use
Focal Area 6. Fire Prevention, Control and Monitoring		
6.1 Reduce and minimise occurrence of fire and associated haze	**Brunei Darussalam** - Encourage technology transfer in fire prevention and rehabilitation effort **Indonesia** - To establish '*Desa Mandiri Peduli Gambut*' integrated with '*Masyarakat Peduli Api*' (Fire Care Community) - To strengthen patrol system and zero burning implementation - To strengthen fire monitoring and integrate monitoring system (LAPAN MODIS Catalog, Sipongi, FDRS, SIPALAGA, SIMATAG) **Malaysia** - High priority to have multi-stakeholder collaboration in preventing peat fire - Reference to all relevant SOP (DOE and Bomba) and guidelines, need more commitment and enforcement on the regulations and national programme on peatland management - Need budget - Continue dissemination of FDRS and hotspot information, good to have fire scars information to prevent repeated peat fires - Linkage to climate change and Nationally Determined Contributions (GHG emission)	**Myanmar** - High priority to tackle increasing hotspot count due to forest fires and other types of fires during dry season, prevention measures are necessary for haze from huge forest fire **Philippines** - High priority to have multi-stakeholder collaboration - Linkage to climate change and NDC (GHG emission) **Thailand** - Strengthen multi-stakeholder collaboration in prevention, partrol and suppression of forest fire **Viet Nam** - High priority to reduce occurrence of fire

Focal Areas/ Operational Objectives	Future Priorities	
Focal Area 7. Conservation of Peatland Biodiversity		
7.1 Promote conservation of peatland biodiversity	**Indonesia** - To identify endemic species of flora and fauna in peatlands - To strengthen site conservation and germplasm - To promote Ramsar Sites management **Lao PDR** - To conduct inventory on peatlands sites and its natural resources including flora and fauna. **Malaysia** - High priority to provide comprehensive biodiversity information through assessment at locations to identify endemic species of flora and fauna in peatlands - Need greater protection and connectivity and proper land-use planning - Develop more seed banks for suitable species for rehabilitation - Consider to develop incentive scheme for State that gazette peatland as protected area, for carbon financing mechanism to help offset emission and opportunity to encourage the State Government to protect and manage the peatlands more sustainably (e.g. Pahang and Selangor on carbon offset programmes) - Meet CBD target of 17% of peatlands in totally protected areas	**Philippines** - High priority to promote biodiversity conservation for peatlands - Implementation of Philippine Biodiversity Strategy and Action Plan (2015-2028); Agusan Marsh acknowledged as a key biodiversity area in PBSAP **Thailand** - High priority to have comprehensive survey on biodiversity in peatland **Viet Nam** - High priority to identify species of flora and fauna in peatlands
Focal Area 8. Integrated Management of Peatlands		
8.1 Promote multi-agency involvement in peatland management	**Brunei Darussalam** - To involve relevant government agencies such as the Brunei Darussalam Climate Change Secretariat (BCCS) under the Ministry of Development, NGO and private sectors **Indonesia** - To strengthen multi-stakeholder partnership in supporting DMPG - To implement peatland management plan (RPPEG) in provincial as well as District level - To establish '*Desa Mandiri Peduli Gambut*' **Malaysia** - High priority to improve coordination and commitment of agencies for cross-sectoral collaboration, and information sharing for integrated practices to conserve the biodiversity and undertake rehabilitation work - To strengthen multi-stakeholder partnership (government, private sector, research institute, CSOs and community) – identify strategic partners - To develop State Action Plans on Peatlands (SAPP) for peat states (SMPEM project and departmental fund)	**Myanmar** - To form a Technical Group on peatland survey and assessment, GIS and spatial analysis, community engagement and sustainable livelihoods, peatland management and policy. - Need to develop a plan on integrated and sustainable peatland management and reducing impacts on peatlands **Philippines** - High priority to promote IPM - Include the Leyte Sab-a on the current Masterplan Formulation of Leyte Riverbasin planning facilitated by the DENR RBCO - Enhance stakeholder engagement and support include delineate boundaries **Viet Nam** - High priority to strengthen the capacity of management agencies at national and local levels, especially for the national focal agency in the management and use of peatlands in the country
8.2 Promote integrated water resources and peatland management using a basin-wide approach and avoiding fragmentation	**Indonesia** - To implement sustainable peatland management based on PHU - Need to develop FDRS using water level in peatland area as an indicator	**Malaysia** - High priority to have sufficient background information (baseline) on topo-hydrological information and systematic data for water management as most important aspect for peatland management **Viet Nam** - High priority to integrate management of water and fire prevention
8.3 Promote integrated forest and peatland management	**Malaysia** - Medium/High priority to promote and revise IMP – some expired and IMP NSPSF active in implementation (2014-2023); JPSM has guidelines and format for developing IMP; need competent officer, sufficient manpower and funding	**Thailand** - Apply "Sufficiency Economy" philosophy to promote integrated peatland management **Viet Nam** - High priority to promote integrated forest and peatland management

Focal Areas/ Operational Objectives	Future Priorities	
8.4 Manage agriculture in peatland areas in integrated manner	**Indonesia** - To develop paludiculture technology in peatland area - To promote agroforestry and sylvofishery using species site matching for better peatland management and enhance community livelihood	**Viet Nam** - Medium priority to manage agriculture in peatland areas in integrated manner
8.5 Promote integrated community livelihood and peatland management	**Lao PDR** - High priority to engage local community due to their traditional knowledge on valuing the peatland (identification of peatland is needed for management and conservation)	**Viet Nam** - High priority to support development of community livelihoods to protect peatland resources - Medium priority to promote integrated community livelihood and peatland management
Focal Area 9. Promotion of Best Management Practices of Peatlands		
9.1 Promote best management practices through documentation and demonstration sites	**Indonesia** - To identify and document best practices in peatland management (conservation and cultivation areas) - To promote exchange knowledge and experience on best practices - To strengthen DMPG implementation **Malaysia** - Medium/High priority to document BMPs and promote as demonstration sites - Need to widely promote the BMPs and replicate the BMPs to other areas - Need to optimise function of Centre of Excellence at North Selangor Peat Swamp Forest and Klias Peat Swamp Field Centre and at other PAs such as Maludam National Park and Loagan Bunut National Park - To identify and document best practices in peatland management (conservation and cultivation areas) - To promote exchange knowledge and experience on best practices	**Philippines** - High priority to identify and document best practices in peatland management (conservation and cultivation areas) - To promote the BMPs and replicate the BMPs to other areas - Provide appropriate peatland friendly livelihood support/trainings to the local organisation/community to effectively manage the peatland **Thailand** - To promote best management practices through documentation and demonstration sites **Viet Nam** - Medium priority to promote best management practices
Focal Area 10. Restoration and Rehabilitation		
10.1 Develop appropriate techniques for the restoration or rehabilitation of degraded peatlands	**Indonesia** - To identify valuable species adaptable to peatland condition - To promote agroforestry in peatland **Malaysia** - High priority on restoration and rehabilitation of peatland ecosystems - To Identify valuable species adaptable to peatland condition and seed banks - To promote agroforestry in peatland - Need better coordination to collate relevant research and tested techniques **Myanmar** - To develop a restoration and rehabilitation plan for peatlands in Myanmar	**Philippines** - High priority to develop appropriate techniques include identify indigenous and typhoon-resistant species - A direct intervention programme under the Philippine Biodiversity Strategy and Action Plan (PBSAP) - To increase investment/development fund for innovative technologies and application of tested techniques at the site (some available cost effective techniques identified and to be replicated at site) - Reinstatement and Reversion of "CARPed distributed lands" in the Leyte Sab-a Peat Swamp through DENR and DAR collaboration and partnership **Thailand** - Promote environmental Corporate Social Responsibility (CSR) mechanism in restoration or rehabilitation of degraded peatlands **Viet Nam** - Medium priority to develop a restoration and rehabilitation plan for peatlands
10.2 Rehabilitation burnt, drained and degraded peatlands	**Indonesia** - Mapping of degraded peatland area in detail - To extent rehabilitation of degraded peatland area	**Malaysia** - High priority to increase investment/development fund for innovative technologies and application of tested techniques at the site (some available cost effective techniques identified and to be replicated at site)

Focal Areas/ Operational Objectives	Future Priorities	
Focal Area 11. Peatland and Climate Change		
11.1 Protect and improve function of peatlands for carbon sequestration and storage	**Indonesia** - To strengthen multi-stakeholder partnership for climate change mitigation - To implement climate change mitigation from related sectors (Forestry and Agriculture) **Malaysia** - High priority to strengthen multi-stakeholder partnership for climate change mitigation - To explore possible carbon financing mechanisms to encourage peatland protection and conservation (results from long term carbon flux assessment as reference/baseline)	**Philippines** - High priority to improve peatland function for carbon storage and incorporate into climate change adaptation processes - Mainstreaming climate change in biodiversity planning and management - To promote rehabilitation and restoration of degraded peatlands for carbon sequestration and storage. **Thailand** - High priority to strengthen multi-stakeholder partnership for climate change mitigation - To protect and improve function of peatlands for carbon sequestration and storage
11.2 Support incorporation of peatlands into climate change adaptation processes	**Indonesia** - To incorporate peatlands into National Action Plan for Climate Change Adaptation (RAN-API) **Malaysia** - Medium priority to incorporate peatlands into climate change adaptation – NDC, SDGs, REDD+	**Thailand** - High priority to support incorporation of peatlands into climate change adaptation processes
Focal Area 12. Regional Cooperation		
12.1 Promote exchange of expertise in addressing peatland management issues	**Indonesia** - To strengthen collaboration among AMS in peatland management - To promote exchange knowledge and experience on best practices in regional level **Lao PDR** - To exchange knowledge and lessons learnt on peatland management at the regional level and require experts to support Lao PDR on peatland assessment	**Myanmar** - Development of common guidelines for conservation and sustainable use of peatland resources to enhance peatland management in ASEAN region - APMS to support climate-responsible peatland management **Philippines** - Medium/high priority to strengthen collaboration among AMS in peatland management - Ongoing regional programmes/projects: EU-SUPA, IFAD-MAHFSA
12.2 Establishment of 'networks or centres of excellence' in the region for peatland assessment and management	**Indonesia** - To incorporate peatland related programme with the International Tropical Peatland Center (ITPC) launched in Jakarta on 30 October 2018.	
12.3 Contribute to the implementation of other related agreements and regional cooperation mechanisms	**Malaysia** - Medium priority to strengthen collaboration among AMS in peatland management and establishment of "networks or centres of excellence" - To promote exchange of knowledge and experience on best practices in regional level - Ongoing regional programmes/projects: EU-SUPA, IFAD-MAHFSA	

Focal Areas/ Operational Objectives	Future Priorities	
12.4 Enhance multi-stakeholder partnerships to support peatland management	**Indonesia** - To enhance the role of multi-stakeholder on peatland management - Scaling-up the BMPs of multi-stakeholder programmes on peatland management	
Focal Area 13. Financing of the Implementation of Strategy		
13.1 Generate financial resources and incentives required for the programmes and activities to achieve targets of the strategy	**Brunei Darussalam** - Attract more funding opportunities and private sectors engagement **Indonesia** - To Identify, search and attract funding allocation from national and international sources for peatland management **Malaysia** - High priority in securing financing to implement the APMS – national (e.g. RMK-12 and RMK-13) and international funding (development organisations – GEF-IFAD SMPEM, EU-SUPA) - To identify, search and attract financial support for peatland e.g. carbon projects, CSR, etc. - Develop rules and incentives for private sector engagement	**Philippines** - High priority to identify, search and attract financial support for peatland e.g. carbon projects, CSR, etc. (domestic and international funding) **Thailand** - High priority to identify, search and attract funding allocation from national and international sources for peatland management

9. LESSONS LEARNED AND BEST MANAGEMENT PRACTICES

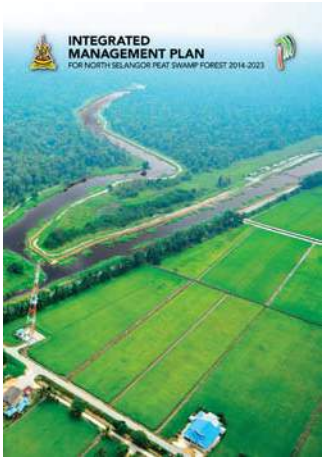
One important element arising from the APMS review – in particular from the FGDs and discussions with the APFP NFPs as well as the review of the peatland-related projects reports and literature – is the growing number of examples of case studies and BMPs for peatlands in Southeast Asia. Many of these BMPs have been recognised at international fora, publication platforms and exchange programmes. Although it is not a formal part of the scope of the APMS review, it is proposed that the final report include a listing or summary of some of the BMPs from the ASEAN region that have been developed during the APMS implementation period. This could even be further elaborated as a separate publication as part of the recognition of the achievements of the APMS.

See **Table 14** below and **Annex 10** for List of selected BMPs implemented by AMS in 2006-2020.

Table 14: Selected BMPs on peatland management in the ASEAN region to be promoted

Country	Selected Case Studies or BMPs
Brunei Darussalam	**Rehabilitation of peatland in Badas Peat Swamp** Badas peat dome in Brunei Darussalam covering 30,000 ha of splendid peat swamp area. There are endemic tree species to Borneo such as the Dryobalanops rappa (Kapur Paya) and Shorea albida (Light red Meranti). It also covers two Important Bird Areas (IBAs) recognised by Birdlife International i.e. Sg Seria and the Panaga Grasslands – habitats for migratory birds including the Chinese Egret (categorised as Vulnerable under the IUCN Red List). It is considered critical habitat under the 5th National Report to the CBD due to its high biodiversity value. The site is under threat by critical oil and gas infrastructure and activities leading to subsidence, habitat loss and increased fire risk. Joint effort on rehabilitation activities have been undertaken by stakeholders - e.g. national, international agencies, research institute and private sectors. A Biodiversity Action Plan was developed for Areas of High Biodiversity Value from collaboration of private industry and NGO. There have been annual tree planting activities undertaken in the degraded peatland area through citizen-science reforestation project. Tree planting programme was welcomed by the participation of local community and public (https://badastreeplanting.org/peat-rehabilitation/). The effort also combined with an IoT monitoring programme to evaluate the effects of the canal blocking on hydrology fluctuation and fire risk in this area. This area is also included under the framework of Heart of Borneo Initiative.
Cambodia	**Mangrove peatland** The peatlands of Koh Kapik Ramsar Site is the first peatland identified in mangrove ecosystem in Cambodia through SEApeat project, funded by the EU and implemented by GEC and national partner agency, Department of Freshwater Wetlands Conservation. Previously there was only mangrove peat recorded in Sulawesi of Indonesia. Since the mangrove peat is unique in the country, it is recommended that detail studies should be further undertaken in particular its biodiversity and ecological value. Further studies especially on the peat material on bulk density, pH and salinity carbon content are recommended for this site.
Indonesia	**Peatland Regulations** Although the Government of Indonesia did not ratify the AATHP in 2007, an important regulation on peatland management was issued as Presidential Instruction No.1 year 2007 on the Acceleration of Rehabilitation and Revitalisation of Peatland Area in Central Kalimantan. Several similar regulations related to peatland matters were subsequently issued, such as: Laws No. 32 year 2009 on Environmental Protection and Management and Minister of Agriculture's Regulation No.14/Permentan/PL.110/2/2009 on the Guidelines of Peatland Uses for Oil Palm Cultivation, Minister of Environment and Forestry's Regulation No. 32/2016 on Forest and Land Fire Control. Indonesia also issued the Laws No. 26 year 2014 on the Adoption of AATHP, which was followed by policy on peatland management in Government Regulation No. 71 year 2014 on Protection and Management of Peatland Ecosystems and its revision as the Government Regulation No. 57/2016. There are three main important concerns on balancing the development and environmental value, namely: a) Using the word "peatland ecosystem" as the Government's view not only to use peatland as an object but to use peatland as an ecosystem which influences each other in forming balance, stability, and productivity; b) Inclusion the term of PHU which means the peatland ecosystem located between two rivers, between river and sea, and/or in swampy area; and c) Peatland ecosystem in Indonesia is classified in two functions named protection function and cultivation function. The implementation of the Laws is enforced by the MOEF and being supported by restoration programmes led by BRG.
	Peatland Restoration Agency: Strategy and action for rewetting The establishment of BRG was governed by the Presidential Regulation No. 1/2016 after the large-scale fire happened in 2015 where about 2 million ha of peatlands were burned. The mandate of BRG is to accelerate restoration of hydrological function of peatland, particularly on degraded peatland in seven provinces, namely: Riau, Jambi, South Sumatera, West Kalimantan, Central Kalimantan, South Kalimantan, and Papua with four priority districts, namely: Kepulauan Meranti in Riau, Musi Banyu Asin and Kabupaten Ogan Komering Ilir in South Sumatera, and Pulang Pisau in Central Kalimantan. Total restoration priority areas cover approximately 2.67 million ha in 106 PHUs. In implementing the restoration plan, BRG has involved 31 research partners from research institutes and universities with 120 research packages. Based on the strategic plan, BRG has been increasing its budget allocation by year. Peatland restoration strategy through rewetting programme was studied through upscaling pilot sites and canal blocking evaluation. BRG has deployed more than 150 units of groundwater level (GWL) monitoring equipment in the seven priority provinces. Peatland GWL monitoring is very important to provide early warning alert and trigger preparation of prevention for forest and land fire. Peatland GWL Monitoring System (SIPALAGA) has a function from data recording of GWL to telemetry based real-time data publishing on website. The system is recording the GWL, peat moisture content and rainfall every 10 minutes.

Country	Selected Case Studies or Best Management Practices (BMPs)
	Forest and land fire information system Hotspot as an indicator for forest and land fire has been compiled and analysed by LAPAN as one national hotspot data source. All ministries or agencies should refer to the hotspot data source, which can be accessed in the website of http://modis-catalog.lapan.go.id/monitoring. The hotspot data can be extracted for the whole Indonesia as well as for provinces in the form of excel as well as map. It is derived from various satellites including: Aqua, Terra, SNPP, NOAA 20, and Landsat 8 with various confidence level from < 29% to > 80%. Besides, MOEF developed forest and land fire monitoring system (http://sipongi.menlhk.go.id/home/main), which shows important information on burned area and hotspots as fire indicators for the whole Indonesia in the forms of data, graphs and maps, and other fire control information.
	Early Warning System for forest and land fires Indonesia has developed Early Warning System (EWS) for forest and land fires based on Canadian System, running by National Agency for Meteorology and Geophysics (BMKG), which covers: Fine Fuel Moisture Code (FFMC), Duff Moisture Code (DMC), Drought Code (DC), Initial Spread Index (ISI), Build Up Index (BUI) and Fire Weather Index (FWI) prediction for 7-days in advance at both national and provincial levels. New features of smoke dispersion and transboundary haze pollution have been developed (https://www.bmkg.go.id/sancakarla/) that shows air quality elements such as PM10, SO2, and NO2. This EWS also provides a long term prediction of forest and land fires up to next 7 months as a results of high resolution of long term climatic data and hotspot historical data as fire indicator. The new Early Warning System (EWS) for forest and land fires is established which cover ASEAN countries and freely accessed (https://www.bmkg.go.id/cuaca/kebakaran-hutan.bmkg?index=dc&wil=indonesia&day=obs)
	Water level monitoring on peatland area GWL is one of peatland fire risk indicators. BRG has been supported by BPPT to develop the Peatland Ground Water Level Monitoring System (SIPALAGA), which has a function from data recording of GWL through telemetry based real-time data publishing at a specific website. The system will record the GWL, peat moisture content, and rainfall every 10 minutes daily. It is expected to support historical/series data and information of GWL and related parameters. As per December 2018, BRG has deployed 142 units of the GWL monitoring equipment, distributed in 7 restoration priority provinces (Riau-47 units, Jambi-13 units, South Sumatera-20 units, West Kalimantan-13 units, Central Kalimantan-42 units, South Kalimantan-5 units and Papua-2 units) (https://sipalaga.brg.go.id/). Indonesia also established the web-based GWL monitoring for concession holders with the SiMATAG-0.4m, which monitoring 3.4 million hectares area of peatland utilizing 10,690 GWL monitoring points across Indonesia.
	Fire Monitoring The use of hotspot data for fire detection by MOEF is equipped by real-time ground fire monitoring using Thermal CCTV Technology located in fire prone areas in six provinces. The technology was installed to conduct early detection and fire prevention by recording the area condition through thermal CCTV on look-out towers located at fire prone areas at about 50 m high. The thermal CCTV will detect hot wave in 5-10 km radius, which is recorded and saved in a computer for monitoring the detail and real-time forest and land fires. MOEF also operates drone to monitor and measure burned areas.
	Protection and management of peatland Collaboration between government and private sector. *Gambut Lestari Masyarakat Mandiri* is a collaboration programme between the government and PT Pertamina in Riau Province, comprising three main elements: Kampung Gambut Berdikari (promoting integrated pineapple farming, empowerment of *Masyarakat Peduli Api*/MPA, peatland arboretum), *Generasi Emas* (inclusion of peatland in school curriculum, health care service), and *Permata Hijau* (mangrove conservation and ecotourism, fisheries).
Lao PDR	**Community empowerment in Beung Kiat Ngong Ramsar site** Beung Kiat Ngong located in Champasak Province of southern Lao PDR. The Beung Kiat Ngong is an open wetlands and its complexity comprises various wetland types, including swamps, lakes and peatlands. Local people rely on the wetlands for their livelihoods, mainly for fishing and collecting wild vegetables. Key threats to this area include peat extraction; over-harvesting of fish, aquatic resources, and non-timber forest products; increasing cattle and buffalo population; and, insufficient human and financial resources to implement regulations and a management plan. Community was engaged to implement strategy of wise use of wetlands by maintaining and rehabilitating the site for local livelihood activities including tourism.
Malaysia	**Community-based patrolling for peatland management and fire prevention: *Sahabat Hutan Gambut Selangor Utara* (SHGSU)** In August 2012, a local community association, *Sahabat Hutan Gambut Selangor Utara* (SHGSU) or "Friends of North Selangor Peat Swamp Forest" was established with support of GEC, to empower the local community in conserving the adjacent NSPSF. SHGSU provides a platform to the local community to actively involving in various tasks required for rehabilitation of the NSPSF and management of the buffer zone. This SHGSU has been in collaboration with the local government and private sector in supporting the implementation of the Integrated Management Plan for the NSPSF including establishing community nurseries to prepare peatland species seedlings for planting programme. They have also been promoting and sharing the importance of the peatland ecosystems with public through eco-tourism activities. 

Country	Selected Case Studies or Best Management Practices (BMPs)
	Integrated Management Plan (IMP) for North Selangor Peat Swamp Forest (NSPSF) The IMP covers the period of 10 years from 2014 – 2023. The proposed overall management objective is "to maintain the geographical extent and integrity of the NSPSF to sustain and rehabilitate the functions of the ecosystem as provider of goods and services for the benefit of the local and global communities". The specific objectives of the IMP are: • Re-establish the hydrological functions and the natural water balance of the NSPSF; • Prevent all fire occurrence and associated haze in and adjacent to NSPSF; • Restore the forest ecosystem of NSPSF by encouraging natural forest regeneration and where necessary supplement with planting in severely degraded sites; • Establish a buffer zone of at least 500m width along the entire outer boundaries of the NSPSF to minimise impacts of activities in adjacent areas; • Develop and promote sustainable use of NSPSF including eco-tourism, harvesting of NTFP, recreation and environmental awareness, education and research; • Promote conservation of peatland biodiversity and ecosystem functions; • Maintain and enhance carbon stock, minimise GHG emission and develop options for carbon financing; and • Promote multi-stakeholder participation in the implementation of the IMP. 
Myanmar	**Conservation activity in Inle Lake** Inle Lake is situated in Nyaung Shwe Township, Taunggyi District, south of Shan State. It is the second largest freshwater lake of Myanmar, possessing several ancient Pagodas, Temples and Shrines held in high esteem by Buddhist believers, many domestic pilgrims travel to the Lake every year to pay homage to these revered religious sites. Due to Inle Lake's diverse wetland ecosystem, richness in biodiversity and species endemism. It was nominated as a "Ramsar Site" and also recognised as an IBA as the Lake is a popular stopover site for migratory water birds along the East Asian Flyway. The Government of Myanmar designated the Lake as the Inle Lake Wildlife Sanctuary in 1985, incorporating Saga Lake and the Mobye` Reservoir to the south. It was later declared as an ASEAN Heritage Park and a World Heritage Site. Inle Lake is in threat of environmental degradation from unsustainable use of resources, increasing pressure from population, climate change and rapid tourism development. In 2014, with the collaboration of Ministry of Environmental Conservation and Forestry (MOECAF), UNDP and UNESCO, a fund from Norwegian Government was allocated to implement conservation and rehabilitation activities together with the local community in the area. Due to dependence of the communities to the Lake, organic farming and market linkages have been implemented by Doe Taung Thu, a local NGO. Local farmers have been trained in organic farming include training on vermiculture (composting), producing natural pesticides, plant juice, and fruit juice containing indigenous micro-organisms.
Philippines	**Peatland assessment and inventory** The first map of peatland areas in Philippines was developed in 2012. Profiling and assessment of inland wetlands including peatlands are being collated by BMB-DENR for updating the national database. Mapping and assessment of peatland area have been undertaken by government agencies in collaboration with research institutes, both ground truthing by using peat-depth survey and drone, LiDAR and hyperspectral image. Some research on carbon sequestration, diversity of flora and fauna, micro-invertebrate communities and soil science were conducted. However, there are still a lot of peatlands that need to be further surveyed and documented. Agusan Marsh Wildlife Sanctuary was designated as Ramsar site in 1999. It has delineation of management zones handled by Protected Area Management Board (PAMB). Diversity in this area include approximately 11,500 ha declared as crocodile sanctuary, Kalaw/ Hornbill sanctuary, bat sanctuary, peatlands, and forest vegetation areas. "Handbook on Peat Swamp Flora of Agusan Marsh, Philippines" was published in 2014 that first documented in peatland flora in Agusan Marsh, with 252 species that divided into three categories, i.e. flowering plants, mosses and ferns. With the conduct of peatland assessment and inventory, the Caimpugan and Talacogon peatlands have been included to the expansion of the protected area of Agusan Marsh Wildlife Sanctuary under the Republic Act 11038 "Expanded National Integrated Protected Areas System Act (ENIPAS Act)" which gives additional protection of the site. 
Thailand	**Princess Sirindhorn Research and Nature Study Center (also known as Princess Sirindhorn Wildlife Sanctuary)** Princess Sirindhorn Wildlife Sanctuary or Pru To Daeng received its Sanctuary status in 1991 and nominated as Ramsar site in 2001. Located in a vast peat swamp area spread over 3 districts with approximately 20,260 ha, surrounded by communities depending on the forest's resources for low-intensity exploitation including NTFPs, such as fisheries and Melaleuca harvesting for charcoal. The area of invaluable biodiversity and ecosystem complexity, is a habitat to 470 species of flora, 217 species of birds, 52 reptiles, 62 fish species, 106 species of butterflies and 60 mammal species including 13 species of bats. It is the only 'bird spawning area' of Thailand. It is a famous ecotourism site and an education hub through the establishment of Princess Sirindhorn Peatswamp Forest Research and Nature Study Center. The Centre was established to support conservation, research and awareness of peat swamp forest. There is thrilling nature study trail about 1.2km long wooden bridges with informative signboards that provide interesting facts about the local knowledge of peat swamp for awareness purposes.

Country	Selected Case Studies or Best Management Practices (BMPs)
	Guideline on Peat Swamp Forest Rehabilitation and Planting in Thailand This Guideline is a comprehensive reference on replanting and rehabilitation of (PSF) to their natural conditions. It was published by the National Park, Wildlife and Plant Conservation Department (DNP) of Thailand. It was first developed in Thai language in 2003 and translated into English in 2005. This Guideline has been supporting the government agencies, NGOs, public and other interested parties to understand and practice processes of planting, nurturing and rehabilitating the PSF. This Guideline shares the list of suitable plant species for rehabilitation, procedures for seedling preparation, good planting practices, tools and equipment needed, maintenance of planting site, fire prevention and budgeting plan.
Viet Nam	**Rehabilitation of U Minh Thuong** U Minh Thuong National Park (UMTNP) is located in U Minh region, Kien Giang Province. It has a core area of 8,038 ha and a buffer zone of 13,000 ha. UMT is one of the two that preserves the last remnants of PSF in the Mekong Delta. A survey conducted in 1976 by the Geological Survey Agency of Viet Nam documented 12,400 ha of peatland in UMT. Since then frequent fires have greatly reduced the extent of PSF and the thickness of peat layers. Agricultural development in the area also led to further degradation of the PSF. The area of UMT peat swamp is now estimated 4,000 ha. Since 2010, a water and fire management was implemented at UMT and the PSF was restored significantly. Some species of fauna and flora that disappeared previously due to the forest fires and inappropriate management from 2002 to 2009, were recorded their return presence in 2014. An inventory showed a total of 14 animal species and 17 plant species, which included in IUCN and Viet Nam Red Books have been restored within the peatland habitats. Some waterfowls (Leptoptilos javanicus, Pelecaniformes, Plegadis falcinellus) have begun choosing the peatland forest and grassland as breeding ground. The UMTNP is an IBA, a Ramsar Site and an ASEAN Heritage Park.
	Green Contract concept from Viet Nam The Concept was developed by APFP and SEApeat Project to engage local community living in buffer zone of U Minh Thuong and U Ming Ha National Parks to practice zero burning farming. Local experts include soil scientists and agricultural lecturers visited the buffer zone and the local community to provide technical advices on suitable crops to be cultivated within the buffer zone. The Concept was successfully implemented and the local community have been gaining additional income through the harvests. The Concept was then adopted by local government and it is still being implemented until now. With positive responses and benefits gained so far by the local communities and national park management authority, the UMTNP was designated as ASEAN Heritage Park in 2013 and the status was promoted to Ramsar site in 2015.
Regional	**APFP** To facilitate information sharing and encourage sustainable practices in forest management and plantations, the ASEAN Secretariat and the GEC (as APFP Regional Project Executing Agency) collaborated with AMS to demonstrate, implement and scale-up sustainable management and rehabilitation of peatland forests in the region. The Project focused on: • strengthening institutional capacity and frameworks; • reducing the rate of degradation on peatlands in Southeast Asia; • demonstrating integrated management and rehabilitation of peatlands at target sites; and • engaging private sector and local communities in sustainable peatland management. The APFP with complementary of EU funded SEApeat Project organised regional workshops and peer learning programmes for government officials and local communities. Technical training sessions and meetings were conducted to enhance capacity of the government partners, while lessons learned and BMPs through peer-to-peer learning and knowledge exchange visits for the local community groups to share local knowledge on peatland management practices. The projects contributed directly to the framework of the APMS and NAPPs, as well as supported development of the APSMPE 2014-2020 framework that was endorsed by all 10 AMS Environmental Ministers in 2013.
	RSPO Peatland Working Group – BMP Peat Manuals The first RSPO Peatland Working Group (PLWG) established in 2010 and operated until late 2012. The objectives of the PLWG were to provide guidance to RSPO members for sustainable oil palm cultivation on peatland included BMPs, environmental and social aspects related to oil palm plantation and evaluate options/constraints for rehabilitating the degraded peatlands. Second PLWG was established for 2018-2020. The aims of PLWG-2 are to update guidance produced by the PLWG (2010-2012) and to provide additional guidance in relation to RSPO Principle and Criteria of 2013. Significant achievements by PLWG-2 are updated the RSPO BMP Peat Manuals in 2019, i.e. BMPs Oil Palm Cultivation on Peat (Volume 1) and BMPs for Management and Rehabilitation of Peatlands (Volume 2). Subjected to new P&C 2018, all RSPO members' plantations are required to conduct Drainability Procedure before replanting is implemented. If the plantation exceeds drainability limit, the plantation needs to phase out oil palm replanting and replace with crops that are suitable to be planted on a higher water table condition (e.g. paludiculture) or rehabilitate the plantation with peatland tree species. 
	FDRS by Met Malaysia, BMKG and DNP (FDRS) is an early warning system predicting the risk of fire occurrence that supports decision-making process by land managers and policy-makers. The FDRS for Southeast Asia was managed by the Malaysian Meteorological Department (Met Malaysia). However, there are also available FDRS prepared by Indonesia (BKMG) and Thailand (DNP). The Early Warning System for forest and land fires established by BMKG, Indonesia which covers ASEAN countries can be freely accessed (https://www.bmkg.go.id/cuaca/kebakaran-hutan.bmkg?index=dc&wil=indonesia&day=obs). DNP Thailand is supporting Mekong countries in fire prediction based on modified algorithms that suit to local conditions of the Mekong countries. Both the FDRS of BMKG and DNP are able to produce prediction in advance, 7 days and 6 days respectively.

10. RESOURCE MOBILISATION

The APMS identifies four broad sources of funding for the implementation of the Strategy. These are:

a) Direct contributions from each AMS towards specific actions;

b) ASEAN pooled resources;

c) External funding; and

d) Private sector contributions/CSR.

It was proposed that ASEAN should adopt a mix of these approaches towards resource mobilisation so that these resources will complement one another.

The progress in securing support from each of these sources is discussed below:

10.1 Direct Contributions from each AMS towards Specific Actions

The APMS states that *"AMS will be expected to allocate sufficient resources to support the implementation of the strategy at regional and national level. Therefore, respective AMS should mainstream the APMS and NAPs in particular into national development programmes. In this way, the allocation of national funds to implement the APMS and NAPs should be easily secured"*.

In reality, some AMS faced significant challenges in allocating adequate resources from its domestic resources – especially at the early stages of the APMS, where the importance of peatlands was not recognised by a variety of stakeholders. This was particularly the case in countries with relatively small areas of peatlands.

Some countries, such as Philippines, did mainstream their NAPP into their national wetland and biodiversity policies as well as their national development plan. This facilitated the allocation of resources to a variety of government departments to undertake different aspects of peatland assessment and management.

In Indonesia, which has the largest area of peatlands in the region, government resource allocations related to peatlands prior to the APMS were mainly for large scale drainage and development projects in peatland areas such as the failed mega-rice project in Central Kalimantan or the series of swamp development projects linked to transmigration programmes. Budget allocations related to peatland protection were mainly linked to peatland fire control as well as the management of selected protected areas with peatlands. Following the approval in 2014 of the new Government Regulation on Protection and Management of Peatland Ecosystems and the establishment of the Directorate of Peatland Degradation Control in the Ministry of Environment and Forestry in early 2015, the allocation of funds for peatland protection and management was significantly increased. Further increases were made with the establishment for the Peatland Restoration Agency after the extensive peatland and forest fires in late 2015. **Table 15** provides information on the budget allocations for action on peatland in Indonesia between 2015 and 2024.

Table 15: Budget allocations for action on peatland in Indonesia between 2015 and 2024

No	Institution	Budget Allocation Plan (USD millions)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1.	Directorate Peatland Degradation Control, MOEF	1.7	0.9	1.7	1.9	2.2	22.6 (+17.2)*	34.0	44.2	57.8	70.2
2.	Directorate Forest and Land Fire Management, MOEF	3.3	5.6	6.4	7.4	8.6	12.4	14.8	17.3	19.7	22.1
3.	Peatland Restoration Agency (BRG)	-	6.9	58.8	35.0	21.1	21.2	N/A	N/A	N/A	N/A

** Additional budget allocation is designed as part of economic recovery due to COVID-19. All activities are carried out in peatland areas.*

Sources:

1. *Strategic Plan, Unit Kerja Direktorat Pengendalian Kerusakan Gambut, KLHK 2015-2019/Update by DPKG 2020*
2. *Strategic Plan, MOEF Tahun 2020-2024*
3. *Strategic Plan, Unit Kerja Dirjen Pengendalian Perubahan Iklim, KLHK 2015-2019*
4. *Strategic Plan, Badan Restorasi Gambut 2016-2020*

Other AMS such as Malaysia and Thailand have also secured significant funding for action related to peatland management in recent years – but other AMS including Brunei Darussalam, Cambodia, Lao PDR, Myanmar and Viet Nam have little or no specific allocation for work on peatlands at present.

Moving forwards, it is necessary for each AMS to secure adequate funding from domestic sources to at least cover key coordination and management functions in relation to peatlands.

10.2 ASEAN Pooled Resources

The concept of "pooled resources" was envisioned to be in the form of a common pool of financial resources, to be made up from contributions of AMS, based on a mutually-acceptable scheme e.g. the ASEAN Haze Fund. During the period of the APMS implementation, the level of funds available in the ASEAN Haze Fund has not been large and so it has been directed mainly to support the cost of regional meetings and training activities. Several of these activities have been related to peatlands – such as a workshop on peatland governance held in Malaysia in 2017, back to back with a meeting of the ATFP; Training of Trainers Regional Workshop in Indonesia in 2016 on the ASEAN Guidelines on Peatland Fire Management. Support was also provided for work on peatland biodiversity by the ASEAN Centre for Biodiversity (ACB) mainly through support from regional donor supported programmes.

Another project supported by ASEAN linked funds is the Networked ASEAN Peat Swamp Forest Communities (NAPC) Project – a research project supported by ICT Virtual Organisation of ASEAN Institutes and NICT ASEAN IVO, which aims to deploy IoT-based solution, involving scientists/experts from Indonesia, Brunei Darussalam and Malaysia, which total budget is USD 76,000 for 2019-2020.

The advantage of the pooled resources is that they are under the direct management of ASEAN and the AMS, and can be allocated to support regional activities for which it is sometimes hard to fund by other donors. However, the level of funds in the ASEAN Haze Fund is too low to sustain a broad range of regional actions. Given the high level of interest in undertaking regional activities related to the APMS, it would be strategic if the contributions to the ASEAN Haze Fund are enhanced or that a special fund dedicated for action on peatlands is established to receive contributions from AMS or other stakeholders such as development cooperation partners or even the private sector.

10.3 External Funding

The APMS states that "*Contributions from Dialogue Partners of ASEAN and other donor institutions remain an important funding source for the Strategy*". Significant progress has been made in securing support from a range of international donors to address different peatland management issues.

Significant levels of resources have been allocated by a number of funders to support peatland management in the region. An estimated USD 292 million has been approved by selected funders to support peatland management in the region during the APMS period as shown in **Table 16**.

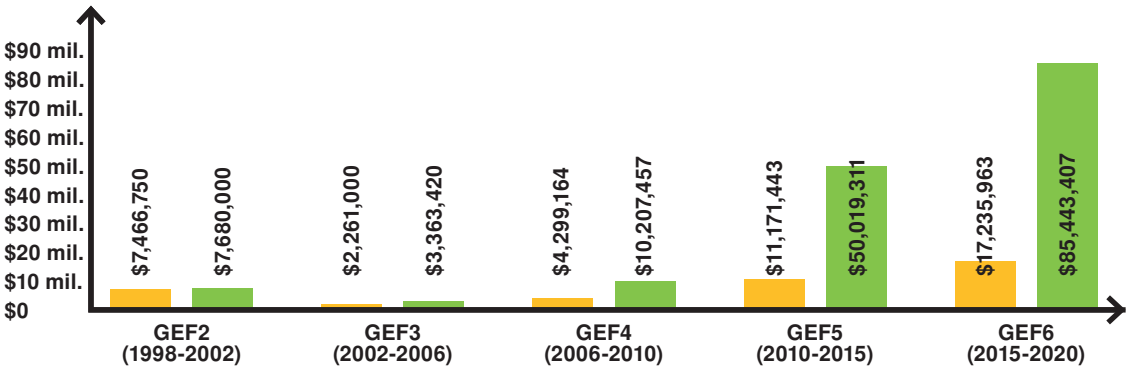
Table 16: Indicative allocations of resources for projects related to peatland management in ASEAN approved during the APMS period by selected funders

Funder	Estimated Amount 2006-2020 USD
Norwegian Government	120 million
Australia	40 million
United States of America	40 million
Global Environment Facility	36 million
European Union	24 million
Germany	20 million
Japan	12 million
TOTAL	**292 million**

** Note the amounts are estimates based on information available online and may not include the full allocations by the countries concerned.*

There are also significant trends in the allocation of funds for peatlands by individual funders during the APMS period. Figure 13 shows the trend in the size of GEF projects related to peatlands both before and during the APMS period. As can be seen the total allocation for GEF project implementation (including both GEF funds and co-funding from other donors and governments) increased by 600% between the first five years of the APMS implementation (USD 14,506,621) and the last five years of APMS implementation (USD 102,679,370). The approval of projects in the last 10 years of the APMS (USD 163,870,124) was nearly 8 times more than the allocation in the 10 years prior to the APMS (USD 20,771,170).

Figure 13: Trend in the funding level of GEF projects (GEF funds/Co-funding) approved related to peatlands in ASEAN in 5-year blocks before and after the adoption of the APMS



Based on feedback gained from the APMS Review questionnaires and other information, more than 50 projects and programmes related to peatlands have been funded by regional and international funders between 2015 and 2020. The projects are mainly focused on landscape restoration and fire prevention in larger peatlands AMS, while support for smaller AMS was mainly focussed on capacity building development for conservation and addressing fire and transboundary haze. Various programmes at regional level included support for capacity building and exchange, fire prediction and warning, compilation of best practices for peatland restoration and rehabilitation. A list of compiled peatland related programmes/projects in ASEAN is in **Annex 11**.

Within the framework of the overall international support for peatland management in the ASEAN region the majority of the resources have been provided on a country by country basis through bilateral funding channels. Nevertheless, a significant and growing amount of resources have been allocated on a regional basis with specified intent to support the implementation of the APMS. **Table 17** lists some specific projects which have been approved to specifically support APMS implementation.

Table 17: Regional projects to support APMS implementation

Funding agency	Project title	Year of support	Budget	Executing agency
IFAD-GEF	APFP	2009-2014	USD 4.30 million	ASEC, GEC, AMS
EU	SEApeat	2010-2015	USD 2.06 million	GEC, AMS
IFAD	MAHFSA[32]	2019-2024	USD 3.50 million	ASEC, GEC, ASEC, GEC, CIFOR, AMS
EU-Germany	SUPA[33]	2018-2023	USD 29.04 million	GIZ, WRI, AMS
IUCN-GEF	Mekong Peatlands Project[34]	2019-2023	USD 2.90 million	IUCN, GEC, FREDA, AMS

One of the challenges with international funding, whether on a bilateral or multilateral basis, is the lack of predictability and the long approval pipeline. Most of the projects listed in **Table 17** had a pipeline period of 3-5 years between concept submission and first disbursement of funds. Delays were generally related to complex project development procedures or delays in securing agreement of AMS or ASEC to the financing agreements. In **Table 17**, the last three projects were developed to immediately continue activities initiated under the first two projects. However, in practice there was a 3-year gap between the two sets of projects. This led to serious challenges and lack in continuity and loss of momentum in key ongoing actions. In addition, capacity at country and regional level was impacted by the 3-year period with no support. In future, mechanisms need to be found to help ensure continuity of funding for implementation of the APMS.

10.4 Private Sector Contributions/CSR

There has been a growing amount of private sector support for peatland conservation and sustainable management over the 15 years of APMS implementation. Prior to the start of the APMS, there was little or no engagement with the private sector in addressing the targets under the APMS. At that time the private sector was mainly being blamed for starting fires and degrading peatlands in the region. However, through the framework of initiatives such as the APFP (2010-2014) there was increasing dialogue with the private sector. In Selangor state in Malaysia, a number of private sector oil palm plantation companies operating in areas adjacent to remaining peat swamp forests were engaged to support fire prevention as well as community-based forest and peatland rehabilitation. This support was supplemented by CSR contributions and volunteers from a wide variety of companies in banking, consumer goods and other sectors. This work became a model for other peatland landscapes in Malaysia and elsewhere.

FOOTNOTE

32 Measurable Actions on Haze-Free Sustainable Land Management for Southeast Asia (MAHFSA) Programme, 2019 - 2023

33 Sustainable Use of Peatlands and Haze Mitigation in ASEAN (SUPA) Program, 2018 – 2023

34 Sustainable Management of Peatland Ecosystems in Mekong Countries (Mekong Peatlands Project), 2019-2023

In Indonesia, the pulp and paper sector took the lead in developing a landscape conservation initiative to conserve 10 large peatland and forest landscapes covering many millions of hectares. In many cases these landscapes were those where the companies had their own plantations. By establishing a landscape initiative, they were able to support conservation of peatlands beyond the boundaries of their concession to complement the conservation areas mandated within their concessions. In one case, (Giam Siak Kecil-Bukit Batu Landscape in Riau, Sumatra) the landscape was designated as a Man and Biosphere Reserve covering 850,000ha and the company is still supporting with its management. In Indonesia CSR support from the national oil company Pertamina, supported an award-winning community peatland fire prevention, sustainable use and conservation project at Sungai Pakning in Riau Province.

Another example of private sector engagement has been the proactive work by the RSPO to force all companies wanting to be certified under their scheme to cease from developing any new oil palm plantations on peat as well as require strict application of best management practices on any existing plantations on peat. This approach has been expanding at a global level with many processors and traders insisting that they would not buy palm oil from companies that continue to develop new plantations on peat or do not follow good management practices. Some of these companies are also starting to invest additional funds to support active protection and rehabilitation measures in the peatland landscapes around plantations.

Since private sector companies manage a large portion of peatlands in the region as oil palm and forest plantations, logging concessions or ecotourism destinations, the private sector has a major potential role in peatland management which can be further enhanced in the future. The advantage of such private sector support is that it generally can be provided faster and in a more flexible manner that than support from international funders. In addition, the changing of management practices by private sector land manager can be implemented almost immediately, once the companies adjust their policies.

10.5 Trends in Resource Availability by Country

Table 18 below shows information on the availability of financial resources (domestic and international funding) by AMS for implementation of the APMS and trends (where known).

Table 18: Domestic and international funding in AMS relevant to peatland

Country	Domestic fund	International fund	Trend
Brunei Darussalam	Limited	Limited	Brunei Darussalam has faced challenges to secure international funding for work on peatland due to its economic status. Some support has been received for research work from the private sector.
Cambodia	Limited	Limited	Increasing with international support (GEF-IUCN).
Indonesia	Large and growing	Large and growing	Large and growing number of international projects and funding for peatlands. Substantial increase in domestic funding between 2015 and 2020 linked to new national regulations and institutions for peatlands. Significant private sector support.
Lao PDR	Limited	Limited	Increase in future. Some projects conducted at Beung Kiat Ngong Ramsar site supported by IUCN, MRC, and FAO.
Malaysia	Significant and growing	Significant but limited sources	Increase in number and scope of peatland related projects, but limited sources of international funding. Significant private sector support.
Myanmar	Limited	Limited	Limited funding available for work on peatlands with only two recorded projects (SEApeat and current GEF-IUCN Mekong peatland project).
Philippines	Limited but growing	Limited	Increase in interest/funds from year to year, Limited international funding. New support from private sector.
Singapore	Limited	No	Supported research in AMS related to peatlands and regional training through Regional Haze Training Network.
Thailand	Significant	Limited	National funding has supported inventories and assessments, and fire prevention and control. International funding from EU SEApeat and UNDP-GEF.
Viet Nam	Limited	Limited	Very limited funding in recent years. There is only one project implemented in U Minh Thuong National Park, No international project in U Minh Hạ peatland area since the completion of the SEApeat project (2015).
Regional		Significant and growing	ASEAN Regional Haze Fund under AATHP framework. International funds from IFAD-GEF through APFP, EU supported SEApeat (2010-2015) and currently IFAD supported MAHFSA Programme and TAKE-SMPEM[35] Project, EU supported SUPA Program; GEF-IUCN Mekong Peatlands Project.

FOOTNOTE

35 Technical Assistance and Knowledge Exchange for Sustainable Management of Peatland Ecosystems in Malaysia (TAKE-SMPEM), 2019 – 2022

Overall Views

While significant progress has been made, there are still some major gaps and challenges in relation to financing of APMS implementation. In the original APMS, it was specified that a resource mobilisation strategy for the implementation of the strategy should be developed (Action 13.1.1). Regular forums among donors and supporters were anticipated to be organised to generate external funding and facilitate coordinated funding of activities. In addition, under the strategy, it was proposed that mechanisms and options to generate sustaining resources for peatland conservation and management will also be explored and developed to sustain respective national and regional activities.

Unfortunately, there was no resource mobilisation strategy developed for the APMS and focus was made on individual separate projects. An allocation has been made within the budget of the IFAD-supported MAHFSA programme (2019-2024) to support the development of a 10-year investment framework for the APMS. However, due to the delays in the start-up of the programme and the COVID-19 pandemic, that has yet to be initiated. It is now envisaged that it will be prepared in parallel with the development of the next phase of the APMS.

It is also important that in the future a more systematic approach to resource generation is undertaken to ensure that adequate support for APMS implementation is provided in a timely and predictable matter.

11. CONCLUSIONS

The main conclusions of the Final Review of the APMS are as follows:

APMS and Regional approach

1. All the actions specified in the APMS have been initiated and most are well underway.
All 98 actions specified in the APMS have been initiated or addressed at regional level and in many of the AMS. Most of them are well underway or are being continuously implemented. Six AMS (Brunei Darussalam, Indonesia, Malaysia, Philippines, Thailand and Viet Nam) have developed the NAPPs, drawing on the APMS matrix. The remaining AMS, with the exception of Singapore which lacks peatlands, have all focused on national assessments to identify peatland areas and issues to enable them to identify important actions and to mainstream peatland elements into existing national policies and/or action plans so that conservation and protection of peatland ecosystems can be addressed.

2. Significant progress has been made in achieving the Goal and General Objectives of the APMS.
There has been very good progress in enhancing awareness and capacity on peatlands in all AMS. Each AMS has designated a focal point agency related to peatland management and several have established national committees or working groups on peatlands or incorporated peatlands into the work of other committees like biodiversity or wetland committees. Some AMS have developed specific regulations and policies related to peatland or incorporated peatlands in to national policies. Most AMS have significantly enhanced institutions and individual capacity related to peatlands. All AMS now have recognised national experts on different aspects of peatlands related to peatland assessment, fire prevention and control, management and climate change linkages.

Significant action has been taken by AMS to minimise transboundary haze and environmental degradation related to peatlands especially in the southern ASEAN region where most peatlands occur. There has been a paradigm shift in the approach to addressing peatland fires – moving from an early focus on fire-fighting to a broader approach emphasising prevention. The prediction, warning and monitoring of peatland fires has also significantly improved by enhancement of FDRS as well as satellite observation and tracking of fires and haze.

AMS have recognised the importance of sustainable management of peatlands with water management being recognised as one of the most critical aspect of peatland management with restrictions and best management approaches for water management in peatlands being promoted. Regulations, guidelines and best management manuals being developed for plantations, forestry and agriculture on peatlands in different AMS.

Regional cooperation and exchange has significantly increased under the framework of the APMS. A large number of regional and international conferences, workshops and training programmes have been organised by ASEC and AMS over the past 15 years. Exchanges and peer-to-peer learning have demonstrably advanced peatland management in the region and has enabled AMS to fast track introduction of new approaches to peatland management. The ATFP was approved in 2013 and has met regularly to review progress in the implementation of the APMS.

3. ASEAN Member States continue to value the APMS and the associated work on peatlands
The feedback from AMS during the review has indicated that they strongly support the APMS and look forward to the further development of the next phase of the strategy based on conclusions and recommendations, as well as agreement of AMS. Even though there are different levels of effort based on national and local level priorities, peatland ecosystems have been recognised as one of the important ecosystems for protection and conservation throughout the region.

4. The APMS continues to be highly relevant and important in the ASEAN region
The APMS continues to be very relevant to broader ASEAN frameworks including the ASEAN Community Vision 2025 and its medium-term plans ASCC Blueprint 2025, ASEAN Economic Community Blueprint 2025 and the AATHP. According to feedback provided by respondents, the APMS is still relevant and important for the AMS to sustainably manage the peatlands within the countries. The APMS also provides guidance to the AMS to develop national and/or provincial/state/local level strategies or action plans for peatland management. It also provides an important framework to enhance options for sustainable peatland management by local communities and facilitate peer-to-peer leaning by communities and others on such approaches.

5. Implementation of the APMS makes an important contribution to safeguard regional and global environment and meeting obligations of global environment conventions and multilateral environmental agreements

The implementation of the APMS contributes significantly to the implementation of the AATHP and ASEAN Haze-Free Roadmap. In addition, the APMS implementation also supported a range of global environmental conventions, multilateral environmental agreements and targets including: The UNFCCC and the Paris Climate Agreement; CBD; Ramsar Convention on Wetlands of International Importance; UNCCD; the peatland resolution of the UNEA, UNDRR and the UN SDGs. Actions under the APMS have enhanced the protection of peatland biodiversity, reduced the rate of peatland degradation and GHG emission from peatlands and improved the prevention of peatland fires and reduced transboundary smoke haze.

6. The APMS has led to significant progress and achievements on conservation and restoration of peatlands and fire prevention

The APMS has stimulated significant actions and achievements including the identification of significant peatland in nine of the 10 AMS and large-scale actions to prevent peatland fires and restore degraded peatlands. Implementation of the APMS has been recognised and stated specifically in the Mid-Term Review of the ASCC Blueprint (2009-2015) as an outstanding regional cooperation mechanism, which that has contributed to environmental sustainability and linked regional to national to local actions. There have been different levels of implementation in different AMS, based on the relative extent of peatlands, prevalence of management issues as well as the level of national capacity for peatland management.

7. The APMS has helped to share good practices and stimulate regional and national actions

The APMS has helped to facilitate the sharing of BMPs between countries and has successfully stimulated replication of good practices within and between countries. During the implementation of the APFP and the SEApeat Project between 2010 and 2015, active exchange between AMS was supported. Since 2016, the exchange opportunities have been limited especially for government and community stakeholders, however, there have been increased exchanges across the research and private sector through regional networks and mechanisms. The on-going SUPA and MAHFSA programmes are supporting further documentation and sharing of best practices in the region and supporting replication and upscaling.

8. The APMS institutional framework has improved with establishment of the ATFP but needs further enhancement

The APMS started implementation in 2006 but the ATFP was established only after the APMS Mid-Term Review in 2013. The operationalisation of the ATFP started in 2014 and the APMS has met four times to report on and guide action in the region. The ATFP has been overseeing implementation of projects/programmes concerning peatlands/haze as Project/Programme Steering Committee. There have been challenges with insufficient resources for frequent meetings and exchanges, as well as for regional and national coordination. One important mechanism specified in the APMS which was not fully operationalised is the proposed Detailed Action Plan (DAP) for the APMS which was meant to be developed after adoption and to include a detailed matrix to record budget, source of funding, target date, responsible institution and a monitoring variable for each of the actions in the APMS. Although such matrices were partly developed in some countries, they were not consistently prepared or updated. Similarly at the regional level, a DAP was also not developed although some programme coordination mechanisms with partners were initiated. In addition, there has been lack of staff within the ASEAN Secretariat, in corresponding to the increasing roles to support APMS implementation.

9. The resources available to implement the APMS from national and international sources have been increasing but there are still significant resource mobilisation gaps and challenges

There has been an increasing number of projects and funding support to sustainably manage tropical peatlands within the ASEAN region, mainly through international and bilateral cooperation as well as national allocations in some countries like Indonesia and Malaysia. For the period 2016-2020, about USD 160 million was committed by a range of international donors together with co-finance from national or other sources. This includes support for further implementation of the APMS from the GEF through IFAD in Indonesia (i.e. SMPEI and IMPLI) and Malaysia (i.e. SMPEM), and through IUCN in Mekong countries (i.e. Mekong Peatlands Project for Cambodia, Lao PDR and Myanmar). In addition, the EU has supported the regional SUPA Programme and IFAD has financed the MAHFSA Programme. However, challenges in project design or approval delayed the start of implementation of some of this new round of international funding till 2019 or 2020. Some countries have not received any international support in recent years negatively affecting planned national and local actions. Envisaged global funding flows for peatland management from climate finance have also failed to materialise. On the positive side, there has been increased support for peatland management in a number of countries from the private sector including proactive measures by oil palm and forest plantation companies to safeguard remaining peatland landscapes.

10. The APMS has enabled cost-effective action by sharing low cost appropriate techniques between countries and stakeholders.

Through previous projects some sharing sessions were possible between stakeholders in which government, private sector (palm and forestry companies), CSOs, media and local communities managed to share their experiences and innovations in peatland management at regional level. Some of the learning sessions through site visits have been successful to replicate cost-effective approaches across the AMS.

National Actions

11. Six AMS have developed and started implementation of their own National Action Plans on Peatland (NAPP)

Six AMS containing more than 95% of the known peatland area in ASEAN have developed and started to implement their own NAPPs as stated in Table 10. AMS have different levels of implementing the NAPPs but generally the NAPPs were finalised, all but one are being implemented and some have been reviewed and extended for implementation. With the exception of Singapore, the three remaining AMS without an NAPP are currently undertaking assessments in preparation for developing a NAPP in 2021 and 2022.

12. There has been a significant improvement in national capacity and institutions to undertake work on peatlands

The capacity and institutions within ASEAN to undertake work on peatland has significantly increased in the past 15 years, moving from a situation with the majority of AMS having little or no expertise to one where the majority of AMS has significant expertise. Whereas most AMS do not have a dedicated institution undertaking peatland management, all AMS have appointed a NFP for Peatlands to coordinate peatland related activities within the country and report progress to the ATFP. Based on feedback from AMS indicates that many NFP agencies lack adequate resources and personnel to address peatland issues and there is only one AMS with an active national steering committee responsible for peatland. Most AMS have incorporated peatland elements into existing biodiversity and/or wetland committee.

13. Peatlands have been incorporated into other policy and legislative frameworks in several AMS

Mainstreaming of peatland-related issues into a more comprehensive national strategy and action plans such as NBSAP or National Wetland Policies is underway in most AMS, including those with stand-alone NAPPs. In addition, peatlands have also started to be referred to in policies and regulations for agriculture, plantations or environment helping to ensure that peatland ecosystems are considered by a broader range of stakeholders. This process has been supported by a number of country and regional initiatives linked to the APMS. However, further work is needed to address remaining policy conflicts especially between environment and development related policies.

14. All AMS have taken some action to support the APMS implementation, depending on capacity, resources and relative importance of peatland-related issues at the national level

Good progress of APMS implementation has been reported at regional national and local levels by most AMS. However, there has been a significant difference in scale and continuity of action depending on the levels of domestic capacity and resources as well as the relative importance or extent of peatland related issues. CLMV Countries (i.e. Cambodia, Lao PDR, Myanmar and Viet Nam), in particular have faced challenges in securing sufficient and sustaining national resources for peatland actions.

Stakeholder Engagement

15. Active National Focal Points (NFP) for Peatlands of AMS are key to coordinate and facilitate effective engagement of different government agencies including provincial/state and local governments from different sectors

There have been substantial efforts undertaken by the NFP and national agencies in facilitating the engagement of different economic sectors in addressing peatland management within some AMS. Progress has also been made in better engaging local government in enhanced peatland management and fire prevention.

16. The engagement of local communities is essential for sustainable peatland management

Engagement of local communities through on-the-ground activities have contributed to the success of the APMS implementation as stated in the MTR of the ASCC Blueprint 2009-2015. Pilot projects through the APFP and SEApeat project clearly demonstrate that the effective engagement of indigenous and local communities in improving the sustainability of peatland management and reducing fire occurrence at the same time as enhancing local livelihoods. Very significant reductions in peatland fires have been made through effective empowering of local communities living in and adjacent to fire prone peatlands. Conservation areas have also benefitted from improved partnerships with local communities.

17. The private sector is a key partner for sustainable peatland management

Up to a third of the peatlands in ASEAN are under the management of the private sector in particular in the forestry, agriculture and plantation sectors. Many private sector industries (based on statements by related associations) are convinced that peatland degradation is a major long-term risk for such companies. The oil palm sector (such as through RSPO) has been active in developing high standards for peatland management and also contributing to peatland protection. Significant support has also been given through Corporate Social Responsibility (CSR) funds. It is crucial to further engage these private sector entities as well as those from the finance and banking sector, to enhance allocation of resources to sustainably manage peatland landscapes to avoid further degradation and especially peat fire and subsidence.

18. Civil society is a key partner to facilitate engagement of stakeholders and enhance public awareness on peatland management issues

Civil society have been assisting in advocating for sustainable peatland management and facilitating collaboration among stakeholders in particular government agencies and local communities for on-site change of actions or modify behavior in line with government policies and plans, as well as engaging public to enhance knowledge and awareness on important services that peatland ecosystems are providing to the society.

19. Research on peatlands has rapidly expanded in recent years but more remains to be done

There has been a dramatic increase in research on peatlands in ASEAN over the past 15 years, generating information on peatland status and values as well as on management trends and challenges. This research has helped guide policy developments. Significant work has been undertaken related to peatland fires and GHG emissions as well as on assessing peatland biodiversity. However, more research is needed on developing economically-viable and sustainable peatland management options such as paludiculture and guiding peatland rehabilitation and climate change adaptation.

20. International cooperation partners have increased their support for peatland management in recent years but this needs to be further scaled-up and provided in a more expedited and predictable manner

Support from bilateral and multilateral development assistance and environmental and research funding has increased significantly in recent years. However, the delays from generally long preparation processes have led to disruption of ongoing peatland management programmes at country and local levels. Given the serious and increasing degradation and loss of peatland ecosystem in the region, expedited and predictable funding mechanisms are needed Further support is also needed for scaling-up effort for sustainable peatland management; improved protection of the remaining relatively intact peatland ecosystems; as well as support sustainable livelihoods for peatland dependent communities within the region.

Sustainable Peatland Management Approaches

21. The majority of peatlands in ASEAN have been identified and documented but there are still important gaps in knowledge

Peatlands have been mapped in most of the countries in the region, but there are significant gaps in knowledge in the Mekong region, Philippines and Papua Island in Indonesia, as well as for upland and montane peatlands throughout the region. The status of many peatlands has been rapidly changing with large-scale clearance and drainage in many countries with less than 10% of peatlands in parts of southwestern ASEAN remaining in relatively intact state. There is inadequate assessment, monitoring or reporting of changes in the status of peatlands.

22. Peatlands in ASEAN are of global significance for biodiversity conservation and climate regulation as well as of national and local significance for water management and livelihood support

Peatlands in ASEAN are the most important carbon sink in the region but their degradation is responsible for the largest emission source from the agriculture, forestry and land use sectors. ASEAN's peatlands have highly diverse and unique biodiversity being home to many endemic, rare, threatened and endangered (RTE) species. Peatlands also play a critical role in storing and regulating water and preventing floods and saline water intrusion as well as supporting a broad range of human livelihoods. Peatlands are significantly under-represented in the network of totally protected areas (TPAs) in the region.

23. Peatlands in the ASEAN region have been seriously degraded in the last 50 years and relatively few areas of pristine peatland remain

Peatlands in ASEAN have been degraded and converted for other land use in particular for logging, agriculture (plantation) and settlement over the last 50 years. Degraded peatlands have led to large-scale transboundary haze affecting the health of millions of people, leading to billions of dollars of losses of natural resources and negative impacts on economic sectors. Only a small portion of pristine peatlands remain in the region. The proportion of peatland in protected areas being much lower than the targeted 17% as specified in the CBD Aichi Targets. There has still been further degradation of peatlands during the APMS period but over the past 5-10 years, many AMS have halted or limited further large-scale conversion on peatlands and enhanced rehabilitation measures.

24. Effective water management in the peatland landscape is the most important factor for sustainable peatland management

Effective and proper water management through a landscape, or PHU, approach is the most important strategy for sustainable peatland management. Good water management is critical for ensuring optimum yields of crops and preventing GHG emission and land subsidence that leads to increased flooding.

25. Enhanced peatland management and fire prevention is critical to eliminate transboundary haze in ASEAN

According to work by the Max Planck Institute, more than 90% of the transboundary haze in the southern ASEAN region is linked to peatland degradation and fires. While progress has been made in reducing its extent and severity, peatland fire and associated national and transboundary haze, will only be eliminated by enhanced peatland management and proactive peatland fire prevention. While peatlands in Northern ASEAN are smaller in scale, they are still prone to fire and also need fire prevention measures.

26. Peatland fire needs to be managed using an integrated fire management approach

In line with the ASEAN Guidelines on Peatland Fire Management, peatland fires should be prevented or controlled through an integrated fire management approach involving the four elements i.e. PPRR. A paradigm shift from fire suppression to fire prevention should be prioritised and 80% of resources should be allocated to peatland fire prevention rather than preparation for fire-fighting and control.

27. The root cause of peatland degradation includes business as usual approaches to peatland development such as drainage and planting of dryland crops

The root cause of peatland degradation in the region has been the large-scale clearance and drainage of peatlands for agriculture, plantations, infrastructure and mining. This has disrupted the hydrology of peatland ecosystems and often fragmented them into smaller non-viable remnants. Peatlands have been planted with crops more suited to drylands such as oil palm, rubber, maize and acacia and so have often been over-drained leading to significant subsidence and high fire risks. Peatlands have also been deliberately burned to remove natural vegetation and based on a false belief that it may enhance fertility.

28. The importance of peatlands as carbon stores has been recognised and actions to reduce GHG emission in peatland has been prioritised by some AMS

Some AMS have included peatland elements into their NDC under the Paris Climate Agreement as one of the key indicators and/or targets for reducing emissions. Since peatlands are one of the most carbon rich ecosystems in the region, there is high potential to enhance measures to conserve and restore peatlands as an effective climate mitigation strategy.

29. Insufficient action has been taken to assess the impacts of climate change on peatlands and develop adaptation strategies

The main climate scenarios in the ASEAN region are rising sea levels and saline water intrusion, increasing temperatures, more severe droughts and a higher proportion of extreme rainfall events. All will have a serious impact on peatlands and increase peatland degradation, fires, land subsidence and flooding. Sustainable peatland management approaches can minimise risks of the fire and degradation and help to buffer saline water intrusion and flooding. Sustainable peatlands management should be considered more importantly than before and mainstreamed into climate adaptation strategies.

12. PROPOSED RECOMMENDATIONS TO ATFP AND COM TO AATHP ON THE FUTURE OF THE APMS

APMS and Regional Approach

1. The APMS should be reformulated for the period 2021 to 2030 to maintain and scale-up action for sustainable peatland management

Although all specified actions in the APMS have been initiated, most are not completed in all AMS and some are in urgent need to continue such as fire prevention, sustainable management, research and monitoring. There are still countries and sub-regions facing challenges to implement the range of targeted actions. In addition, there are emerging issues that need to be addressed. Based on the experience and lessons learned in the APMS implementation, it is recommended that the APMS should be reformulated to suit the current situation rather than just extended in its current form. Most AMS have indicating that they are planning to continue and enhance the work on peatland in the future, and encourage an extension of the APMS to act as a framework and support for future action.

2. The scope of the APMS focal areas and objectives should be updated, focused and also broadened to certain additional areas

There is some duplication of actions in the current APMS between different Operational Objectives (or Focal Areas). Other actions have largely been completed or are of lower priority. The actions should be more target-oriented and focused rather than general. Additional areas should be considered for higher priority such as multi-stakeholder engagement, community development and economically-viable as well as sustainable peatland utilisation options. Actions on community development and enhancement of community livelihood should be prioritised, promoted and supported with effective business mechanisms to provide better living of the peatland dependent communities.

3. Clear targets, criteria and indicators should be developed for the next phase of the APMS to enable effective monitoring and evaluation

There are currently no clear targets, criteria and indicators in the existing APMS that can be quantified for monitoring, which has created a major challenge to track progress and review and evaluate the status of implementation. Monitoring and Evaluation (M&E) Plans at national and regional levels should be developed with clear objectives, criteria and indicators and targets for change to support enhanced management of peatland ecosystems within the region. The targets should build on the six key targets adopted by ASEAN in 2013 as the framework for the related APSMPE. These targets could provide the core framework of the APMS in future rather that the current focal areas and objectives. Some indicative or relevant targets are included in **Table 19**. The targets should be complemented by a robust M&E System to track progress and identify areas for enhancement.

Table 19: Key potential targets for inclusion in the APMS to 2030

Target	Source reference
All peatland areas identified and inventorised	APSMPE 2014-2020
Zero-burning uniformly practiced to prevent any uncontrolled wildfires on peatlands, and eliminate any widespread smoke haze	APSMPE 2014-2020
Fire prone sites rehabilitated by focusing on root causes of fire	APSMPE 2014-2020
Bonn Challenge	
Peatlands sustainably managed, sustainable livelihoods enhanced, and sustainable economic use mainstreamed	APSMPE 2014-2020
Peatlands conserved to contribute to significantly reduced emissions of greenhouse gases and increased peatland biodiversity in the region	APSMPE 2014-2020
APMS and NAPPs implemented; national and regional capacity enhanced	APSMPE 2014-2020
4 million ha or 17% of all peatlands in ASEAN to be included in protected areas	CBD Aichi Target 17% by 2020
Possible new target 30% by 2030	
Zero net degradation of peatlands	UNCCD
40% significant reduction in peatland emissions by 2030 compared to 2005	UNFCCC Paris Agreement/NDCs
Rights of peatland dependent communities recognised and livelihoods enhanced	UN SDGs
Transboundary haze eliminated	ASEAN Roadmap to a Haze-Free ASEAN

4. **The next phase of the APMS should be developed through a participatory and multi-stakeholder process**

The original APMS was developed primarily through consultation amongst national government agencies. As documented in this review, the first phase of the APMS implementation has demonstrated the critical role of other key stakeholders including local governments, indigenous and local communities, private sector, civil society and the research community. It is recommended that the next phase of the APMS is developed through a participatory and multi-stakeholder process, to enable contribution, buy in and implementation support from different stakeholders and sectors. Inputs from multiple disciplinary background would assist in comprehensively preparing the strategies and action plan.

5. **The institutional framework at regional level should be strengthened and enhanced support from ASEAN Secretariat and partners**

The regional and country level coordination mechanisms should be enhanced with dedicated personnel and enhanced resources and support from partners. Harmonised reporting formats should be used to enable effective and timely tracking of progress and challenges to be addressed.

6. **Consideration should be given to establish sub-regional action plans for the northern and southern ASEAN in the next APMS given the different nature and drivers of the peatland management**

AMS in southern parts of ASEAN have extensive peatlands with large-scale peatland development, drainage and significant drivers of peatland action related to fires and transboundary haze. In the northern ASEAN region, peatland tend to be smaller in scale but of significance of biodiversity conservation and local livelihoods. National capacity and resources to manage peatlands are more limited in the northern ASEAN region. Adjusting the planning and implementation frames to these two sub-regions would parallel and lead to the separate plans and institutional arrangements developed for fire and haze management in southern ASEAN and the Mekong sub-regions.

7. **An investment framework should be developed for the next phase of the APMS to guide/support resource allocations at local, national and international levels**

In order to provide adequate resources for sustainable peatland management in a regular and dependable manner, an investment framework tied to the next phase of the APMS is important to highlight resource needs and to attract support from multi-stakeholders. The investment framework(s) at national or regional levels will support actions at local, national, regional and international levels. It can also support the scaling-up and replication of best management practices within and across AMS in the region as well as driving investment in economically viable sustainable peatland management options.

8. **A multi-stakeholder financing mechanism(s) and resource mobilisation plan should be established to support implementation of the APMS**

There is currently no clear financing mechanism established to support the APMS and peatland projects/programmes for the region. The international financial support so far has been based on ad-hoc funding and bilateral discussions between funding organisations and the AMS. Such funding frequently has a long preparation period resulting in delays in providing funds for priority actions. It also leads to duplication of effort. Establishing or strengthening financing mechanisms at regional or country levels could reinforce the implementation of the APMS. A regional mechanism could be managed as an ASEAN Trust Fund or by a partner financial institution guided by a multi-stakeholder platform and a roundtable of development cooperation partners. Contributions could come from ASEAN Dialogue Partners, donors and private sector. This would complement the proposed investment framework. The financial mechanism could channel funds to AMS or partner organisations to implement priority actions in a timely manner. It could link to regional, national and local funding and ensure continuity of action. In parallel to the investment framework and financing mechanism, a resource mobilisation plan is needed for regional and national peatland management implementation. This must be in place for better coordination between actors and a sustained approach to implementation.

9. **A regional knowledge hub for peatland management should be established and information sharing and exchange should be enhanced**

Increasing amounts of information on peatland management are being shared on the internet by many different players/stakeholders. However, there is a need to have a centralised knowledge hub under the umbrella of the ASEAN Secretariat and an online source where updated, reliable and curated information on peatlands is available for the use and exchange among the stakeholders and public at all level regarding the sustainable peatland management and preventing transboundary smoke haze within the region. The knowledge hub should be funded by the AMS so that it exists perpetuity.

10. **A special publication to showcase the achievements and lessons learned from the 15 years of APMS implementation (2006-2020) should be prepared**

A special publication should be produced by ASEAN to document and showcase the achievements of the 15 years of APMS implementation illustrated by case studies and examples of best management practices. This should be broadly disseminated to key audiences in the ASEAN region and internationally.

National Actions

11. Strengthen the capacity of NFPs on Peatlands to work with multiple agencies

The capacity and resources of the NFPs agencies on peatlands in the various AMS should be strengthened and supported to enable them to effectively oversee the management of peatlands in their respective country, monitor and report to the ATFP. A critical challenge in many AMS is working effectively across ministries and agencies to coordinate and synergise actions. To avoid any conflict between authorities, the NFP and the implementing agencies have to have proper coordination and an integrated plan to enable policy harmonisation and streamlining as well as effective cooperation at the ground or landscape level.

12. AMS with existing NAPPs should update and extend them in parallel with the revised APMS.

Six AMS have existing NAPPs, with most of them expiring in 2020. The NAPPs should be reviewed, updated and extended in parallel with the preparation of the next phase of the APMS as stated in **Table 20**. The findings and recommendations in this report should be used as a guide for the review and revision of the existing NAPPs with regard to prioritisation and gaps and inclusion of targets. Development and refinement of the NAPPs should include prioritisation and customisation of peatland management, restoration approaches to focal areas to each country. In order to make the NAPP a success, better coordination mechanisms across relevant sectors with clear roles are needed. With the NAPP, the power for appropriate decision making at the local level should be strengthened through either decentralisation or other devolution of power for implementation and enforcement to start at the right entry point.

13. AMS currently without NAPPs should either develop a NAPP and/or integrate peatlands into other appropriate plans and strategies

AMS with smaller peatland areas in the country may develop a NAPP as stated in **Table 20** and/or where appropriate, integrate peatlands management concerns into existing national policies or plans such as NBSAP or National Wetland Plans.

Table 20: Recommendations for further development of NAPPs in each AMS

COUNTRY	RECOMMENDATIONS
Brunei Darussalam	The current NAPP to 2020 should be reviewed and extended to 2030 taking into account recommendations of APMS review.
Cambodia	NAPP to be developed taking into account recommendations of APMS review.
Indonesia	Implementation of the National Plan to 2049 and associated rolling plans should take into consideration the APMS review findings and recommendations
Lao PDR	A NAPP should be developed taking into account recommendations of APMS review.
Malaysia	The current NAPP to 2020 should be reviewed, revised and extended to 2030 taking into account recent findings and recommendations of APMS review.
Myanmar	A NAPP should be developed taking into account recommendations of APMS review.
Philippines	The current NAPP should be reviewed and revised and extended to 2030 taking into account recommendations of APMS review.
Singapore	Focus on supporting issues at regional level
Thailand	The current NAPP to 2020 should be reviewed and revised and extended to 2030 taking into account recommendations of APMS review.
Viet Nam	The current draft NAPP should be reviewed and revised and resubmitted for approval to cover period to 2030 taking into account recommendations of APMS review

14. Peatlands should be fully incorporated into national development plans, national climate mitigation and adaptation plans, and rules and regulations related to environment and land management

Based on experience and lessons learned from previous peatland management and risks from degradation such as floods, subsidence, fires and haze, AMS should integrate peatlands into land use and development planning and also strengthen rules and regulations and law enforcement to effectively prevent further degradation. Sustainable management of peatlands should be further highlighted and to be incorporated into climate adaptation and mitigation plans.

15. Further assessments of peatlands at national and sub-national levels should be undertaken in each of the AMS to fully document all peatlands

There are significant gaps in knowledge in the distribution of peatlands in many parts of the ASEAN region including in the Mekong sub-region, Philippines and Papua Region in Indonesia. Peatlands are extensive in some upland and montane parts of the region such as Malaysia, Sumatera, Papua and Sulawesi of Indonesia. In addition, due to rapid changes, the status of peatlands throughout ASEAN needs to be updated to support management and monitoring measures.

Stakeholder Engagement

16. Partnership framework/platforms should be established at regional and national levels to facilitate enhanced engagement of key stakeholders for implementation of the APMS

Multi-stakeholder partnership platforms for sustainable peatland management can enhance the provision of support from multiple stakeholders including government agencies, private sector, CSOs, local communities and academia, as well as ASEAN Dialogue Partners. Such platforms can also avoid duplication and enhance synergy between related support programmes. This mechanism is also important to allow two-way communications between NFPs, stakeholders and partners and to enable sharing information and scaling-up good practices at local, national and regional levels. It can also enable key result and best management practices to be highlighted to policy makers. Establishment of a regular Regional Partners Forum back-to-back with meetings of the ATFP or other relevant existing ASEAN mechanisms (COM/COP, TWG/MSC, TWG/MSC Mekong) would be strategic.

17. AMS should adopt a community-based approach when implementing the APMS at local level

Recognizing that local communities are key stakeholders in peatland management, the next phase of the APMS should strongly support community-based peatland stewardship and sustainable use. Gender equality and engaging of youth should be an important aspect of community engagement. Engagement with indigenous people and local communities should comply with Free, Prior and Informed Consent (FPIC) principle as far as possible.

18. Linkages should be enhanced to other relevant ASEAN sectors

The APMS implementation should be linked to existing relevant national, regional and international programmes, such as the ASEAN Ministerial Meeting on Agriculture and Forestry as well as coordinated between different sectors at the national level.

19. The engagement of civil society, private sector and research institutions in the APMS and sustainable peatland management should be enhanced

Civil society, private sector and research institutions have a key role to play in the scaling-up and implementation of the APMS. These stakeholders should be seen as important partners in implementing sustainable peatland management and so should be involved in planning, implementation and monitoring of the next phase of the APMS. Each AMS should provide clear opportunities for and ensure meaningful public participation in national, provincial/state and local development planning and investment, when it relates to peatland issues.

20. Expand targeted research on key issues related to peatland management

Although research on peatland has rapidly expanded in ASEAN, it is still heavily focused on biodiversity and peatland ecosystem (especially related to carbon sequestration, emission factors and the economics of carbon). There is still a huge research gap on multi-stakeholder processes and management, namely integrated water management; landscape management and rehabilitation; development of economically-viable crops and income generating activities for wet and rewetted peatlands; integrated forest fire management; and development of suitable livelihoods in peatlands.

Sustainable Peatland Management Approach

21. Remaining intact peatlands should be designated as protected areas to conserve biodiversity and ecosystem functions

There are relatively few remaining intact peatlands in the region, therefore the remaining intact peatlands should be identified and designated as locally or nationally protected areas. Additional peatlands of regional or international importance should be designated as ASEAN Heritage Park, Ramsar Site and/or Important Bird Areas (IBA) and Key Biodiversity Areas (KBA). The area of peatlands in protected areas (PAs) including local or community conserved areas should be expanded from the existing estimated area of approximately 1.1 million ha (4.4%) to cover 17% or 4 million ha of the estimated 25 million peatlands in the ASEAN region to meet the CBD Aichi Target of 17% of the area of all terrestrial ecosystems to be included in the protected areas by 2020. To facilitate this, a review should be made of the current coverage of peatlands within the protected area system combined with an assessment to identify potential additional peatlands to be included in protected areas or have their protection status upgraded.

22. Special measures should be taken to assess and conserve montane or upland peatlands

Montane or upland peatlands are extensive in some regions of ASEAN and play key roles in water supply, micro-climate moderation and ecology of such regions with many unique and rare species. However, these upland peatland areas are now under threat from fire, peat mining and intensive agricultural activities. Special measures should be taken to identify, assess and safeguard these systems and develop appropriate sustainable management strategies.

23. Experience in sustainable peatland management should be documented and shared through exchange programmes and regional site networks

The results of exchanges within and between countries and to demonstration sites have been inspiring and these have frequently stimulated rapid learning, replication and adaptation of best practices. Peer-to-peer learning and exchange programmes should be further stimulated and supported together with establishment an ASEAN network of protected peatlands and demonstration sites – to act as a focus for sharing and learning.

24. New and economically-viable peatland management options for local communities need to be developed and promoted

Paludiculture, or the cultivation of suitable crops on wet or rewetted peatlands, is a critical approach to generate livelihoods for local communities in peatland areas. Studies on ecological and socio-economic aspects need to be expanded to understand better the feasibility and value chain potential of the crops/species. Planting water tolerant plant species, zero burning farming practices, integrated farming e.g. agroforestry and api-agriculture, silvo-fishery etc. as well as better processing and marketing are also needed to diversify peatland-associated products and income for local communities. Developing such management options can be undertaken with the support from research institutes and the private sector combined with pilot projects with local communities.

25. BMPs for sustainable management of peatland need to be scaled up and more broadly applied

Many BMPs have been developed and documented related to oil palm and forest plantation in peatlands but they need to be more widely promoted and applied to improve existing management of the plantations on peatland. Best practices for peatland conservation and rehabilitation, in particular rehabilitating degraded peatlands by restoring natural water tables and encourage natural revegetation also need to be scaled-up drawing on positive recent experience.

26. Peatland ecosystem management should be mainstreamed based on the peatland hydrological unit or landscape approach

Some AMS have successfully been managing their peatland ecosystems through PHU and/or landscape approach, which prioritise water management. This proven approach should be promoted to all AMS and internationally to provide a framework for sustainable peatland management.

27. Peatland fire prevention should be enhanced through investment, incentives, capacity development, multi-stakeholder partnerships and technology

Peatland fire prevention should be considered as priority in all AMS with reference to the ASEAN Guidelines on Peatland Fire Management. These approaches should be promoted further through national SOPs and strategies. Investment, incentives, capacity development and multi-stakeholder partnerships must be put in place to encourage smallholders and local community to effectively prevent peatland fires. New technology and approaches should be used to support peatland fire prevention strategies including use of peatland fire prediction/FDRS, drone and advanced satellite imagery, improved water management and monitoring systems.

28. Rights of local and indigenous communities living in and adjacent to peatlands should be recognised and land tenure conflicts resolved

Indigenous and local communities are effective stewards for peatland ecosystems. Their role and rights should be recognised and they should be empowered to support protection and sustainable use of the system. Conflicts related to land tenure should be solved through participatory land use planning (PLUP) and other approaches to ensure community rights are clear and understood. If local communities have clear rights, then they have the long-term incentive for integrated peatland management.

29. New approaches for results-based management for peatlands should be developed including payments for ecosystem services

Peatland management options for different payment of ecosystem services should be explored with state agencies, private sector, and local stakeholders as a means to stimulate and reward good stewardship of peatland landscapes. In addition to payment schemes for water and carbon, stewardship consideration should also be given to new tools such as “LandScale” an emerging tool to help drive landscape-scale sustainability which provides measurable indicators of the state and trajectory of sustainability at the landscape level across environmental, social, and economic dimensions.

30. An ambitious target should be set for rewetting and rehabilitating degraded peatlands for fire prevention, biodiversity conservation, climate mitigation and sustainable livelihoods

Large areas of peatlands in ASEAN have been degraded and will continue to create problems of fire, haze, subsidence, flooding, loss of biodiversity and ecosystem services unless action is taken. All AMS should take measures to restore the water regime of degraded peatlands as a priority step in their rehabilitation. Multiple benefits of restoration of biodiversity, climate change mitigation, water resource management and sustainable livelihood of communities should be the holistic target result rather than single purpose rehabilitation work.

ANNEX 1: TERMS OF REFERENCE OF THE FINAL REVIEW OF THE APMS

Sustainable use of Peatland and Haze Mitigation in ASEAN (SUPA) Component 1
P.N: 14.9048.1-002.00

Terms of Reference for Consultancy Services
for the 'Final Review of the ASEAN Peatland Management Strategy (APMS)
2006-2020'

1. Background

In the Association of South East Asian Nations (ASEAN) region peatlands cover approximately 23,6 million hectares, representing 56% of global tropical peatlands[1]. It is estimated that ASEAN peatlands store approx. 68 billion tons of carbon, i.e. 14% of carbon stored in peatlands globally[2]. In the past few decades, human interventions such as logging, slash and burn, deforestation, drainage for agriculture, and consequently increasing wildfires have turned ASEAN's carbon-rich peatlands into giant carbon emitters.

The Strategy and Action Plan for Sustainable Management of Peatlands in ASEAN Member Countries, generally known as ASEAN Peatland Management Strategy (APMS) was endorsed by 12th ASEAN Ministerial Meeting on Environment (AMME) in 2006 to guide actions to support the sustainable management of peatlands in the region for the period of 2006-2020. The general objectives of the APMS are to: (i) enhance awareness and capacity on peatlands; (ii) address transboundary haze pollution and environmental degradation; (iii) promote sustainable management of peatlands; and (iv) promote regional cooperation. The first review of APMS was conducted in 2012, facilitated by the ASEAN Peatland Forest Project (APFP) and SEApeat Project funded by Global Environment Facility, International Fund for Agricultural Development and the European Union. The revision was adopted by the 9th Meeting of the Conference of the Parties to ASEAN Agreement on Transboundary Haze Pollution in 2013. The ASEAN Task Force on Peatlands (ATFP) was established in monitoring and supporting the implementation of the APMS (2006-2020).
The SUPA (Sustainable Use of Peatland and Haze Mitigation in ASEAN) Component 1 is a regional programme implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH with the objective to strengthen the ASEAN Secretariat (ASEC) and ASEAN Member States to implement the APMS and National Action Plan on Peatlands (NAPPs). SUPA Component 1 is co-financed by the Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU) and European Union (EU).

[1] Source: http://www.weather.gov.sg/vfsp-was/about-peatlands-in-southeast-asia/
[2] Source: Page, SE, Rieley, JO & Banks, C 2011, "Global and Regional Importance of the Tropical Peatland Carbon Pool", Global Change Biology, vol. 17, no. 2, pp. 798-818, DOI 10.1111/j.1356-2486.2010.02279.

The 4th Meeting of ATFP held in February 2019 agreed to merge the second and final review that would allow an early start of the final review, to anticipate the smooth continuation of the current APMS which will expire in 2020, and the next one (APMS 2021-2030). The exercise will be conducted in two phases:

(i) Final Review of APMS with a view to be reported to the 16th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution (COP-16) next year. This final review will include recommendations for the next APMS; and

(ii) Development of the next APMS with a view to be reported and endorsed by COP-17 in 2021.

GIZ is seeking consultancy service to carry out the first phase on *the final review of the implementation of the current ASEAN Peatland Management Strategy 2006-2020.*

2. Objectives

The objective of the final review of APMS is to provide a consolidated (national and regional) assessment on the implementation of the APMS and achievements of the targets; and generate information and learning to inform the formulation of the next strategy. The assessment shall include challenges and opportunities, lessons learnt, best practices, and key recommendations. The review will ensure that initiatives and activities remain consistent with the overall goal and general objectives and are responsive to emerging issues and priorities.

3. Scope of work

The final review will assess the implementation of APMS in the following aspects:

- **Appropriateness/relevance**: conformity with ASEAN Vision 2020 and its medium-term plans and the ASEAN Agreement on Transboundary Haze Pollution; sectoral need;
- **Effectiveness:** achievement of planned processes and results; outputs delivered; outcomes achieved;
- **Efficiency:** level of resources needed to achieve outputs and targets;
- **Impact:** contribution to the ASEAN Vision 2020 and its medium-term plans and the ASEAN Agreement on Transboundary Haze Pollution; avoidance of negative consequences; and
- **Sustainability:** retention of knowledge gained, ongoing resources available, political will to sustain momentum, continuity of flow of benefits.

4. Deliverables and Timelines

- **The expected deliverables (outputs)** are as follows:

No.	Output	Description	Timeline
1.	Detailed work plan for undertaking the review	The workplan should include: Objectives, key actions/activities, outcomes, key milestones, resources and a timeline/ work plan calendar by activities and resource type.	January – March 2020
2.	Preliminary report	The preliminary report should contain the above-mentioned indicators to be presented to ATFP for comments, the status of AMS NAPPs i.e. which AMS have already NAPPS and what is the state of their implementation, challenges of both developing and implementation of NAPPs at national level, lessons learned, an evaluation of the main success stories and upscaling examples from ASEAN implemented projects: the ASEAN Peatland Forest Project (APFP), SEApeat and more recently the ASEAN Programme on Sustainable Management of Peatland Ecosystem (APSMPE) 2014-2020.	June – August 2020
3.	Final report	The final report is expected to be of high quality data, figures, and tables. The final report would be presented to the COM/COP for consideration.	September - October 2020

5. Main tasks

The activities to be conducted under the project are as follow:

- Provide a consolidated (national and regional) assessment of the implementation of the APMS in relation to the progress made towards the achievements of the targets while taking into account the current peatland situation in ASEAN, that should include but might not be limited to: latest available data at regional and national level e.g. extent, nature, issues related to peatlands.
- Evaluate the progress of implementation e.g. regional and national actions (NAPPs) and the relevance of existing actions on national level,
- Review of regional and national priorities,
- Explore new developments to be covered both at regional and national level for peatland management e.g. policies, implementation mechanisms,
- Design and facilitate two workshops with the ATFP and provide input on:
    - How the Strategy, the reviewed Strategic Framework and associated delivery mechanisms have helped ASEAN to focus and improve the relevance, strategic

positioning and effectiveness of ASEANS's contribution to improved peatland management.
    - Progress achieved, the evaluation highlights some of the positive work conducted so far and identifies potential gaps as well as resources and capacity bottlenecks, with a view to offer concrete orientations on the next steps in ASEAN's work on sustainable peatland management.
    - Prepare presentations and report of the review of last APMS
- Provide strategic recommendations for ASEAN at all levels – regional and national for each AMS – to further mainstream sustainable peatland management in the AMS and increase the contribution of ASEAN.
- Make recommendations for the development of the new APMS 2020-2030, drawing lessons learned from the challenges encountered during the implementation of APMS 2006-2020 and making a critical analysis of the relevance of existing actions and priorities to inform the formulation of the next Strategy.

Most of the tasks are expected to be desktop-based work. Occasionally, trips within the ASEAN region may be necessary as described in the workplan.

6. Consultant team profile

The Consultants are ideally able to satisfy the following criteria

- Hold a University degree in a discipline related to the assignment, or equivalent professional experience of a minimum of 8-10 years;
- Have previous experience in consultancy work in the ASEAN context. The Consultant must have had experience in conducting similar consultancy work i.e. review and evaluation of policies and/or strategies, formulation of policies and/or strategies related to the environmental field for other inter-governmental or regional organizations, multi-national companies, or non-governmental organizations in the region
- Have knowledge of peatlands and the challenges related to peatland management in the ASEAN context;
- Excellent command of spoken and written English;
- Good reporting and presentation skills;
- Cultural sensitivity to deal appropriately with interlocutors in ASEAN Member States;
- Must be based in an ASEAN Member State;
- Compose of multidisciplinary fields of the team in the field of i) environment/peatland; ii) socio-economic/trade development, and iii) governance-communities.

7. Application submission

The closing date for applications is 7 January 2020. To apply submit via email to andri.irvan@giz.de and swesty.haryanty@giz.de , the following documents:

1. CVs, should include experiences on ASEAN level and peatlands, references, and publications (if any),
2. Work plan (includes proposed methods, steps and timeline)
3. Financial proposal (daily rate and working time). Tickets, land transport, accommodation and daily subsistence allowance will be remunerated by GIZ SUPA against proof of payment (receipts).

Only applications with all the above-mentioned supporting documents before the closing date will be considered. Only selected candidates will be invited to **present their work plan to representatives of the ASEAN Secretariat and GIZ**. Final decision will be made based on application documents and presentation.

ANNEX 2: TERMS OF REFERENCE AND MEMBERSHIP OF TASK FORCE OF APMS REVIEW

TASK FORCE OF THE FINAL REVIEW OF ASEAN PEATLAND MANAGEMENT STRATEGY 2006-2020 (APMS)

TERMS OF REFERENCE

Background and Mandate

1. The APMS was developed by the ASEAN Member States (AMS) to guide actions to support management of peatlands in the region for the period of 2006-2020. The APMS was prepared based on the pressing need recognised by both national and international communities for wise use and sustainable management of peatlands as well as the emerging threat of peatland fire and its associated smoke haze to the economy and health of the region, and its contribution to addressing global climate change. The APMS was developed within the framework of the ASEAN Peatland Management Initiative (APMI) and the ASEAN Agreement on Transboundary Haze Pollution (AATHP).

2. The goal of the APMS is to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation to support and sustain local livelihoods, reduce risk of fire and associated haze and contribute to global environmental management. The general objectives of the APMS are:

- To enhance awareness and capacity on peatlands:
- To address transboundary haze pollution and environmental degradation
- To promote sustainable management of peatlands
- To promote regional cooperation.

3. COM-15 noted that 4th ATFP: (i) agreed to merge the second and final review that would allow an early start of the final review, to anticipate the smooth continuation of the current APMS which will expire in 2020, and the next one (APMS 2020-2030), and to provide more comprehensive review; and (ii) approved the concept note of the final review of APMS with the support from GIZ under SUPA Component 1.

4. The final review of the APMS will be conducted in two phases:
   i. Final Review of APMS with a view to be reported to the 16th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution (AATHP) (COP-16) in 2020. This final review will include recommendations for the next APMS; and
   ii. Development of the next APMS (for 2021-2030) with a view to be reported and endorsed by COP-17 in 2021.

5. Global Environment Centre (GEC) was appointed by GIZ, as implementer of ASEAN-European Union the Sustainable Use of Peatland and Haze Mitigation in ASEAN (SUPA) Component 1, in February 2020 to undertake the final review of the APMS.

Role

6. The main role of the Task Force Members of the Final Review of the APMS (the APMS Task Force, hereinafter) is to work closely with ATFP, COM and GEC: i) realise the objectives of the final review of the APMS and facilitate cooperation with relevant key stakeholders and partners within respective AMS; ii) work closely with GEC on compiling and sharing inputs from the relevant key stakeholders and partners from respective country; iii) review recommendations for the next steps to advance APMS; iv) facilitate briefing of other stakeholders including ATFP Focal Points and COM to AATHP on progress and issues with the final review; and v) assist in gathering feedback, guidance, and support at management and political level from respective AMS.

Chairmanship

7. The Chair of the APMS Task Force shall follow the ATFP chairmanship.

8. The designation of the Chair and duration shall be in accordance with the period of the final review of the APMS.

Reporting

9. The APMS Task Force reports to and is responsible to the ATFP.

Frequency of Meetings

10. The APMS Task Force shall meet at least twice during the process period of the final review of the APMS, from March – November 2020, either virtually or physically, or more frequently as the need arises with support from SUPA Component 1. In so far as is feasible, the APMS Task Force meetings shall be held back-to-back with relevant ASEAN meetings.

Membership of the Task Force of APMS Review

Brunei Darussalam		
Noralinda Binti Haji Ibrahim *Acting Director* *Forestry Department, Ministry of Primary Resources and Tourism* **Ms. Dk. Haryanti PH Petra** *Senior Environment Officer* *Department of Environment, Parks and Recreation*	**Zaeidi Bin Hj Berudin** *Forestry Officer* *Heart of Borneo Centre* *Ministry of Primary Resources & Tourism* *Brunei Darussalam* **Ms. Han Qin Yun** *Landscape Architect* *Department of Environment, Parks and Recreation*	**Hj Mosaidi Bin Mohd. Said** *Environment Officer, International Affair Division,* *Department of Environment, Parks and Recreation, Ministry of Development* *Brunei Darussalam*
Cambodia (Chair)		
Dr. Srey Sunleang *Director* *Department of Freshwater Wetlands Conservation,* *Ministry of Environment*		
Indonesia		
Mr. Muhammad Askary *Head of Sub Directorate for Preservation of Peatland Ecosystem* *Ministry of Environment and Forestry*		
Lao PDR		
Ms. Phaylin Bouakeo *Deputy Director of River Basin Planning and Development Division* *Department of Water Resources, MONRE*	**Mr. Phingsaliao Sithiengtham** *Department of Water Resources, MONRE*	
Malaysia		
Ms. Norsham binti Abdul Latip *Senior Under Secretary* *Biodiversity and Forestry Management* *Ministry of Energy & Natural Resources* **Ms. Farrah Shameen binti Mohamad Ashray** *Under Secretary* *Division of Forestry Management* *Ministry of Energy & Natural Resources,*	**Ms. Atifa Maryam binti Norbanan** *Assistant Secretary* *Division of Forestry Management* *Ministry of Energy & Natural Resources* **Mr. Harry Yong** *Head of Wetland Forest Section* *Forestry Department of Peninsular Malaysia*	**Mr. Bahren Zuhaily bin Abdul Rahim** *Assistant Director* *Forestry Department of Peninsular Malaysia*
Myanmar		
U Soe Naing *Director, Natural Resources Division* *Environmental Conservation Department* *Ministry of Natural Resources and Environmental Conservation*		
Philippines		
Ms. Marlynn M. Mendoza *Chief of Caves, Wetlands and other Ecosystems Division,* *Biodiversity Management Bureau – Department of Environment and Natural Resource*	**Ms. Joy M. Navarro** *Sr. Ecosystems Management Specialist, Wetlands and other Ecosystems Division,* *Biodiversity Management Bureau – Department of Environment and Natural Resource*	Alternate Member: **Ms. Zoisane Geam G. Lumbres** *Ecosystem Management Specialist II* *Caves, Wetlands and other Ecosystems Division* *Biodiversity Management Bureau – Department of Environment and Natural Resource*
Singapore		
Ms Tan Joo Gian *Senior Executive/International Relations Department* *National Environment Agency*	**Mr Daryl Gomes** *International Relations Department* *National Environment Agency*	
Thailand		
Ms. Chatchaya Buaniam *Forestry Technical Officer* *Department of National Parks, Wildlife and Plant Conservation*		
Viet Nam		
Mr. Nguyen Ngoc Thanh *Officer* *Forest Protection Department, Vietnam Administration of Forestry*		

ANNEX 3: LIST OF APMS FOCAL AREAS, OPERATIONAL OBJECTIVES AND ACTIONS

Focal Areas	Operational Objectives	Action
1. Inventory and Assessment	1.1 Determine the extent and status of peatlands in the ASEAN region	1.1.1 Harmonise definition and classification of peatlands (e.g. type, depth, vegetation, water regime, extent)
		1.1.2 Determine and update the extent and status of peatlands in the region through comprehensive national inventories (including status of protection, degradation and land use)
		1.1.3 Ascertain the direct and indirect uses and values of peatlands and associated biodiversity
	1.2 Assess problems and constraints faced in peatland management	1.2.1 Identify problems, constraints and opportunities faced in peatland management
		1.2.2 Undertake assessment of issues related to peatland management to identify potential management options
	1.3 Monitor and evaluate peatland status and management	1.3.1 Develop a methodology and prepare guideline for monitoring of peatland areas for ecological change and management purposes
		1.3.2 Undertake regular monitoring of peatland areas, including peatland water quality and physico-chemical conditions
		1.3.3 Establish permanent ecological plots for peatland monitoring
2. Research	2.1 Undertake priority research activities	2.1.1 Undertake research on appropriate techniques and practices for peatland management
		2.1.2 Undertake basic research on peatland ecosystems and species and hydrological processes to better understand peatland functioning
		2.1.3 Undertake R&D to enhance existing or develop new uses for peatland products and resources
		2.1.4 Undertake research to assess and support community development and livelihood activities building on indigenous knowledge and practices
		2.1.5 Undertake economic valuation of peatland resources including cost benefit analysis of the use of peatland resources
3. Awareness and Capacity Building	3.1 Enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze through implementation of a comprehensive plan	3.1.1 Develop and implement a communication plan for peatland management, including use of media (e.g. video, TV), internet (e.g. youtube) schools, extension services, workshops, information exchange programmes and networks such as SEA-Peat Network and social networking
		3.1.2 Develop appropriate local language awareness materials and activities to enhance understanding of peatland values, threats, impacts and sustainable management options
		3.1.3 Provide the general public and government agencies with information on the roles of peatlands, its ecology and economy
	3.2 Build institutional capacity on management of peatlands	3.2.1 Support and enhance human resources and strengthen institutional capacity and develop a core group of local experts
		3.2.2 Establish mechanisms and organise training programmes, workshops, attachments and study tours
		3.2.3 Support transfer of technology for peatland management including practical training
		3.2.4 Encourage academic institutions to offer and prioritise graduate program(MS and PHD) to focus on peatland conservation and management
		3.2.5 Integrate peatland concerns in school curriculum/co- curriculum activities
4. Information Sharing	4.1 Enhance information management and promote sharing	4.1.1 Establish or strengthen existing information systems or clearing houses to manage and make available information related to peatlands
		4.1.2 Strengthen regional sharing of experience and networking through use of mechanisms such as the ASEAN Haze Action Online, the SEA Peat Network, www. aseanpeat.net, workshops, documentation, network as well as strengthening national capacity for information sharing
		4.1.3 Enhance regional information sharing on the extent, status and management of peatlands and develop handbooks for best management practices

Focal Areas	Operational Objectives	Action
5. Policies and Legislation	5.1 Develop or strengthen policies and legislation to protect peatlands and reduce peat fire	5.1.1 Designate specific institutions responsible for peatland management and establish National Peatland Working Groups for related issues 5.1.2 Formulate or update national policies and strategies relating to peatland conservation and wise use, including facilitation of integrated land use planning and management for peatlands 5.1.3 Strengthen law enforcement
6. Fire Prevention, Control and Monitoring	6.1 Reduce and minimise occurrence of fire and associated haze	6.1.1 Identify peatlands in the region with high fire risk and develop and promote preventive measures, and provide necessary equipment and training to appropriate authorities 6.1.2 Establishment of Peatland Fire Prediction and early warning system (including Fire Danger Rating System (FDRS)) 6.1.3 To develop SOP for fire prevention activities including management of water tables in peatlands appropriately according to land use to prevent fire 6.1.4 Develop and promote appropriate techniques and SOPs for fire control in peatlands 6.1.5 Strengthen inter-agency coordination and capacity of agencies involved in peatland fire prevention and control, including establishment of peat fire prevention units in agencies responsible for forestry and agriculture 6.1.6 Establish a partnership to support Haze prevention to involve plantation companies, local communities and other stakeholders to work together to prevent fires and haze. 6.1.7 Implement zero-burning strategies for all commercial agriculture and zero or controlled burning for local communities
7. Conservation of Peatland Biodiversity	7.1 Promote conservation of peatland biodiversity	7.1.1 Identify peatlands in the region which are of regional or global importance for conservation of biodiversity 7.1.2 Assess the status, gaps and threats within the network of protected areas for peatlands and peatland biodiversity and identify priority areas for conservation 7.1.3 Legally designate national, regional or globally significant peatland sites as conservation or protected areas 7.1.4 Strengthen all aspects including 'institutional frameworks' of the management of peatland conservation areas 7.1.5 Facilitate sustainable utilisation for peatland resources by local communities within/or adjacent to peatland conservation areas including designated buffer zones
8. Integrated Management of Peatlands	8.1 Promote multi-agency involvement in peatland management	8.1.1 Establish national inter-agency working groups to develop strategies for peatland protection and sustainable use 8.1.2 Encourage sustainable management practices for all peatland users, including those from forestry, agriculture and plantations
	8.2 Promote integrated water resources and peatland management using a basin-wide approach and avoiding fragmentation	8.2.1 Establish regulations or guidelines to control and restrict the opening up of deep peat, peat domes and in order to protect the fundamental importance of the natural water regime as the basis for best management practices in peatlands, and promote Strategic Environment Assessment (SEA)/Environment impact assessment (EIA) on opening of peatland for all purposes. 8.2.2 Establish through regulations or guidelines, measures to control or restrict further drainage and conversion (for agriculture, plantation, forestry, settlement, mining, infrastructure and other uses) of deep peat, peat domes, undisturbed peatlands as well as other areas of conservation importance 8.2.3 Establish an appropriate water management regime for peat domes and surrounding peat areas, including the blocking of disused or illegal canals

Focal Areas	Operational Objectives	Action
	8.3 Promote integrated forest and peatland management	8.3.1 Ensure the long-term designation and protection of peat swamp forest in reserves and take urgent measures to protect the remaining undisturbed peatlands 8.3.2 Develop Integrated Management Plans or guidelines for management of peatland forests and peatland protected areas. 8.3.3 Develop and promote sustainable forest management practices, including low-impact harvesting, zero- drainage harvesting, etc. 8.3.4 Develop and implement measures for post harvesting rehabilitation 8.3.5 Prohibit illegal harvesting practices and associated trading activities 8.3.6 Utilise peatlands judiciously for other land uses to prevent fragmentation 8.3.7 Document peatland biodiversity and socio-economic, cultural, and ecological uses
	8.4 Manage agriculture in peatland areas in integrated manner	8.4.1 Restrict future agricultural development only to degraded shallow peat 8.4.2 Document and promote indigenous and traditional knowledge and methodologies, such as techniques for prevention of subsidence and over-drainage; and low impact land-clearing and agricultural practices in existing peatland agricultural areas 8.4.3 Develop best practice land clearing techniques affordable and appropriate for communities living in peatland areas 8.4.4 Promote zero burning and best agricultural practices on peatlands through incentive and disincentive measures
	8.5 Promote integrated community livelihood and peatland management	8.5.1 Enhance local community knowledge of peatlands through awareness and education 8.5.2 Support the protection and sustainable use of peatlands through application of customary laws and traditional practices 8.5.3 Promote and enhance market access for traditional products developed by local communities from peatlands 8.5.4 Support and empower local communities to protect and sustainably use peatland resources to contribute to their livelihood and environmental security 8.5.5 Introduce and strengthen alternative livelihoods to minimise impacts or dependence on peatlands 8.5.6 Engage grassroots stakeholders in participatory management of peatlands
9. Promotion of Best Management Practices of Peatlands	9.1 Promote best management practices through documentation and demonstration sites	9.1.1 Identify and promote demonstration sites for best management practices, for example: site for eco -tourism, livelihood options, restoration, etc. 9.1.2 Establish pilot project(s) in each country (according to local needs) to test new sustainable management and fire prevention approaches for peatlands 9.1.3 Promote the application of best management practices for peatlands through research and development 9.1.4 Establish multi-country technical working groups to work on issues of common concern, such as peatland water management, peatland silviculture or rehabilitation option
10. Restoration and Rehabilitation	10.1 Develop appropriate techniques for the restoration or rehabilitation of degraded peatlands	10.1.1 Develop, promote widely and update regularly, guidelines and manuals on peatland restoration and rehabilitation based on local knowledge, regional experience and R&D findings 10.1.2 Establish pilot projects to test techniques and document lessons learnt for peatland restoration and rehabilitation 10.1.3 Organise specific training programmes related to peatland restoration and rehabilitation
	10.2 Rehabilitation of burnt, drained and degraded peatlands	10.2.1 Identify and classify degraded peatlands according to the rehabilitation options based on local knowledge, regional experience, R&D findings and appropriate technology 10.2.2 Develop national programmes to initiate peatland restoration and rehabilitation activities 10.2.3 Implement programmes for peatland restoration and rehabilitation

Focal Areas	Operational Objectives	Action
11. Peatland and Climate Change	11.1 Protect and improve function of peatlands for carbon sequestration and storage	11.1.1 Quantify the above and below ground carbon content in peatlands in ASEAN countries and its role in mitigating climate change 11.1.2 Identify degraded peatlands and explore the possibility for restoration through the Clean Development Mechanism (CDM) under the Kyoto Protocol/REDD+ Mechanisms 11.1.3 Facilitate support for peatland management and restoration from other climate change-related funding mechanisms 11.1.4 Assess potential negative impacts of the use of peat as an energy source
	11.2 Support incorporation of peatlands into climate change adaptation processes	11.2.1 Assess the impact of climate change scenarios on peatland ecosystems in ASEAN countries 11.2.2 Identify management strategies applicable to minimising peatland vulnerability to global climate change 11.2.3 Integrate peatland issues into national or regional climate change adaptation plans 11.2.4 Source support for peatland management from adaptation financing mechanisms
12. Regional Cooperation	12.1 Promote exchange of expertise in addressing peatland management issues	12.1.1 Develop regional collaborative research projects and other activities involving experts from ASEAN countries 12.1.2 Strengthen the SEA Peat Network to include all experts on peatland in the ASEAN region 12.1.3 Organise regional workshops/conferences to strengthen cooperation and exchange of experience
	12.2 Establishment if 'networks or centres of excellence' in the region for peatland assessment and management	12.2.1 Designate appropriate 'networks or centres of excellence' in the region on specific aspects related to peatland management 12.2.2 Support the strengthening and selected activities of selected centres 12.2.3 Enhance linkage and cooperation between centres 12.2.4 Designate peatland conservation areas under relevant regional/international mechanism such as ASEAN Heritage Parks or Ramsar Sites, Biosphere Reserves or World Heritage Sites
	12.3 Contribute to the implementation of other related agreements and regional cooperation mechanisms	12.3.1 Incorporate peatland issues into ASEAN frameworks related to Nature Conservation and Biodiversity, Multilateral Environment Agreements, Water Resource Management, Forestry and Agriculture; and Education 12.3.2 Integrate the APMS into the implementation of the ASEAN Agreement on Transboundary Haze Pollution. 12.3.3 Support input on peatland issues into related global convention deliberations (including Ramsar Convention, Convention on Biological Diversity, Convention to Combat Desertification, and UN Framework Convention on Climate Change)
	12.4 Enhance multi-stakeholder partnerships to support peatland management	12.4.1 Strengthen partnership among stakeholders through the APMS/National Action Plan on Peatlands (NAPP) and related activities 12.4.2 Forge or strengthen partnerships at local and country level among key stakeholders, including government agencies, NGOs, community and private sector to implement sound peatland management and development
13. Financing of the Implementation of Strategy	13.1 Generate financial resources and incentives required for the programmes and activities to achieve targets of the strategy	13.1.1 Develop a financing strategy for implementation of the APMS/NAPP including cost benefit analysis 13.1.2 Undertake feasibility studies to explore use of polluter- pay and user-pay schemes, tax incentives, payment for ecosystem services or other options to generate sustaining resources to support the implementation of the strategy 13.1.3 Establish or enhance funding mechanisms to support the strategy implementation 13.1.4 Develop/reallocate specific budgets and proposals for funding of activities by national governments, external supporters and other sources to generate resources to support the implementation of the strategy 13.1.5 Organise regular forums among donors and supporters to facilitate coordinated funding of activities 13.1.6 Establish funding mechanisms related to payments for peatland environmental services, REDD+ to generate funds for peatland conservation and management 13.1.7 Establish appropriate mechanisms to channel resources to local government or community groups to support sustainable management and rehabilitation activities through micro credit and CSR activities

ANNEX 4: LIST OF DOCUMENTS REVIEWED AND LIST OF STAKEHOLDERS PROVIDED RESPONSES ON QUESTIONNAIRES

List of Documents reviewed		List of stakeholders provided responses on questionnaires	
Brunei Darussalam			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP	• Country Reports to TWG/MSC of AATHP • Final Draft NAPP	• Department of Environment, Parks and Recreation (JASTRe) (ATFP NFP) (compiled inputs from stakeholders)	
Cambodia			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC Mekong of AATHP • Assessment Reports of Peatland Survey	• Peam Krasop Wildlife Sanctuary Management Plan (presentations) • National Protected Area Strategic Management Plan, 2017-2031	• Department of Freshwater Wetlands Conservation, Ministry of Environment (ATFP NFP)	
Indonesia			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC of AATHP • Peatland related policies (PP57/2016 Jo. PP71/2014) and sub-regulations (e.g. P14, P15 and P16/2017, SK129/2019, SK130/2019) • National, Provincial and District Plans on Peatland Management and Protection (RPPEG) • National Strategy and Action Plan for Peatland Management	• Master Plan for peatland provinces (Riau, West Kalimantan) • Peatland Hydrological Unit maps (by MOEF) • Peatland Map (Ministry of Agriculture) • National Reports and presentation files related to peatland matters to international conferences (e.g. COP of UNFCCC, ITPC, Global Landscape Forum, etc.) • Nationally determined contribution (NDC) for UNFCCC	• Directorate of Peatland Degradation Control, Directorate General of Pollution and Environmental Degradation Control, MOEF (ATFP NFP) • FORDA (Social Economy, Policy and Climate Change), MOEF • Foreign Affairs Bureau/Bilateral Collaboration/Sub-Division of Inter-region Collaboration, MOEF • Directorate of Forest and Land Fire Control/Sub-Division of Forest and Land Fire Control Planning, MOEF	• Inventory and Monitoring of Forest Resource, Directorate General of Forest Planology and Environmental Governance, MOEF • Ministry of Agriculture • Badan Restorasi Gambut (BRG) • Institute Pertanian Bogor (IPB) • Wetlands International Indonesia Programme•
Lao PDR			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC Mekong of AATHP	• Assessment Reports of Peatland Survey/Peatlands Assessment in Laos (English and Lao language) • Management Plan of the Beung Kiat Ngong Ramsar Site	• Department of Water Resources (DWR), Ministry of Natural Resources and Environment (ATFP NFP)	
Malaysia			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/ MSC of AATHP • National Action Plan on Peatlands • National Policy on Biological Diversity • Reports on review of implementation of the National Programme on Fire Prone Peatland Management	• National policies (e.g. Environmental Quality Act 1974, Environment Impact Assessment Order 2015, National Forestry Act 1984) • National Physical Plan • MSPO Standards (oil palm cultivation on peat) • Malaysian INDC Report • National Policy on Climate Change • Local & Transboundary Haze Study. HAZE: Help Action toward Zero Emissions (Academy Science of Malaysia)	• JPSM-KeTSA/Biodiversity and Forestry Management Division (ATFP NFP) • Department of Environment (DOE) (AATHP NFP) • Malaysian Meteorological Department (MET Malaysia) • Department of Agriculture Malaysia (DOA)/Land Resource Management Division • Sabah Forestry Department • Fire and Rescue Department of Malaysia (BOMBA) • Forest Department Sarawak • Ministry of Urban Development and Natural Resources Sarawak (MUDeNR) • Forest Research Institute Malaysia (FRIM)/Forestry and Environment Division	• Malaysian Palm Oil Board (MPOB)/Biology & Sustainability Research Division/Peat Environment & Biodiversity Unit • Sarawak Forestry Corporation • Sarawak Tropical Peat Research Institute (TROPI) • Malaysian Nature Society (MNS) • WWF-Malaysia (WWF) • Liverpool John Moores University (TROCARI) • Sime Darby Plantation Bhd • School of Science, Monash University Malaysia • Department of International and Strategic Studies, University of Malaya • University of Nottingham Malaysia

List of Documents reviewed		List of stakeholders provided responses on questionnaires	
Myanmar			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC Mekong of AATHP • Assessment Reports of Peatland Survey • Inle Lake Management Plan	• National Biological Strategies and Action Plan • National Forestry Action Programme • Inle Lake Long Term Restoration and Conservation Plan • National Biodiversity Strategy and Action Plan	• Environmental Conservation Department (ECD), Ministry of Natural Resources and Environmental Conservation (MONREC) (ATFP NFP)	
Philippines			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • National Wetland Action Plan/ National Inland Wetland Conservation Plan 2017-2021 • National Action Plan on Peatlands • Philippine Development Plan (PDP) 2017-2022 (Chapter 20 Ensuring Ecological Integrity, Clean and Healthy Environment)	• Municipal Ordinances on peatland protection and management • National Greening Programme • Assessment Reports on peatland survey • The Aligned Philippine National Action Plan to Combat Desertification, Land Degradation and Drought FY 2015-2025 • Peatland assessment reports	• Biodiversity Management Bureau (BMB), DENR (ATFP NFP) • DENR, Regional Office VIII Conservation & Development Division (CDD) • Ecosystems Research and Development Bureau (ERDB)/ Coastal Zone and Freshwater Ecosystems Research Division	• Visayas State University/College of Environmental & Agricultural Technology/Instruction • International Institute of Rural Reconstruction (IIRR) • Bureau of Soils and Water Management (BSWM), Department of Agriculture
Singapore			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP	• Country Reports to TWG/MSC of AATHP • Technical reports/outlook from ASMC on climate/weather forecast	• National Environment Agency (ATFP NFP)	
Thailand			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC (and Mekong) of AATHP	• National Action Plan on Peatlands • ONEP Kuan Kreng Peatland Project document	• Department of National Parks, Plant and Wildlife Conservation (DNP), MONRE (ATFP NFP)	
Viet Nam			
• Country Reports to ATFP • Country Reports to COM/COP of AATHP • Country Reports to TWG/MSC Mekong of AATHP	• Final Draft National Action Plan on Peatlands • U Minh Thuong National Park Management Plan • U Minh Ha National Park Management Plan (2015-2020), and draft Management Plan for the period 2021-2030		
ASEAN Development/Dialogue Partners			
• Peatland related project documents (via websites)		• Norwegian Embassy • Germany Embassy • International Fund for Agricultural Development (IFAD)	• United Nations Environment Programme • Japan International Cooperation Agency (JICA)
Regional/International Stakeholders			
• Peatland related project documents (via website) • Peatland-related standards and documents		• Global Fire Monitoring Center (GFMC)/Regional Fire Management Resource Center – South East Asia (RFMRC-SEA) • Proforest • Wetlands International (WI) • ASEAN Specialised Meteorological Centre (ASMC) • Roundtable on Sustainable Palm Oil (RSPO)	• University of Leicester • National University of Singapore • Singapore Institute of International Affairs • People's Movement on Haze • The Center for People and Forests (RECOFTC) • Global Green Growth Institute Indonesia

ANNEX 5: COPIES OF QUESTIONNAIRES

Annex 5a. Questionnaire for Indonesia stakeholders in local language

KUESIONER FGD LAHAN GAMBUT

Nama :	Alamat email :

1. Nama Lembaga tempat bekerja (pilih salah satu dan isi Direktorat/Bagian yang sesuai):

No.	Nama Lembaga	Direktorat/Bagian
1.	Kementerian Lingkungan Hidup dan Kehutanan	
2.	Kementerian Pertanian	
3.	LAPAN	
4.	BMKG	
5.	Badan Restorasi Gambut	
6.	Universitas	
7.	CIFOR	
8.	Wetlands International-Indonesia Program	
9.	Lainnya	

2. Program kerja pengelolaan lahan gambut di lembaga Saudara berkaitan dengan (pilih satu atau lebih program kerja dengan melingkari nomor dan beri penjelasannya):

No.	Program Kerja	Penjelasan
1.	Perubahan Iklim	
2.	Pengendalian Kebakaran Hutan dan Lahan	
3.	Pemetaan lahan gambut	
4.	Budidaya di lahan gambut	
5.	Konservasi keanekaragaman hayati	
6.	Penelitian dan Pengembangan	
7.	Lainnya	

3. Program Khusus terkait dengan pengelolaan lahan gambut yang dilakukan dalam periode 2015-2020:

No.	Program Khusus (Judul)	Tahun/Lokasi	Sumberdana (APBN/Donor)
1.			
2.			
3.			
4.			
5.			

4. Rencana Program terkait dengan pengelolaan lahan gambut yang akan dilakukan dalam periode 2021-2026:

No.	Program Khusus (Judul)	Tahun/Lokasi	Sumberdana (APBN/Donor)
1.			
2.			
3.			
4.			
5.			

5. Menurut Saudara, tantangan yang paling berat dihadapi dalam pengelolaan lahan gambut di Indonesia? Tuliskan skor dan alasannya (Nilai skor: 1= paling ringan, 5= paling berat)

No.	Tantangan	Skor	Penjelasan
1.	Perubahan Iklim		
2.	Pengendalian Kebakaran Hutan dan Lahan		
3.	Pemetaan lahan gambut		
4.	Budidaya di lahan gambut		
5.	Konservasi keanekaragaman hayati		
6.	Penelitian dan Pengembangan		
7.	Lainnya		

6. Kepentingan para pihak dalam pengelolaan lahan gambut yang berkelanjutan di masa yang akan datang, tuliskan skor dan alasannya (Nilai skor: 1= Tidak penting, 5= paling penting)

No.	Para pihak	Skor	Penjelasan
1.	Pemerintah Pusat		
2.	Pemerintah Daerah		
3.	Swasta (Perkebunan, HTI, dll)		
4.	Perguruan Tinggi		
5.	Lembaga Penelitian		
6.	Masyarakat lokal		
7.	Lembaga Swadaya Masyarakat (LSM)		
8.	Lainnya		

7. Peningkatan kapasitas yang diperlukan untuk pengelolaan lahan gambut berkelanjutan untuk masa mendatang:

a. _____

b. _____

c. _____

8. Rekomendasi untuk memperkuat Pengelolaan Lahan Gambut Berkelanjutan di Indonesia untuk 10 tahun yang akan datang (2020-2030):

_____

_____

_____

9. Matriks ASEAN Peatland Management Strategy (APMS), mohon dilengkapi.

Fokus Area	Tujuan Operasional	Capaian (2006-2015)	Hambatan/ Tantangan	Prioritas (Tinggi, Sedang, Rendah) untuk tahun 2021-2030	Usulan prioritas
1. Inventarisasi dan Asesmen	1.1 Menentukan luas dan status lahan gambut di kawasan ASEAN				
	1.2 Menganalisis masalah dan kendala yang dihadapi dalam pengelolaan lahan gambut				
	1.3 Memantau dan mengevaluasi status dan pengelolaan lahan gambut				
2. Riset	2.1 Melaksanakan aktivitas prioritas riset				
3. Peningkatan Kesadaran dan kapasitas	3.1 Meningkatkan kesadaran masyarakat tentang pentingnya lahan gambut, kerentanannya terhadap kebakaran dan ancaman kabut asap melalui penerapan rencana yang komprehensif				
	3.2 Membangun kapasitas kelembagaan dalam pengelolaan lahan gambut				

Fokus Area	Tujuan Operasional	Capaian (2006-2015)	Hambatan/ Tantangan	Prioritas (Tinggi, Sedang, Rendah) untuk tahun 2021-2030	Usulan prioritas
4. Sharing Informasi	4.1 Meningkatkan manajemen informasi dan saling berbagi informasi				
5. Kebijakan dan Peraturan	5.1 Mengembangkan atau memperkuat kebijakan dan peraturan untuk melindungi lahan gambut dan mengurangi kebakaran gambut				
6. Pencegahan, Pengendalian, dan Pemantauan Kebakaran	6.1 Mengurangi dan meminimalkan terjadinya kebakaran dan kabut asap yang ditimbulkan				
7. Konservasi Keanekaragaman Hayati Lahan Gambut	7.1 Mempromosikan konservasi keanekaragaman hayati lahan gambut				
8. Pengelolaan Lahan Gambut Terpadu	8.1 Mempromosikan keterlibatan multi-stakeholder dalam pengelolaan lahan gambut				
	8.2 Mempromosikan sumber daya air dan pengelolaan lahan gambut yang terintegrasi menggunakan pendekatan seluruh wilayah sungai dan mencegah fragmentasi				
	8.3 Mempromosikan pengelolaan hutan dan lahan gambut terpadu				
	8.4 Mengelola pertanian di lahan gambut secara terpadu				
	8.5 Mempromosikan mata pencaharian masyarakat dan pengelolaan lahan gambut terpadu				
9. Mempromosikan Praktik Pengelolaan Lahan Gambut Terbaik	9.1 Mempromosikan praktik manajemen terbaik melalui dokumentasi dan demonstrasi				
10. Restorasi dan Rehabilitasi	10.1 Mengembangkan teknik yang tepat untuk restorasi atau rehabilitasi lahan gambut yang terdegradasi				
	10.2 Rehabilitasi lahan gambut yang terbakar, dikeringkan dan terdegradasi				
11. Gambut dan Perubahan Iklim	11.1 Melindungi dan meningkatkan fungsi lahan gambut untuk penyerapan dan penyimpanan karbon				
	11.2 Mendukung isu terkait lahan gambut ke dalam proses adaptasi perubahan iklim				
12. Kerjasama Regional	12.1 Mempromosikan pertukaran ahli dalam menangani masalah pengelolaan lahan gambut				
	12.2 Pembentukan jika 'jaringan atau pusat keunggulan' di kawasan untuk asesmen dan pengelolaan lahan gambut				
	12.3 Berkontribusi pada implementasi perjanjian terkait lainnya dan mekanisme kerja sama regional				
	12.4 Meningkatkan kemitraan kepentingan multi-Stakeholder untuk mendukung pengelolaan lahan gambut				
13. Pembiayaan Implementasi Strategi	13.1 Menghasilkan sumber daya keuangan dan insentif yang diperlukan untuk program dan kegiatan untuk mencapai target strategi				

Terima kasih atas partisipasinya.
Contact: syaufina2016@gmail.com, lailans@apps.ipb.ac.id, riena.prasiddha@gmail.com

Annex 5b. Questionnaire for Malaysian stakeholders in local language

KAJI SELIDIK – Maklum Balas Pihak Berkepentingan Mengenai Keutamaan Pengurusan Tanah Gambut – Malaysia
Borang ini adalah sebahagian dari proses kajian semula Strategi Pengurusan Gambut ASEAN 2006-2020 (APMS) yang diberikan mandat oleh ASEAN dan Negara Anggota ASEAN (AMS). Kajian semula ini akan dijalankan dari bulan Mac hingga Oktober 2020. Global Environment Centre (GEC) telah dilantik dengan dana oleh program EU-SUPA melalui GIZ untuk membantu Sekretariat ASEAN (ASEC) dalam kajian semula APMS sebagaimana yang dinyatakan di dalam surat daripada ASEC ke AMS pada 4 Mac 2020 kepada National Focal Point bagi Perjanjian Pencemaran Jerebu Merentas Sempadan ASEAN (AATHP) dan Pasukan Petugas Tanah Gambut ASEAN (ATFP). Maklum balas dari semua AMS adalah sangat penting untuk memudahkan proses kajian semula dan mengemaskini APMS bagi menyokong pengurusan tanah gambut secara mampan di ASEAN. Borang ini hendaklah dilengkapkan oleh organisasi kerajaan, bukan kerajaan, penyelidikan dan sektor swasta.

Nama :	Alamat emel :

1. Nama institusi/agensi (sila pilih salah satu daripada pilihan di bawah dan nyatakan jabatan/bahagian):

No.	Institusi	Jabatan/Bahagian
1.	Kementerian Tenaga dan Sumber Asli	
2.	Kementerian Alam Sekitar dan Air	
3.	Kementerian Pertanian dan Industri Makanan	
4.	Kementerian Perusahaan Perladangan dan Komoditi	
5.	Kementerian Perumahan dan Kerajaan Tempatan	
6.	Lain-lain Kementerian	
7.	Kerajaan Negeri	
8.	Kerajaan Tempatan	
9.	Universiti/Institut Penyelidikan	
10.	NGO Alam Sekitar Malaysia	
11.	Lain-lain NGO/CSO/Organisasi berasaskan komuniti	
12.	Sektor Swasta	
13.	Lain-lain:	

2. Program pengurusan tanah gambut di dalam agensi anda adalah berkaitan dengan satu atau lebih program yang disenaraikan di bawah, dan sila berikan penerangan ringkas:

No.	Program	Ya/Tidak	Penerangan
1.	Perubahan iklim		
2.	Kawalan kebakaran hutan		
3.	Pemetaan tanah gambut		
4.	Pertanian di atas tanah gambut		
5	Perladangan di atas tanah gambut		
6.	Pengurusan hutan		
7.	Pengurusan air		
8.	Pembangunan komuniti		
9.	Perancangan guna tanah dan pembangunan		
10.	Pemuliharaan biodiversiti		
11.	Penyelidikan dan pembangunan		
12.	Lain-lain:		

3. Program/projek khusus berkaitan dengan pengurusan tanah gambut yang dilaksanakan dalam tempoh 2015-2020 (sila masukkan baris tambahan ke dalam jadual):

No.	Program khusus (Tajuk)	Tahun/Lokasi	Sumber dana (Belanjawan negara/Penyumbang)
1.			
2.			
3.			
dll.			

4. Program/projek yang dirancang berkaitan dengan pengurusan tanah gambut untuk dilaksanakan dalam tempoh 2021-2030 (sila masukkan baris tambahan ke dalam jadual):

No.	Program khusus (Tajuk)	Tahun/Lokasi	Sumber dana (Belanjawan negara/ Penyumbang)	Status (Cadangan/Lulus)
1.				
2.				
3.				
dll.				

5. Pada pandangan anda, apakah cabaran terbesar dalam pengurusan tanah gambut di Malaysia? Sila berikan skor dan sebab (Skor: 1= mudah, 5= sukar)

No.	Cabaran	Skor	Catatan
1.	Perubahan iklim		
2.	Kawalan kebakaran hutan		
3.	Pemetaan tanah gambut		
4.	Perumahan dan infrastruktur di atas tanah gambut		
5.	Mengurangkan tahap kemiskinan dan sumber pendapatan yang mampan di kawasan tanah gambut		
6.	Penurunan ketinggian permukaan tanah dan pengurusan air di tanah gambut		
7.	Ladang kelapa sawit di tanah gambut		
8.	Pertanian di tanah gambut		
9.	Pengurusan Hutan Secara Mampan		
10.	Pemulihan tanah gambut		
11.	Pengurusan tanah gambut bersepadu		
12.	Pemuliharaan biodiversiti		
13.	Penyelidikan dan pembangunan		
14.	Lain-lain:		

6. Keperluan untuk pelbagai pihak berkepentingan terlibat secara aktif dalam pengurusan tanah gambut yang mampan di masa hadapan, Sila berikan skor dan sebab (Skor: 1= kurang penting, 5= sangat penting)

No.	Pihak berkepentingan	Skor	Catatan
1.	Kerajaan pusat		
2.	Kerajaan negeri		
2.	Kerajaan tempatan		
3.	Sektor swasta (Perladangan, pembinaan, dll)		
4.	Universiti/Institut penyelidikan		
5.	Perancangan guna tanah dan pembangunan		
6.	Agensi teknikal		
7.	Komuniti tempatan		
8.	NGOs/CSOs		
9.	Lain-lain:		

7. Keutamaan dalam pembinaan keupayaan (capacity building) untuk pengurusan tanah gambut secara mampan di masa hadapan (sila masukkan baris tambahan sekiranya perlu):

a. _____

b. _____

c. _____

8. Cadangan untuk mengukuhkan pengurusan tanah gambut secara mampan di Malaysia dalam tempoh 10 tahun akan datang (2021-2030):

_____

_____

_____

9. Matrik Strategi Pengurusan Tanah Gambut ASEAN (ASEAN Peatland Management Strategy, APMS), sila isikan

Bidang Tumpuan	Objektif	Pencapaian di Malaysia (2006-2020)	Cabaran/ kekangan	Keutamaan (Tinggi, Sederhana, Rendah) Mengikut Tahun 2021-2030	Komen
1. Inventori dan Penilaian	1.1 Menentukan tahap dan mengemas kini status sumber kawasan tanah gambut di ASEAN				
	1.2 Meningkatkan pengetahuan dan pemahaman tentang pengurusan tanah gambut				
	1.3 Memantau dan menilai status pengurusan tanah gambut				
2. Penyelidikan	2.1 Menjalankan aktiviti penyelidikan utama				
3. Kesedaran dan Pembinaan Keupayaan	3.1 Meningkatkan kesedaran awam tentang pengurusan tanah gambut				
	3.2 Mengukuhkan keupayaan menguruskan tanah gambut secara mampan				
4. Perkongsian Maklumat	4.1 Mengukuhkan mekanisme penyimpanan dan pertukaran maklumat				
5. Dasar dan Perundangan	5.1 Menyemak semula dan mengukuhkan dasar, perundangan dan garis panduan serta pelaksanaannya				
6. Pencegahan, Kawalan dan Pemantauan Kebakaran	6.1 Mengurangkan dan meminimumkan kejadian kebakaran dan jerebu				
7. Pemuliharaan Kepelbagaian Biologi Tanah Gambut	7.1 Menggalakkan pemuliharaan kepelbagaian biologi dan fungsi ekosistem tanah gambut				
8. Pengurusan Bersepadu Tanah Gambut	8.1 Menggalakkan pengurusan bersepadu tanah gambut				
	8.2 Menggalakkan pengurusan air yang ditingkatkan di kawasan tanah gambut				
	8.3 Meningkatkan penggunaan sumber hutan secara mampan				
	8.4 Meningkatkan produktiviti dan kemampanan pertanian di tanah gambut				
	8.5 Meningkatkan taraf hidup masyarakat yang bergantung pada kawasan tanah gambut				
9. Menggalakkan Amalan Pengurusan Baik Tanah Gambut	9.1 Menggalakkan amalan pengurusan baik melalui dokumentasi dan penubuhan tapak demonstrasi				
10. Restorasi dan Pemulihan	10.1 Membangunkan teknik yang sesuai untuk restorasi atau pemulihan tanah gambut yang terdegradasi				
	10.2 Pemulihan tanah gambut yang terbakar, kering dan terdegradasi				

Bidang Tumpuan	Objektif	Pencapaian di Malaysia (2006-2020)	Cabaran/ kekangan	Keutamaan (Tinggi, Sederhana, Rendah) Mengikut Tahun 2021-2030	Komen
11. Tanah Gambut dan Perubahan Iklim	11.1 Melindungi dan meningkatkan fungsi tanah gambut untuk penyerapan dan penyimpanan karbon				
	11.2 Menilai impak perubahan iklim dan membangunkan langkah penyesuaian				
12. Kerjasama Serantau	12.1 Menggalakkan pertukaran kepakaran dalam menangani isu pengurusan tanah gambut				
	12.2 Penubuhan 'jaringan atau pusat kecemerlangan (Centre of Excellence)' di ASEAN ini untuk penilaian dan pengurusan tanah gambut				
	12.3 Menyumbang kepada pelaksanaan perjanjian lain yang berkaitan dan mekanisme kerjasama serantau				
	12.4 Meningkatkan perkongsian pelbagai pihak berkepentingan untuk menyokong pengurusan tanah gambut				
13. Pembiayaan Bagi Pelaksanaan Strategi	13.1 Menjana sumber kewangan dan insentif yang diperlukan untuk program dan aktiviti bagi mencapai sasaran strategi				
Lain-lain 1*					
Lain-lain 2					

** Sila letakkan baris tambahan jika anda mempunyai cadangan bidang fokus atau objektif baru untuk 2021-2030*

---------- Terima kasih di atas penyertaan dan input anda ----------

Input anda amat dihargai. Sila kembalikan borang yang telah dilengkapkan kepada Global Environment Centre di alamat email peatland@gec.org.my sebelum 24 June 2020. Jika anda memerlukan penjelasan lanjut mengenai borang dan proses kajian semula APMS, sila hantar inkuiri anda kepada Cik Lew Siew Yan (Serena) di alamat email serena@gec.org.my.

Annex 5c: Question for Viet Nam stakeholders in local language

Dự thảo câu hỏi chỉ định để đưa vào Đánh giá APMS.

1. Cơ quan chủ trì nào và cơ quan chủ chốt nào chịu trách nhiệm quản lý than bùn trong nước?
   a. Cơ quan lãnh đạo:
   b. Các cơ quan chính và vai trò/trách nhiệm:

2. Tình trạng triển khai thực hiện APMS như thế nào ?
   a. Những kết quả đạt được chung của việc thực hiện APMS trong nước là gì ?
   b. Việc thường xuyên xem xét và báo cáo thực hiện APMS như thế nào ?
   c. Quốc gia của bạn có chiến lược hành động quốc gia (NAPP) hoặc các chính sách/kế hoạch quốc gia liên quan đến việc triển khai APMS không? (nếu có, xin vui lòng giải thích).
   d. Nếu có, báo cáo về việc thực hiện NAPP hoặc các chính sách/kế hoạch quốc gia liên quan như thế nào ?

3. Những điểm mạnh hoặc thành tựu quan trọng của việc triển khai thực hiện APMS là gì ?
   a. Thể chế - có lực lượng đặc nhiệm cụ thể chịu trách nhiệm điều phối và giám sát tiến trình thực hiện APMS không ?
   b. Chuyên môn - quốc gia của bạn có đủ chuyên môn trong việc thực hiện APMS liên quan đến quản lý đất than bùn bền vững về nông nghiệp, trồng rừng, quản lý nước, phòng chống cháy nổ không ?
   c. Tài nguyên - làm thế nào để đất nước của bạn huy động đủ nguồn lực (cả nhân lực và tài chính) cho quản lý đất than bùn bền vững, bao gồm các biện pháp quản lý nông nghiệp và trồng trọt được cải thiện, quản lý nước, phòng chống cháy ?
   d. Mức độ tham gia của các bên liên quan tích cực trong quản lý than bùn là gì ?
   e. Liệt kê các thành tựu cụ thể để quản lý than bùn bền vững có tham khảo các ưu tiên trong APMS.

4. Những điểm yếu và thách thức trong việc triển khai APMS và NAPP là gì ?

5. Có bất kỳ lỗ hổng cụ thể nào trong APMS hoặc các vấn đề mới nổi cần được xem xét ?

6. Những cơ hội mới nổi trong việc giải quyết mục tiêu của APMS là gì ?

7. Những thay đổi chính nào bạn sẽ thực hiện đối với cấu trúc và triển khai APMS hoặc NAPP để tăng cường quản lý đất than bùn ?

8. Ai là đối tác chính trong việc thúc đẩy/hỗ trợ quản lý đất than bùn bền vững ở nước bạn ?
   a) Chính quyền
   b) Khu vực tư nhân
   c) Xã hội dân sự
   d) Nghiên cứu
   e) Cộng đồng
   f) Tổ chức quốc tế
   g) Cac quốc gia khác

9. Trong tương lai, các tổ chức ưu tiên nào sẽ tham gia vào việc phát triển và thực hiện APMS.

Annex 5d: Questionnaire for regional/international stakeholders

QUESTIONNAIRE – Feedback on Peatland Management Priorities – Regional/International Stakeholders
This form is part of the process of final review of the ASEAN Peatland Management Strategy 2006-2020 (APMS) mandated by the ASEAN and ASEAN Member States (AMS). The final review is being undertaken from March until October 2020. Global Environment Centre (GEC) has been appointed with funding from EU-SUPA programme through GIZ to assist ASEAN Secretariat (ASEC) in the review of the APMS. Feedback from all stakeholders is essential to facilitate the review and updating of the APMS and to support sustainable peatland management in the ASEAN region. This form should be completed by non-government, research and private sector organisations, and interested parties in tropical peatlands in Southeast Asia including international development organisations. This questionnaire is also a practice to summarising effort/initiatives undertaken/have been undertaken by the respondent organisation/ agency contributing to national/regional objective for sustainable peatland management in the Southeast Asia region.

Name :	Email address :
Designation, Organisation :	

1. Briefly describe work (if any) undertaken by your agency in the past concerning peatland management in Southeast Asia:

No.	Programme	Yes/No	Brief Description
1.	Climate change		
2.	Land and forest fire control		
2.	Peatland mapping		
3.	Agriculture on peatland		
4.	Plantations on peatland		
5.	Forest management		
6.	Water management		
7.	Community development		
8.	Land use and development planning		
9.	Biodiversity conservation		
10.	Research and Development		
11.	Others:		

2. Specific Programme/project related to peatland management implemented by your agency within the period of 2015-2020 in Southeast Asia (please insert more rows for input, if needed):

No.	Specific Programme (Title)	Year/Location	Funding source (National budget/Donor)
1.			
2.			
3.			
4.			
etc.			

3. Planned Programme/project related to peatland management planned to be implemented by your agency within the period of 2021-2030 in Southeast Asia (please insert more rows, if needed):

No.	Specific Programme (Title)	Year/Location	Funding source (National budget/ Donor)	Status (Proposal/ Approved)
1.				
2.				
3.				
4.				
etc.				

4. What do you think is the biggest challenge in managing tropical peatlands in Southeast Asia? Please write the score and the reason (Score: 1= easiest, 5= hardest)

No.	Challenge	Score	Remarks
1.	**Climate change**		
2.	**Land and forest fire control**		
2.	**Peatland mapping**		
3.	**Housing and infrastructure on peatland**		
4.	**Poverty reduction and sustainable livelihoods in peatland areas**		
5.	**Subsidence and water management in peatlands**		
6.	**Oil palm plantations in peatlands**		
7.	**Agriculture in peatlands**		
8.	**Sustainable forest Management**		
9.	**Restoration of peatlands**		
10.	**Integrated peatland management**		
11.	**Biodiversity conservation**		
12.	**Research and Development**		
13.	**Others:**		

5. Importance of different stakeholders to be actively involved in sustainable peatland management in the future, please write the score and the reason (Score: 1= less important, 5= most important)

No.	Stakeholder	Score	Remarks
1.	**Federal/National government**		
2.	**State government**		
2.	**Local government**		
3.	**Private sector (Plantation, development, etc)**		
4.	**University/Research institute**		
5.	**Land use and development planning**		
6.	**Technical agencies**		
7.	**Local community**		
8.	**NGOs/CSOs**		
9.	**Others:**		

6. The priorities for capacity building for sustainable peatland management in Southeast Asia in the future (please insert more input, if needed):

a. _____

b. _____

c. _____

7. Recommendations to strengthen sustainable management of peatlands in Southeast Asia in the next 10 years (2021-2030):

_____

_____

_____

8. How familiar you are with the APMS?

_____

_____

_____

9. What do you think about the value of the APMS to guide AMS and other stakeholders?

_____

_____

_____

10. How do you see that is value to extend the APMS to 2030?

_____

_____

_____

11. Do you think your agency have national and/or regional capacity to implement the APMS in supporting the countries that you have been working with?

_____

_____

_____

12. What are the gaps you have identified in APMS?

_____

_____

_____

13. What are the challenges and constraints to APMS implementation?

_____

_____

_____

14. Other comment:

_____

_____

_____

---------- Thank you for your participation and input ----------

Your inputs are highly appreciated. Kindly revert the completed form to Global Environment Centre at peatland@gec.org.my by 12 July 2020. If you need clarification on the form and the process of the APMS review, kindly write to Ms. Lew Siew Yan (Serena) at serena@gec.org.my.

ANNEX 6: LIST OF ASEAN TASK FORCE ON PEATLANDS (ATFP)

National Focal Point		Alternate/Contact Person	
Brunei Darussalam			
Martinah Binti Haji Tamit *Acting Director* *Department of Environment, Parks and Recreation, Ministry of Development*	Alternate Focal Points: **Noralinda Binti Haji Ibrahim** *Acting Director* *Forestry Department, Ministry of Primary Resources and Tourism* **Hj Muhd Safwan Bin Abdullah Bibi** *Acting Chief Executive Officer, Heart of Borneo Centre, Ministry of Primary Resources and Tourism*	Alternate Focal Point: **Ms. Dk. Haryanti PH Petra** *Environment Officer* *Department of Environment, Parks and Recreation* Contact person: **Ms. Han Qin Yun** *Landscape Architect, Department of Environment, Parks and Recreation*	
Cambodia			
Dr. Srey Sunleang *Director* *Department of Freshwater Wetlands Conservation, Ministry of Environment*		**Mr. Sun Visal** *Chief of Office* *Department of Freshwater Wetlands Conservation, Ministry of Environment*	
Indonesia			
Ms. SPM Budi Susanti *Director of Peatland Degradation Control,* *Ministry of Environment and Forestry*	Alternate Focal Point: **Mr. Muhammad Askary** *Head of Sub Directorate for Preservation of Peatland Ecosystem, Ministry of Environment and Forestry*	Contact Person: **Ms. Wahyu Utami Tulis Wiyati** *Head of Section for Prevention and Control* *Directorate of Peatland Degradation Control, Ministry of Environment and Forestry*	
Lao PDR			
Ms. Phaylin Bouakeo *Deputy Director of River Basin Planning and Development Division* *Department of Water Resources, MONRE*		**Mr. Phingsaliao Sithiengtham** *Department of Water Resources, MONRE*	
Malaysia			
Dr. Mohd Mokhtar bin Tahar *Deputy Secretary General* *Ministry of Energy and Natural Resources*	**Ms. Norsham Binti Abdul Latip** *Senior Secretary Management of Biodiversity and Forestry Management, Ministry of Energy and Natural Resources (KeTSA)*	Contact person: **Ms. Farrah Shameen binti Mohamad Ashray** *Under Secretary* *Division of Forestry Management, Ministry of Energy & Natural Resources* **Ms. Atifa Maryam Norbanan** *Assistant Secretary* *Division of Forestry Management, Ministry of Energy & Natural Resources, Wisma Sumber Asli*	**Mr. Harry Yong** *Head of Wetland Forest Section* *Forestry Department of Peninsular Malaysia* **Mr. Bahren Zuhaily bin Abdul Rahim** *Assistant Director* *Forestry Department of Peninsular Malaysia*
Myanmar			
U Soe Naing *Director* *Natural Resources Division, Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation*			
Philippines			
Mr. Ricardo L. Calderon *Assistant Secretary for Climate Change and concurrent Director of Biodiversity Management Bureau – Department of Environment and Natural Resource (BMB-DENR)* Copy to: **Office of the DENR Undersecretary for Policy, Planning and International Affairs**		**Armida P. Andres** *Biodiversity Policy and Knowledge Management Division* *BMB-DENR* **Supt. Dennis A. Molo** *Deputy Director for Operations* *Bureau of Fire Protection* *Department of the Interior and Local Government*	**Ms. Joy M. Navarro** *Senior Ecosystems Management Specialist* *Caves, Wetlands, and other Ecosystems Division (CAWED)* *BMB-DENR* **Ms. Zoisane Geam G. Lumbres** *Ecosystem Management Specialist II* *CAWED, BMB-DENR*

National Focal Point	Alternate/Contact Person	
Singapore		
Ms Tan Joo Gian *Senior Executive/International Relations Department* *National Environment Agency*	**Mr Daryl Gomes** *International Relations Department* *National Environment Agency*	
Thailand		
Ms. Chatchaya Buaniam *Forestry Technical Officer* *Department of National Parks, Wildlife and Plant Conservation*	**Ms Piraporn** *Department of Pollution Control*	
Viet Nam		
	Mr. Dinh Van Tuyen *Officer* *Forest Protection Department,* *Vietnam Administration of Forestry*	**Mr. Nguyen Ngoc Thanh** *Officer* *Forest Protection Department,* *Vietnam Administration of Forestry*

ANNEX 7: DETAILED REVIEW AND ANALYSIS OF PROGRESS IN RELATION TO THE APMS ACTIONS

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
1. Inventory and Assessment	1.1 Determine the extent and status of peatlands in the ASEAN region	1.1.1 Harmonise definition and classification of peatlands (e.g. type, depth, vegetation, water regime, extent)	Y	Y	8	80	Most countries have adopted definition to undertaken inventory. Some differences between north and south ASEAN. Mainly use USDA/FAO definition; classification underway	77
		1.1.2 Determine and update the extent and status of peatlands in the region through comprehensive national inventories (including status of protection, degradation and land use)	Y	Y	8	80	Peatlands mapped in most countries; sub regional status reviews undertaken. Work to update is ongoing. Surveys still underway some countries	
		1.1.3 Ascertain the direct and indirect uses and values of peatlands and associated biodiversity	Y	Y	6	70	Numerous studies at different sites on uses of peatlands	
	1.2 Assess problems and constraints faced in peatland management	1.2.1 Identify problems, constraints and opportunities faced in peatland management	Y	Y	6	70	Numerous studies at different sites and some overviews	70
		1.2.2 Undertake assessment of issues related to peatland management to identify potential management options	Y	Y	8	70	Assessments made at many sites in most countries	
	1.3 Monitor and evaluate peatland status and management	1.3.1 Develop a methodology and prepare guideline for monitoring of peatland areas for ecological change and management purposes	Y	Y	6	60	Several methodologies developed for peatland monitoring and management	63
		1.3.2 Undertake regular monitoring of peatland areas, including peatland water quality and physico-chemical conditions	Y	Y	6	70	Ongoing monitoring being undertaken at many sites. Large scale water level monitoring in Indonesia	
		1.3.3 Establish permanent ecological plots for peatland monitoring	Y	Y	5	60	Permanent plots established in several sites and countries	
AVERAGE			**100**	**100**	**7**	**70**		
2. Research	2.1 Undertake priority research activities	2.1.1 Undertake research on appropriate techniques and practices for peatland management	Y	Y	7	80	Large number of research activities on techniques and practices for peatland management	63
		2.1.2 Undertake basic research on peatland ecosystems and species and hydrological processes to better understand peatland functioning	Y	Y	6	70	Large number of research on peat characteristics, peat biodiversity, and hydrological dynamic of peatland.	
		2.1.3 Undertake R&D to enhance existing or develop new uses for peatland products and resources	Y	Y	6	55	R&D to enhance existing or develop ne peatland products is ongoing in 6 AMS including for timber, non timber forest products, honey, fish, oil palm, *melaleuca* etc	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		2.1.4 Undertake research to assess and support community development and livelihood activities building on indigenous knowledge and practices	Y	Y	5	60	Peatland community livelihood related research, such as: agroforestry, agrosilvofishery, fishery, ecotourism, horticulture etc.	
		2.1.5 Undertake economic valuation of peatland resources including cost benefit analysis of the use of peatland resources	Y	Y	5	50	Some research on peatland economic valuation in several AMS.	
AVERAGE			**100**	**100**	**6**	**63**		
3. Awareness and Capacity Building	3.1 Enhance public awareness on importance of peatlands, their vulnerability to fire and the threat of haze through implementation of a comprehensive plan	3.1.1 Develop and implement a communication plan for peatland management, including use of media (e.g. video, TV), internet (e.g. youtube) schools, extension services, workshops, information exchange programmes and networks such as SEA-Peat Network and social networking	Y	Y	10	90	Communication plan developed in 2012 (ATFP); very active and increasing print, electronic and social media coverage of peatland issues; active school programmes in several countries; regional info sharing networks functioning.	85
		3.1.2 Develop appropriate local language awareness materials and activities to enhance understanding of peatland values, threats, impacts and sustainable management options	Y	Y	8	80	At least 50 Local language info and awareness materials and activities developed.	
		3.1.3 Provide the general public and government agencies with information on the roles of peatlands, its ecology and economy	Y	Y	10	85	Information on peatland has been disseminated through workshops, conference, FGD for public and government agencies.	
	3.2 Build institutional capacity on management of peatlands	3.2.1 Support and enhance human resources and strengthen institutional capacity and develop a core group of local experts	Y	Y	10	80	Large amount of training programmes undertaken through out region and local experts on many peatland topics found in most AMS	70
		3.2.2 Establish mechanisms and organise training programmes, workshops, attachments and study tours	Y	Y	10	80	Many training programmes, workshops, Training of trainers, webinars, study tours and exchanges organised in all AMS	
		3.2.3 Support transfer of technology for peatland management including practical training	Y	Y	8	80	Large amount of training programmes	
		3.2.4 Encourage academic institutions to offer and prioritise graduate program(MS and PHD) to focus on peatland conservation and management	Y	Y	5	60	Large amount of thesis and dissertation of graduate programme concerning peatland management and conservation.	
		3.2.5 Integrate peatland concerns in school curriculum/co- curriculum activities	Y	Y	6	50	Peatland has been integrated in school curriculum as 'local content' in several school in peatland area in several AMS	
AVERAGE			**100**	**100**	**8**	**76**		

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
4. Information Sharing	4.1 Enhance information management and promote sharing	4.1.1 Establish or strengthen existing information systems or clearing houses to manage and make available information related to peatlands	Y	Y	6	70	ASEAN Haze Action Online, the SEA Peat Network, www. aseanpeat.net used for info sharing plus websites of many govt agencies. International peat Centre established in Indonesia	77
		4.1.2 Strengthen regional sharing of experience and networking through use of mechanisms such as the ASEAN Haze Action Online, the SEA Peat Network, www. aseanpeat. net, workshops, documentation, network as well as strengthening national capacity for information sharing	Y	Y	8	80	Active regional sharing of information is ongoing through various networks and websites as well as International peat conference and other peatland related workshop in the region.	
		4.1.3 Enhance regional information sharing on the extent, status and management of peatlands and develop handbooks for best management practices	Y	Y	8	80	Active sharing is ongoing in relation to extent and management of peatlands; Several BMP handbooks prepared, extensive info sharing on extent, status and management of peatlands	
AVERAGE			**100**	**100**	**7**	**77**		
5. Policies and Legislation	5.1 Develop or strengthen policies and legislation to protect peatlands and reduce peat fire	5.1.1 Designate specific institutions responsible for peatland management and establish National Peatland Working Groups for related issues	Y	Y	8	80	Focal points for ATFP established all countries. Working groups or committees established in 3 countries. Peatland addressed by other committee in 5 countries	70
		5.1.2 Formulate or update national policies and strategies relating to peatland conservation and wise use, including facilitation of integrated land use planning and management for peatlands	Y	Y	7	70	NAPP developed in six countries and integrated land use plans and management plans developed of peatlands in 7 AMS	
		5.1.3 Strengthen law enforcement	Y	Y	7	60	Indonesia and Malaysia significantly enhanced law enforcement. Indonesia has integrated patrols with military and police. Other countries recognising importance of peatlands in their laws and regions and are generally working to enhance enforcement	
AVERAGE			**100**	**100**	**7**	**70**		
6. Fire Prevention, Control and Monitoring	6.1 Reduce and minimise occurrence of fire and associated haze	6.1.1 Identify peatlands in the region with high fire risk and develop and promote preventive measures, and provide necessary equipment and training to appropriate authorities	Y	Y	5	60	Fire risk map has been developed and fire trainings have been conducted in peatland area	60

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		6.1.2 Establishment of Peatland Fire Prediction and early warning system (including Fire Danger Rating System (FDRS))	Y	Y	6	70	FDRS has been developed which include peat parameters, ex: SPARTAN	
		6.1.3 To develop SOP for fire prevention activities including management of water tables in peatlands appropriately according to land use to prevent fire	Y	Y	5	60	SOP for fire prevention has been developed including fire monitoring system and peatland water monitoring system.	
		6.1.4 Develop and promote appropriate techniques and SOPs for fire control in peatlands	Y	Y	5	60	SOP for fire control and peatland fire suppression,method/tools have been developed.	
		6.1.5 Strengthen inter-agency coordination and capacity of agencies involved in peatland fire prevention and control, including establishment of peat fire prevention units in agencies responsible for forestry and agriculture	Y	Y	4	50	Multi-stakeholders partnership approach has been used for fire control, which include: government (central and local), private sectors, CSO, local community and universities.	
		6.1.6 Establish a partnership to support Haze prevention to involve plantation companies, local communities and other stakeholders to work together to prevent fires and haze.	Y	Y	4	50	Multi-stakeholders partnership approach has been used for fire control, which include: government (central and local), private sectors, CSO, local community and universities	
		6.1.7 Implement zero-burning strategies for all commercial agriculture and zero or controlled burning for local communities	Y	Y	6	70	ASEAN Guidelines on zero and controlled burning widely promoted and implemented. Open burning banned or controlled in most countries	
AVERAGE			**100**	**100**	**5**	**60**		
7. Conservation of Peatland Biodiversity	7.1 Promote conservation of peatland biodiversity	7.1.1 Identify peatlands in the region which are of regional or global importance for conservation of biodiversity	Y	Y	8	80	Peatland have been identified and designated under specific management as RAMSAR sites, ASEAN Heritage Parks, and Biosphere Reserves. Additional assessments are needed to help determine more sites	68
		7.1.2 Assess the status, gaps and threats within the network of protected areas for peatlands and peatland biodiversity and identify priority areas for conservation	Y	Y	7	60	Gaps in protected area network have been identified and additional peatlands designated for protection in some countries.	
		7.1.3 Legally designate national, regional or globally significant peatland sites as conservation or protected areas	Y	Y	9	65	Some important peatlands have been designated as RAMSAR sites, ASEAN Heritage Parks, World Heritage sites and Biosphere Reserves. Further sites need protection	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		7.1.4 Strengthen all aspects including 'institutional frameworks' of the management of peatland conservation areas	Y	Y	7	70	Most peatland conservation areas are under the national park's management.	
		7.1.5 Facilitate sustainable utilisation for peatland resources by local communities within/or adjacent to peatland conservation areas including designated buffer zones	Y	Y	8	70	Buffer zone community development programmes have been undertaken for a number of protected peatlands but action needs to be expanded.	
AVERAGE			**100**	**100**	**8**	**69**		
8. Integrated Management of Peatlands	8.1 Promote multi-agency involvement in peatland management	8.1.1 Establish national inter-agency working groups to develop strategies for peatland protection and sustainable use	Y	Y	6	70	Multi-stakeholders partnership approach has been used for peatland protection and sustainable use, which include: government (central and local), private sectors, CSO, local community and universities	73
		8.1.2 Encourage sustainable management practices for all peatland users, including those from forestry, agriculture and plantations	Y	Y	8	75	Implementation of zero burning on land preparation by forest plantation and oil palm plantation. BMPs promoted to oil palm (RSPO, MSPO, ISPO), forestry (FSC) and agriculture sectors	
	8.2 Promote integrated water resources and peatland management using a basin-wide approach and avoiding fragmentation	8.2.1 Establish regulations or guidelines to control and restrict the opening up of deep peat, peat domes and in order to protect the fundamental importance of the natural water regime as the basis for best management practices in peatlands, and promote Strategic Environment Assessment (SEA)/Environment impact assessment (EIA) on opening of peatland for all purposes	Y	Y	5	50	Government Regulation on management and protection of peatland ecosystem has been developed and implemented and restrictions or guidelines on new development of peatlands for agriculture or plantations put in place in many countries. Most developments on peat are subject to EIA.	60
		8.2.2 Establish through regulations or guidelines, measures to control or restrict further drainage and conversion (for agriculture, plantation, forestry, settlement, mining, infrastructure and other uses) of deep peat, peat domes, undisturbed peatlands as well as other areas of conservation importance	Y	Y	6	70	Government Regulation on management and protection of peatland ecosystem has been developed and implemented. Peatlands have been identified as environmentally sensitive areas in several countries.	
		8.2.3 Establish an appropriate water management regime for peat domes and surrounding peat areas, including the blocking of disused or illegal canals	Y	Y	5	60	Peatland Hydrological unit or peatland landscape concept used extensively In Indonesia and Malaysia. Widespread measures to restore peatland hydrology through blocking of drainage and enhanced water management has been undertaken in at least 5 AMS	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
	8.3 Promote integrated forest and peatland management	8.3.1 Ensure the long-term designation and protection of peat swamp forest in reserves and take urgent measures to protect the remaining undisturbed peatlands	Y	Y	7	75	Protected peatlands have been conserved and managed under restricted law and regulation.	61
		8.3.2 Develop Integrated Management Plans or guidelines for management of peatland forests and peatland protected areas	Y	Y	7	75	Integrated management plans have been developed for peatland forests and protected areas. Regional guidance on integrated management planning have been produced.	
		8.3.3 Develop and promote sustainable forest management practices, including low-impact harvesting, zero-drainage harvesting, etc.	Y	Y	4	50	Reduced impact logging in peat introduced in Indonesia and Malaysia. Logging ban introduced in Brunei Darussalam and Thailand.	
		8.3.4 Develop and implement measures for post harvesting rehabilitation	Y	Y	3	50	SOP for post harvesting rehabilitation has been developed and implemented in Indonesia, Malaysia and Thailand.	
		8.3.5 Prohibit illegal harvesting practices and associated trading activities	Y	Y	6	50	Regulation for illegal logging has been issued and take into force in most AMS.	
		8.3.6 Utilise peatlands judiciously for other land uses to prevent fragmentation	Y	Y	5	60	Regulation and guidelines on peatland uses has been issued and promoted.	
		8.3.7 Document peatland biodiversity and socio-economic, cultural, and ecological uses	Y	Y	7	70	Some documentation on peatland biodiversity, socio economic, cultural and ecological uses have been developed in the form of books and videos/films and reports.	
	8.4 Manage agriculture in peatland areas in integrated manner	8.4.1 Restrict future agricultural development only to degraded shallow peat	Y	Y	4	60	Regulations have been issued and take into force in Indonesia to stop further peatland conversion. Peatland development for agriculture is also restricted in other countries.	58
		8.4.2 Document and promote indigenous and traditional knowledge and methodologies, such as techniques for prevention of subsidence and over-drainage; and low impact land-clearing and agricultural practices in existing peatland agricultural areas	Y	Y	5	60	Documentation on traditional knowledge has been collated and disseminated.	
		8.4.3 Develop best practice land clearing techniques affordable and appropriate for communities living in peatland areas	Y	Y	4	50	BMP for zero burning for communities has been disseminated to local communities.	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		8.4.4 Promote zero burning and best agricultural practices on peatlands through incentive and disincentive measures	Y	Y	5	60	Zero burning has been obligatory for concession holders and commercial purpose.	
	8.5 Promote integrated community livelihood and peatland management	8.5.1 Enhance local community knowledge of peatlands through awareness and education	Y	Y	7	75	Large number of training and awareness activities undertaken for community in at least 7 AMS.	59
		8.5.2 Support the protection and sustainable use of peatlands through application of customary laws and traditional practices	Y	Y	5	50	Village regulation has been developed and traditional approaches for peatland protection have been documented and promoted	
		8.5.3 Promote and enhance market access for traditional products developed by local communities from peatlands	Y	Y	6	50	Livelihood development programme has been implemented	
		8.5.4 Support and empower local communities to protect and sustainably use peatland resources to contribute to their livelihood and environmental security	Y	Y	6	70	Livelihood development programme has been implemented as incentive for community.	
		8.5.5 Introduce and strengthen alternative livelihoods to minimise impacts or dependence on peatlands	Y	Y	5	60	Peatland Independent Village (Desa Mandiri Gambut) programme has been developed and replicated in various parts of Indonesia, Malaysai and 3 other AMS.	
		8.5.6 Engage grassroots stakeholders in participatory management of peatlands	Y	Y	6	50	Participatory peatland community development programmes have been developed for local stakeholders	
AVERAGE			**100**	**100**	**6**	**61**		
9. Promotion of Best Management Practices of Peatlands	9.1 Promote best management practices through documentation and demonstration sites	9.1.1 Identify and promote demonstration sites for best management practices, for example: site for eco -tourism, livelihood options, restoration, etc.	Y	Y	9	70	Demonstration sites for peatland management approaches have been documented and promoted in 9 AMS for a variety of issues, including conservation, ecotourism, community engagement, agriculture, plantations, restoration, and water management.	70
		9.1.2 Establish pilot project(s) in each country (according to local needs) to test new sustainable management and fire prevention approaches for peatlands	Y	Y	8	80	A number of pilot project on peatland fire prevention has been developed and documented.	
		9.1.3 Promote the application of best management practices for peatlands through research and development	Y	Y	6	70	BMPs for peatland have been developed and disseminated.	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		9.1.4 Establish multi-country technical working groups to work on issues of common concern, such as peatland water management, peatland silviculture or rehabilitation option	Y	Y	5	60	APFP working groups established on selected issues including RSPO Peatland Working Groups on oil palm cultivation on peatland and restoration of peatlands and working group on IT linked peatland sites.	
AVERAGE			**100**	**100**	**7**	**70**		
10. Restoration and Rehabilitation	10.1 Develop appropriate techniques for the restoration or rehabilitation of degraded peatlands	10.1.1 Develop, promote widely and update regularly, guidelines and manuals on peatland restoration and rehabilitation based on local knowledge, regional experience and R&D findings	Y	Y	5	64	RSPO manual on conservation and rehabilitation prepared in 2012, was updated in 2019.	66
		10.1.2 Establish pilot projects to test techniques and document lessons learnt for peatland restoration and rehabilitation	Y	Y	7	75	A number of pilot projects of peatland restoration and rehabilitation have been developed and documented.	
		10.1.3 Organise specific training programmes related to peatland restoration and rehabilitation	Y	Y	5	60	A number of training programmes on peatland restoration have been conducted.	
	10.2 Rehabilitation of burnt, drained and degraded peatlands	10.2.1 Identify and classify degraded peatlands according to the rehabilitation options based on local knowledge, regional experience, R&D findings and appropriate technology	Y	Y	4	50	Identification of degraded peatland has been conducted according to different categories of degradation and rehabilitation options.	63
		10.2.2 Develop national programmes to initiate peatland restoration and rehabilitation activities	Y	Y	5	70	Programmes developed peatland rehabilitation in Indonesia, Malaysia, Thailand, Viet Nam and Philippines.	
		10.2.3 Implement programmes for peatland restoration and rehabilitation	Y	Y	6	70	Peatland Directorate and BRG in Indonesia over-seeing actions on 3 million ha; and ongoing programmes in 4 other countries.	
AVERAGE			**100**	**100**	**5**	**65**		
11. Peatland and Climate Change	11.1 Protect and improve function of peatlands for carbon sequestration and storage	11.1.1 Quantify the above and below ground carbon content in peatlands in ASEAN countries and its role in mitigating climate change	Y	Y	6	60	A number of research activities on measuring/calculating carbon content in peatland has been conducted.	46
		11.1.2 Identify degraded peatlands and explore the possibility for restoration through the Clean Development Mechanism (CDM) under the Kyoto Protocol/REDD+ Mechanisms	Y	Y	3	45	Several initiatives have been started to protect and restore peatland in Indonesia, Malaysia and Philippines related to REDD+ or climate financing	
		11.1.3 Facilitate support for peatland management and restoration from other climate change-related funding mechanisms	Y	Y	3	50	Support through GEF, ODA, IKI, private sector sponsorship and Voluntary Carbon fund	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		11.1.4 Assess potential negative impacts of the use of peat as an energy source	Y	N	1	30	One study in Indonesia. Advised not to exploit peatlands for power generation.	
	11.2 Support incorporation of peatlands into climate change adaptation processes	11.2.1 Assess the impact of climate change scenarios on peatland ecosystems in ASEAN countries	Y	Y	4	50	A number of research activities on climate change impacts on peatland has been conducted.	38
		11.2.2 Identify management strategies applicable to minimising peatland vulnerability to global climate change	Y	Y	2	40	Peatland-climate change has been included in the development of climate adaptation plans in some countries.	
		11.2.3 Integrate peatland issues into national or regional climate change adaptation plans	Y	Y	1	30	Included in Indonesia adaptation plan.	
		11.2.4 Source support for peatland management from adaptation financing mechanisms	Y	Y	2	30	Adaptation financing has supported action in Indonesia and Lao PDR.	
AVERAGE			**100**	**87**	**3**	**42**		
12. Regional Cooperation	12.1 Promote exchange of expertise in addressing peatland management issues	12.1.1 Develop regional collaborative research projects and other activities involving experts from ASEAN countries	Y	Y	6	70	Many ongoing and completed collaborative research projects undertaken.	77
		12.1.2 Strengthen the SEA Peat Network to include all experts on peatland in the ASEAN region	Y	Y	7	70	SEApeat Network expanded to 400 participants from 7 AMS.	
		12.1.3 Organise regional workshops/conferences to strengthen cooperation and exchange of experience	Y	Y	10	90	Many regional workshops and conferences organised.	
	12.2 Establishment if 'networks or centres of excellence' in the region for peatland assessment and management	12.2.1 Designate appropriate 'networks or centres of excellence' in the region on specific aspects related to peatland management	Y	Y	6	70	SEApeat Network; ITPC in Indonesia, GEC in Malaysia; TROPI in Sarawak; and various universities with specialism on peat.	70
		12.2.2 Support the strengthening and selected activities of selected centres	Y	Y	5	60	Centres and networks have progressively strengthened through support from regioanl and international projects and involvement in peatland management activities.	
		12.2.3 Enhance linkage and cooperation between centres	Y	Y	5	60	Linkage and cooperation has been enhanced through exchanges, workshops and collaborative projects.	
		12.2.4 Designate peatland conservation areas under relevant regional/international mechanism such as ASEAN Heritage Parks or Ramsar Sites, Biosphere Reserves or World Heritage Sites	Y	Y	9	90	Peatland area with status of AHPs, Ramsar sites, and WHCs (BN, CA, IN, LA, MA, MM, PH, TH, VN).	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
	12.3 Contribute to the implementation of other related agreements and regional cooperation mechanisms	12.3.1 Incorporate peatland issues into ASEAN frameworks related to Nature Conservation and Biodiversity, Multilateral Environment Agreements, Water Resource Management, Forestry and Agriculture; and Education	Y	Y	10	70	AMS have been active in incorporating peatland related issues into biodiversity, multilateral environmental agreements, forestry and agriculture management	73
		12.3.2 Integrate the APMS into the implementation of the ASEAN Agreement on Transboundary Haze Pollution	Y	Y	10	80	APMS has been fully incorporated in the implementation of the AATHP and are discussed in each of the meeting of the COM and COP and other subsidiary bodies.	
		12.3.3 Support input on peatland issues into related global convention deliberations (including Ramsar Convention, Convention on Biological Diversity, Convention to Combat Desertification, and UN Framework Convention on Climate Change)	Y	Y	10	70	All AMS have been involved in activities to link peatland issues into global convention deliberations especially CBD, UNFCCC and Ramsar Convention	
	12.4 Enhance multi-stakeholder partnerships to support peatland management	12.4.1 Strengthen partnership among stakeholders through the APMS/NAPP and related activities	Y	Y	7	70	Active partnerships among different stakeholders have been actively established through NAPPs and country and regional level actions and meetings	70
		12.4.2 Forge or strengthen partnerships at local and country level among key stakeholders, including government agencies, NGOs, community and private sector to implement sound peatland management and development	Y	Y	6	70	Many partnerships have been established among stakeholder at the local level linked to site management issues	
AVERAGE			**100**	**100**	**8**	**73**		
13. Financing of the Implementation of Strategy	13.1 Generate financial resources and incentives required for the programmes and activities to achieve targets of the strategy	13.1.1 Develop a financing strategy for implementation of the APMS/NAPP including cost benefit analysis	Y	Y	3	45	Financing strategy has generally been developed on an ad-hoc basis; in some countries such as Indonesia and Malaysia, specific government budgets have been allocated for peatland management	45
		13.1.2 Undertake feasibility studies to explore use of polluter-pay and user-pay schemes, tax incentives, payment for ecosystem services or other options to generate sustaining resources to support the implementation of the strategy	Y	Y	3	25	A number of research on ecosystem services incentives have been conducted but have yet to result in sustaining mechanisms for financing APMS or NAPPs.	

Focal Areas	Operational Objectives	Action	Started	Ongoing/ continuous	Geog Scope	Score Progress	Notes	Average score
		13.1.3 Establish or enhance funding mechanisms to support the strategy implementation	Y	Y	4	40	No specific funding mechanism has been established just for fundingof the strategy but it had received support from various ASEAN related mechism including ASEAN Haze Fund, ASEAN Australia Development Cooperation Programme and EU-ASEAN cooperation programme	
		13.1.4 Develop/reallocate specific budgets and proposals for funding of activities by national governments, external supporters and other sources to generate resources to support the implementation of the strategy	Y	Y	7	60	A large budget allocation for management and protection of peatland ecosystem has been included in national strategic plan and from external supporters in AMS like Indonesia but not so much in other AMS.	
		13.1.5 Organise regular forums among donors and supporters to facilitate coordinated funding of activities	Y	Y	2	45	Some donors forum to support peatland management has been developed and implemented in Indonesia but not much in other AMS.	
		13.1.6 Establish funding mechanisms related to payments for peatland environmental services, REDD+ to generate funds for peatland conservation and management	Y	Y	3	50	A number of project related to REDD+ in peatland area has been developed and implemented	
		13.1.7 Establish appropriate mechanisms to channel resources to local government or community groups to support sustainable management and rehabilitation activities through micro credit and CSR activities	Y	Y	5	50	Mechanism of financial allocation for local government and local community has been developed and implemented	
AVERAGE			**100**	**100**	**4**	**45**		
GRAND TOTAL			**100**	**99**	**7**	**69**		

** Note:*

- Score 1-10 (Geographic scope) based on number of AMS undertaking activity

- Score progress % based on level of effort progress achievement (expert judgment) in those countries undertaking respective activity

- Complete scoring in this focal area according to literature analysis including APFP/SEApeat completion reports plus ATFP meeting reports and country papers, APMS review questionnaires and focus group discussion, collated literature, information collection by MAHFSA Programme, reports of other peatland related agencies including MOEF, BRG, WI and GEC as well as the knowledge of the review team and the Task Force, etc.

ANNEX 8: LIST OF AMS AGENCIES LEADING AND SUPPORTING THE PEATLAND MANAGEMENT IN RESPECTIVE COUNTRY

Main institution		Remarks adequacy/capacity
Brunei Darussalam		
1. Department of Environment, Parks and Recreation, Ministry of Development* 2. Department of Forestry	3. Fire and Rescue Department 4. Public Works Department 5. Universities	Key agencies under MOD providing technical support to peatland management and fire-fighting and control. Universities support in scientific studies.
Cambodia		
1. Department of Freshwater Wetlands Conservation, Ministry of Environment* 2. Department of Environment Koh Kong Province	3. IUCN 4. Pannasastra University of Cambodia	Key stakeholders on management and conservation of peatland and protected area.
Indonesia		
1. Ministry of Environment and Forestry* 2. Ministry of Agriculture	3. Peatland Restoration Agency 4. Provincial and local government agencies	Strong commitment in managing peatland, rehabilitating degraded peatland, engaging stakeholders in implementing and enforcing national policies and sub-regulations.
Lao PDR		
1. Department of Water Resources, Ministry of Natural Resources and Environment* 2. Department of Land Management	3. Department of Agriculture 4. Provincial and local government agencies	Limited capacity on assessment and management of the peatlands. However, there have been good progress at BKN Ramsar Site (of which some peats are located within and adjacent to BKN area).
Malaysia		
1. Ministry of Energy and Natural Resources* a. Forestry Department Peninsular Malaysia b. Forest Research Institute Malaysia (FRIM) 2. Ministry of Environment and Water a. Department of Environment (DOE)	3. Ministry of Plantation Industries and Commodities (MPIC) 4. Ministry of Agriculture and Food Industries a. Department of Agriculture 5. Fire and Rescue Department of Malaysia 6. State and local government agencies	High capacity on resources/policies implementation/enforcement.
Myanmar		
1. Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation*	2. Forest Department 3. Ministry of Agriculture, Livestock and Irrigation (MOALI) 4. State and local government agencies	Have capacity on environmental and biodiversity conservation, community forestry, agroforestry, reforestation and rehabilitation of watershed area, forest fire prevention and management, soil conservation and mapping.
Philippines		
1. Department of Environment and Natural Resources (DENR) a. Biodiversity Management Bureau (BMB)* b. Ecosystems Research and Development Bureau (ERDB) c. Forest Management Bureau (FMB) d. Environmental Management Bureau (EMB) e. Land Management Bureau f. DENR Field Offices (Regions 8 and 13)	2. Bureau of Fire Protection (BFP), Department of Interior and Local Government 3. Bureau of Soils and Water Management (BSWM), Department of Agriculture 4. National Economic and Development Authority (NEDA)	Increasing capacity and resources on peatland management and rehabilitation.

Main institutions		Remarks adequacy/capacity
Singapore		
International Relations Department, National Environment Agency*		Support monitoring of weather information on hotspot and haze for the region. Provided support through RHTN for training.
Thailand		
1. Ministry of Natural Resources and Environment a. Department of National Parks, Plant and Wildlife Conservation* b. Royal Forest Department, Office of Natural Resources and Environment Policy and Planning c. Department of Pollution Control 2. Ministry of Agriculture and Cooperatives a. Royal Irrigation Department b. Department of Land Development c. Department of Fisheries d. Department of Land Settlement	3. Ministry of Interior a. Land Department b. Local administrative organisation such as Provincial Administrative Organisation (PAO) and Tambon Administrative Organisation (TAO) 4. Office of the Prime Minister a. National Economic and Social Development Office b. Office of the Royal Development Project Board 5. Ministry of Industries 6. Ministry of Sports and Tourism	Have capacity on peatland management and fire prevention and control, promoting ecotourism packages including peatland ecosystems.
Viet Nam		
1. Ministry of Agriculture and Rural Development (MARD)*	2. Vietnam Environment Administration (VEA) 3. Provincial and local authorities	Have capacity on peatland management through park authorities, with engagement of local communities living in buffer zones.
Regional		
1. ASEAN Task Force on Peatlands 2. COM to AATHP	3. ASEAN Secretariat	Overseeing and coordinating regional effort on implementing the AATHP and APMS.

** National Focal Point (NFP) of ATFP*

ANNEX 9: LIST OF SPECIFIC POLICIES AND/OR ACTION PLANS DEVELOPED FOR PEATLANDS BY AMS

Country	Y/N	List of Policies/Action Plans		
Brunei Darussalam	Yes	• National Action Plan on Peatlands (NAPP) • National Climate Change Policy • National Forest Policy, 1989	• Forest Act, Chapter 46 Laws of Brunei • Brunei Darussalam Long-Term Development Plan – Wawasan 2035	• Environmental Protection and Management Order 2016 • Biodiversity Action Plan of Lower Belait Valley
Cambodia	No	No specific peatland policies/action plan but included in National Protected Area Strategic and Management Plan 2017-2031		
Indonesia	Yes	• Laws No. 32 year 2009 on Environmental Protection and Management • Laws No 37 Year 2014 on Soil and Water Conservation • Government Regulation No 71 year 2014 on peatland Ecosystem Protection and Management • Presidential instruction No 8 Year 2015 on Suspension of new Licence Issuance and Primary Forest and Peatland Government • Presidential instruction No 11 Year 2015 on the Improvement Forest and Land Fire Control • Government Regulation No 57 Year 2016 on the Revision of PP No 71 year 2014 on peatland Ecosystem Protection and Management • Presidential Regulation No. 1 Tahun 2016 on Peatland Restoration Agency • Ministry of Environment and Forestry (MOEF) Decree No. P/33/Menlhk/ Setjen/Kum.1/3/2016 on Guidelines on climate Change Adaptation Action Development	• MOEF Decree No. P.32/MenLHK/ Setjen/Kum.1/3/2016 on Forest and Land Fire Control • MOEF Decree No. 14 Year 2017 on Procedures of Peatland Ecosystem Inventory and Function Determination • MOEF Decree No. 15 Year 2017 on Procedures of Water Level Measurement on Peatland Ecosystem Determination Point • MOEF Decree No. 16 Year 2017 on the Technical Guidelines on Peatland Ecosystem Function Recovery • MOEF Decree No. 17 Year 2017 on Revision of MOEF Decree No. P.12/ MENLHK-II/2015 on Industrial Forest Plantation Establishment • MOEF Decree No. 37 Year 2019 on Social Forestry in Peatland Ecosystem • MOEF Decree No. 60 Year 2019 on Procedures of Development, Determination and Changes on Peatland Ecosystem Protection and Management Plan	• MOEF Decree No. 10 Year 2019 on Determination, establishment, and Management of Peat Dome in Peat Hydrological Unit basis • MOEF Decree No 8 Year 2020 on the Assignment of part of Government Affairs on Environmental and Forestry Sector to 7 Governors for Peatland Restoration Activities in Fiscal Year 2020 • MOEF Regulation Number 10/2019 regarding Determination and Management of Peat Doom Based on Peatland Hydrological Unit (PHU) • Ministry of Agriculture (MOA) Decree No. 14/Permentan/PL.110/2/2009 on Guidelines on the utilisation of peatland for oil palm cultivation • MOA Decree No.47 Year 2014 on Guidelines of Land and Plantation Fire Prevention and Control • MOA Decree No. 5 Year 2018 on Zero Burning Land Preparation
Lao PDR	No	No specific peatland policies/action plan but included in Draft Water and Water Resources Strategy.		
Malaysia	Yes	• National Action Plan for Peatlands (2011-2020) • National Policy On Biological Diversity (2016-2025) • National Environment Quality Act 1974	• National Forestry Act 1984 • Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 • Tenth and Eleventh Malaysia Plans (2011-2020)	• National Physical Plans-3 (NPP) 2015-2020 • Malaysian Sustainable Palm Oil (MSPO) Principles and Criteria
Myanmar	No	No specific peatland policies/action plan but included in National Biodiversity Strategy and Action Plan.		
Philippines	Yes	• National Action Plan for the Sustainable Use and Protection of Philippine Peatlands • National Inland Wetland Conservation Plan 2017-2021 • Philippine Development Plan 2017-2022 (Chapter 20)	• Municipal Ordinances • Philippine Biodiversity Strategy and Action Plan (PBSAP) • National Action Plan to Combat Desertification, Land Degradation and Drought	• National Climate Change Action Plan 2011-2028 • Aligned Philippine National Action Plan to Combat Desertification, Land Degradation and Drought (NAP-DLDD) For Year 2015-2025
Singapore	No	Not applicable.		
Thailand	Yes	• National Action Plan on Peatlands (NAPP) • Wetland Policy • National Wetland Management • Wetland Strategic Plan	• National Economic and Social Development Plan • National Forest Policy • The Forest Act 1941 • The National Parks Act 1961	• The National Reserved Forests Act 1964 • The Wildlife Preservation and Protection Act 1992
Viet Nam	Yes	NAPP final draft developed.		
Regional	Yes	• ASEAN Peatland Management Strategy 2006-2020 (APMS) • ASEAN Programme on Sustainable Management of Peatland Ecosystems 2014-2020 (APSMPE)	• ASEAN Guidelines on Peatland Fire Management	• Roadmap on ASEAN Cooperation towards Transboundary Haze Pollution Control with Means of Implementation (ASEAN Haze-Free Roadmap)

ANNEX 10: LIST OF SELECTED BMPS IMPLEMENTED BY AMS IN 2006-2020

No	Country	BMP
1.	Brunei Darussalam	Rehabilitation of peatland in Badas Peat Swamp
2.		Afforestation and Reforestation programme
3.	Cambodia	Peatland assessment: Mangrove peatland
4.	Indonesia	Peatland Regulations in Indonesia
5.		Integrated system for forest and land fires control in Indonesia
6.		Peatland Restoration Agency: Strategy and action for rewetting
7.		Network of peatland protected areas including Ramsar sites
8.		Peatland Mapping in Indonesia
9.		Centres of Excellence for Peatland Research in Indonesia: Bogor Agriculture University and University of Palangka Raya and University of Riau
10.		Information System for Management and Protection of Peatland Ecosystem: SIPPEG
11.		Monitoring System of Peatland Ground Water Level: SIPALAGA-SIMATAG
12.		Fire Information System: SiPongi-Karhutla Monitoring System
13.		Monitoring System and Estimation of Emission Reductions from Peat Restoration: PRIMS
14.		Private Sector Participation in complying Regulation- APHI (Indonesian Forest Concessionaires Association) and GAPKI (Indonesia Oil Palm Entrepreneur Association) [Government and private sector collaboration on best practices in protection and management of peatlands]
15.		Establishment of Fire Care Community (MPA) and Peatland Care Villages (Desa Peduli Gambut)
16.		Merang-Kepahayan and Katingan Peatlands Carbon finance projects
17.		Seven Sustainable Peatland Management Demonstration Sites (APFP-SEApeat project): Danau Sentarum National Park, Sebangau National Park, Harapan Jaya Village, Riau Province, Sumatra, Rasau Jaya, Mumugo, Riau, Jabiren Village, Pulang Pisau District, Central Kalimantan, Kalampangan, Central Kalimantan
18.		Large-scale rewetting and blocking of peatland drainage in Ex-Mega Rice scheme in Central Kalimantan
19.		Partnership between government, local community and private sector for peatland management in Pak Nam, Riau province
20.		Sustainable community livelihoods in peatlands
21.		Introduction of Concept of Peatland Hydrological Unit and mapping throughout Indonesia.
22.	Lao PDR	Community Engagement in Beung Kiat Ngong Ramsar site
23.	Malaysia	Sahabat Hutan Gambut Selangor Utara (SHGSU): Community-based Patrol Management and Fire Prevention
24.		Integrated Management Plan (IMP) for North Selangor Peat Swamp Forest (NSPSF)
25.		Tropical Peat Research Institute (TROPI): Research Institute for Peatland in Sarawak
26.		Centres of Excellence for Peatland Research in Malaysia: North Selangor Peat Swamp Forest (NSPSF), and KLIAS Forest Reserve
27.		Certification and Good Practice : MyGAP, MSPO
28.		Standard Operating Procedures (SOP) for fire prevention and control and training manuals by Department of the Environment and the Fire and Rescue Department
29.		Documentation of 4 Sustainable Peatland Management Demonstration Sites (APFP-SEApeat project): North Selangor Peat Swamp Forests, Southeast Pahang Peat Swamp Forests, Klias Peat Swamp Forest and Loagan Bunut National Park
30.	Myanmar	Inle Lake Conservation activity
31.		Peatland survey
32.	Philippines	Peatland assessment
33.		Peatland inventory- Handbook on Peat Swamp Flora of Agusan Marsh, Philippines
34.		NGOs and research institute in Leyte Sab-a Basin and Agusan Marsh
35.		Philippine Biodiversity Symposium
36.		Identification 2 Sustainable Peatland Management Demonstration Sites (APFP-SEApeat project): Caimpugan Peatlands, Mindanao and Leyte Sab-A Basin, Leyte, Visayas

No	Country	BMP
37.	Singapore	Collection and identification of new plant and animal species from peatlands in ASEAN by The National University of Singapore (NUS)
38.		Mapping and analysis of land use change in peatlands in Southeast Asia by CRISP/NUS
39.	Thailand	Thailand Princess Siridhon Centre
40.		Guideline on Peat Swamp Forest Rehabilitation and Planting in Thailand
41.		Peat Swamp Forest database
42.		Department of National Parks, Wildlife and Plant Conservation: Research Work on Peatland
43.	Viet Nam	Rehabilitation of U Minh Thuong and designation of Ramsar site
44.		Green Contracts in the buffer zone of U Minh Thuong and U Minh Ha National Parks
45.		Identification 2 Sustainable Peatland Management Demonstration Sites (APFP-SEApeat project): U Minh Thuong National Park and U Minh Ha National Park
46.	Regional	RSPO Peatland Working Group – Peatlands BMP Manuals
47.		Certification and Good Practice: RSPO
48.		APFP Project- Regional workshop and Exchange
49.		FDRS Systems Met Malaysia/BKMG/DNP
50.		National Focal Points for ATFP in all ASEAN Member States
51.		National Committees/working groups in Indonesia, Malaysia and Philippines
52.		ASEAN Specialised Meteorological Centre (ASMC): Hotspots & haze monitoring, and weather forecasts
53.		Global Assessment of Peatlands, Biodiversity and Climate Change
54.		Technical networks: RSPO Peatland Working Group, SEApeat Network, TROCARI (Tropical Catchments Research Initiative), and the International Tropical Peatland Centre (ITPC)
55.		Resource Mobilisation: IUCN, UNEP, EU, GEF, IFAD,JICA and ASEAN Development Partners

ANNEX 11: LIST OF COMPILED PEATLAND RELATED PROGRAMMES/PROJECTS IN ASEAN

Regional Programmes/Projects from feedback by AMS and stakeholders on questionnaires

No	Programme/Project	Year Implementation	Fund
1	Establishment of the Regional Fire Management Resource Center - South East Asia (RFMRC-SEA) https://rfmrc-sea.org/	2017, Bogor	GFMC/Germany, Federal Ministry for Food and Agriculture
2	Global Peatlands Initiative Project (Global project with activities in Indonesia)	2018-2021	IKI – Global
3	Indonesia-Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+)	2013-2018, Indonesia	JICA
4	Developing a Scalable Model for Moving Independent Smallholders Towards Meeting P&G No Deforestation Policy	2016-2018, Benut, Johor, Malaysia	Donor: P&G through Proforest
5	Projects in Indonesia: peatland rewetting, peat fire prevention https://indonesia.wetlands.org/	various	Various: national budgets, IKI
6	Workshops on the Use and Interpretation of Data on Land/Forest Fires and Transboundary Haze	Since 2018, Singapore	ASMC
7	Sustainable Management of Peatland Ecosystems in Indonesia (SMPEI)	2017-2021, Riau, Indonesia	GEF5 financing. Co-financing from: Indonesia Government, IFAD, GEC, CIFOR
8	Training for law enforcement officer about scientific evidence regarding fire occurred in the peatland area	2018-2019, Bogor	GFMC/Germany, Federal Ministry for Food and Agriculture; Indonesia attorney general
9	Data Collection Survey on Forest & Peatland Fire Control and Peatland Restoration in Indonesia	2016-2017, Indonesia	JICA
10	HCV-HCSA Assessment project in Sei Linau	2017-2019, Sei Linau, Siak Kecil. Bengkalis District. Riau Province. Indonesia.	Cargill & Musim Mas
11	Capability-Building Programme in Subseasonal-to-Seasonal (S2S) Prediction for Southeast Asia (S2S-SEA)	Since 2017, Singapore	ASMC
12	Integrated Management of Peatland Landscapes in Indonesia (IMPLI)	2020 – 2025, Riau, Jambi and North Sumatra in Indonesia	GEF6 financing. Co-financing from: Indonesia Government, IFAD, Private Sector
13	Training for police officer regarding satellite and monitoring in link with forest fires (including peat fires) scientific evidence	2018, Bogor	GFMC/Germany, Federal Ministry for Food and Agriculture; The Headquarters of the Indonesian National Police
14	Peat Care Village programme (phase 2 & 3) at Sei Linau, Tanjung Damai Villages.Bandar Jaya, Sumber Jaya,	2018-2020, Sei Linau, Bandar Jaya, Sumber Jaya, Tanjung Damai Villages, Indonesia	Cargill, Musim Mas, Peat Restoration Agency
15	ASEAN Regional Climate Data, Analysis and Projections-ARCDAP	Since 2018, Singapore	ASMC
16	Sustainable Management of Peatland Ecosystems in Malaysia (SMPEM)	2020 – 2024, Sabah, Selangor, Pahang and Sarawak states in Malaysia	GEF6 financing. Co-financing from: Malaysia Government, IFAD, GEC, Private Sector
17	Siak Pelalawan Landscape Program	2018 – 2021, Indonesia	Nestle, Cargill, Musim Mas, GAR, PepsiCo, Danone, Unilever, and L'Oreal
18	ASEAN Climate Outlook Forum	Since 2013, various SEA countries	ASMC
19	Measurable Action for Haze-Free Land Management in Southeast Asia (MAHFSA)	2019 – 2024, ASEAN regional initiative	IFAD grant financing. Co-financing from ASEAN Secretariat, GEC and CIFOR
20	Production Landscape Programme	2018-2021, Indonesia	FGMC
21	Technical Assistance and Knowledge Exchange for Sustainable Management of Peatland Ecosystems in Malaysia (TAKE-SMPEM)	2019-2023, TA for Malaysia, and KE within Southeast Asia	IFAD grant financing. Co-financing from GEC

No	Programme/Project	Year Implementation	Fund
22	Haze-Free Sustainable Livelihood Project (HFSLP)	2016 – 2019 (Riau, Indonesia)	IFAD grant financing. Co-financing from CIFOR
23	RSPO Peatland Working Group	2017 – 2020	NA
24	RSPO Peat BMPs 2018: 1) RSPO BMPs for existing oil palm cultivation on peat 2) RSPO BMP for management and rehabilitation of natural vegetation associated with oil palm cultivation on peat	2018	NA
25	RSPO Drainability Assessment Procedure	2019	RSPO
26	Trainings on peat related requirements	2019 - 2020	RSPO
27	Remote sensing oil palm plantations in Indonesia	2013-2020	Various - PhD programme
28	SUSTAINPEAT: Overcoming barriers to sustainable livelihoods & environments in smallholder agricultural systems on tropical peatland	2017-2020	BBSRC – UK Research
29	Peatland assessment in SE Asia by satellite	2018-2020	UK Space Agency
30	Drought and peatland fires in Indonesian Borneo: Understanding drivers and impacts	2020-2023	NERC – UK research funding
31	Dissolved organic carbon fluxes from peatland plantations in Malaysia	2015-2018	NERC – UK research funding for PhD programme
32	Fish and fishing in Kalimantan peatlands	2015-2018	Uni of Leicester PhD programme
33	INTPREP	Singapore/Indonesia	donor/foundations
34	Singapore Dialogue on Sustainable World Resources (Note: Annual conference in Singapore focused on plantation sector)	2015-2019/Singapore	Multiple donors, including companies and Singapore government
35	ASEAN Sustainable Resources Week (Note: Series of online and hybrid events focused on plantation sector)	2020/Singapore	Multiple donors, including companies and Singapore government
36	EU-Singapore Climate Dialogue (Note: Agreed in principle, but funding pending as of Aug 2020)	2020/Singapore	EU Delegation in Singapore
37	Jakarta Workshop (Note: Roundtable discussion for Indonesian industry and Singapore companies)	2015-2019/Jakarta, Indonesia	Multiple donors, including companies and Singapore government
38	ESG Workshop and Report (Note: Focusing on ESG practices in plantation sector, including peat management)	2020/Singapore	Multiple donors, including companies and Singapore government
39	Haze Outlook Report	2019-2020/Singapore	Multiple donors, including companies and Singapore government
40	Special Report: Peatland Management & Rehabilitation in Southeast Asia	2017/Singapore	Multiple donors, including companies and Singapore government
41	Working Paper: Financing Indonesia's Independent Smallholders	2018/Singapore	Multiple donors, including companies and Singapore government
42	Peatland Restoration Programme (Note: Project is under PM Haze, a volunteer NGO partner, SIIA plays supporting role)	2016/Selangor, Malaysia	Multiple donors, including companies and Singapore government
43	Peatland Restoration Programme (Note: Project is under PM Haze, SIIA plays supporting role)	2017-2020/Riau, Indonesia	Multiple donors, including companies and Singapore government
44	Community-based Peatland Restoration Programme	2019-2020/Sungai Tohor	Donor through PM Haze
45	Maximizing carbon sink capacity and conserving biodiversity and through sustainable conservation, restoration and management of peat-swamp ecosystems project	April 2018-July 2020	GEF Through UNDP/ONEP (Completed)

Programmes/Projects supported by ASEAN Development/Dialogues Partners based on feedback by the Partners

No	Name of activities	Year/location	Funding amount
1	Peatland Management and Rehabilitation Project (Propeat)	2019-2021/2, Indonesia	EUR 3 Million
2	Project Biodiversity and Climate Change (Bioclime)	2014 -2017, Indonesia	EUR 4.3 Million
3	Merang REDD Pilot Project I/II	2003 - 2011	EUR 2.1 Million
4	BRG Support Facilities	2016-2018	NOK 90 Million
5	Low Emission Development Project	2016-2021	NOK 237 Million
6	BRG Result Enabling Facilities (this is an 'umbrella' project that manages several other projects - take over no. iv, PRIMS, Peat Moist estimation, green peat economy, etc.)	2017-2020	NOK 349 Million
7	Desa Peduli Gambut, inception phase	2017-2018	NOK 16 Million
8	GGGI Indonesia Program, Phase II (has activities on peatland landscape management)	2016-2020	NOK 183 Million, but peat component is small
9	Improved Soil Carbon Management	2019-2021	NOK 19 Million (Peatland and Mangroves)
10	Strengthening Forest Monitoring for Climate Action	2019 - 2021	NOK 19 Million (Scope is all forests, including peatland)
11	Partnership for Ecoregion and Landscape Management in South Sumatra	2015-2020	NOK 102 Million (Co-funding with UKCCU)

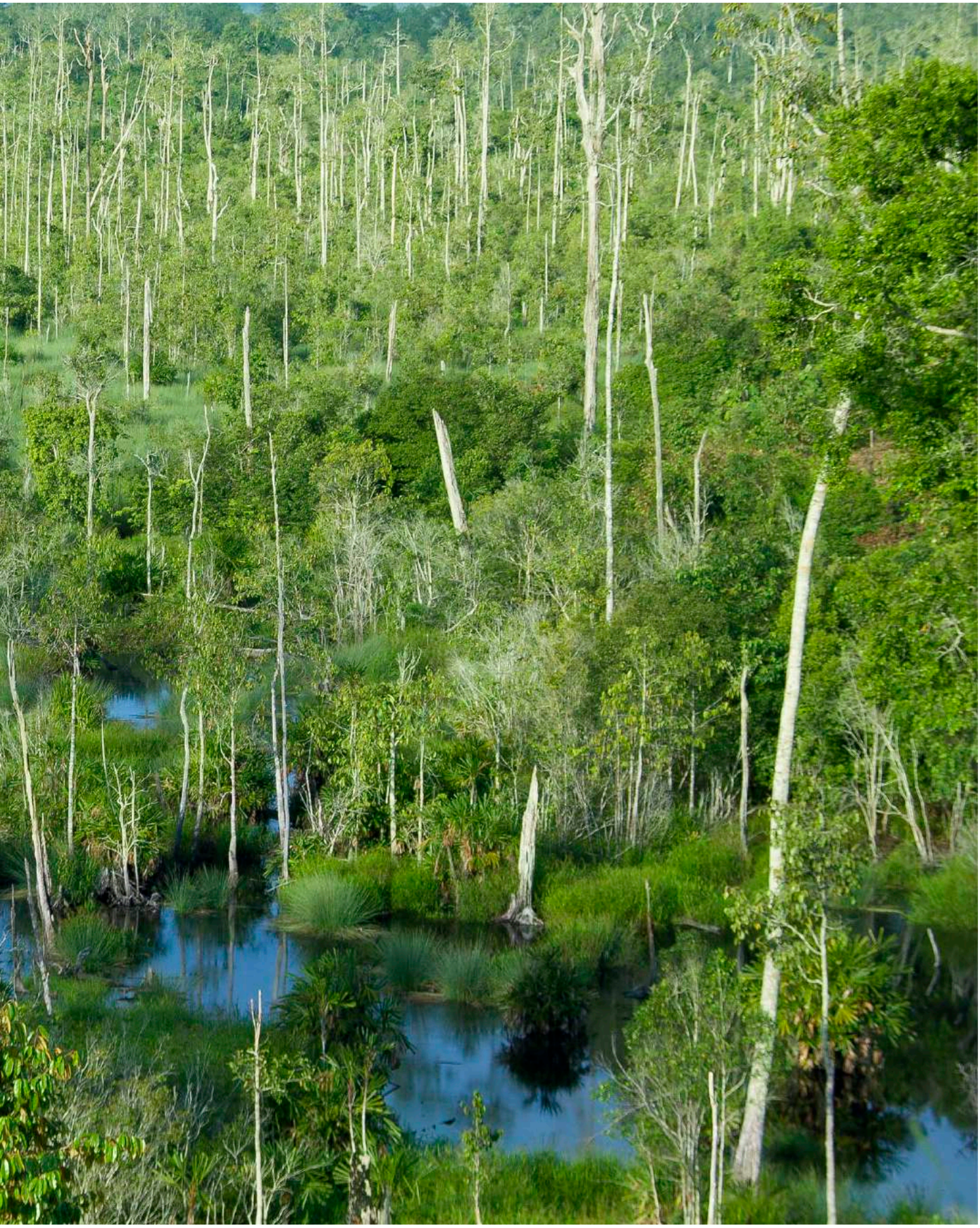


Photo credit: Md Khairulamin Abdullah Sungkai.

ASEAN

@ASEAN

@ASEAN

asean.org
haze.asean.org