



EUROPEAN UNION



one vision  
one identity  
one community



# Investing in Sustainable Natural Capital in ASEAN

STATUS REPORT – SEPTEMBER 2021

Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI)





EUROPEAN UNION



one vision  
one identity  
one community

# Investing in Sustainable Natural Capital in ASEAN

STATUS REPORT – SEPTEMBER 2021

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.

This publication was produced with the financial support of the European Union. The information and views set out in this report are those of the authors (Steele, Paul, et alii) and do not necessarily reflect the official opinion of the European Union, the ASEAN Member States, the ASEAN Secretariat, any related working groups, institutions and bodies, nor or any person acting on their behalf. Neither the European Union, the ASEAN Member States, the ASEAN Secretariat, any related working groups, institutions and bodies, or any person acting on their behalf may be held responsible for the use that may be made of the information contained therein. Responsibility for the information and views expressed lies entirely with the authors.

**For inquiries, contact:**



**The European Union Mission to ASEAN**

Menara Astra, 38th Floor  
Jl. Jend Sudirman Kav 5-6  
Jakarta 10220, Indonesia  
Phone: (62 21) 2554-6200  
Fax: (62 21) 2554-6201

E-mail: [mission-asean@eeas.europa.eu](mailto:mission-asean@eeas.europa.eu)  
Website: <http://eeas.europa.eu/asean>



**ASEAN Secretariat**

Community Relations Division (CRD)  
70 Jalan Sisingamangaraja  
Jakarta 12110, Indonesia  
Phone: (62 21) 724-3372, 726-2991  
Fax: (62 21) 739-8234, 724-3504

E-mail: [public@asean.org](mailto:public@asean.org)

**Authors:** This study is prepared by Paul Steele, Aidy Halimanjaya and Katryn Pasaribu

**Cover photo:** Ismail Amin

Catalogue-in-Publication Data

ASEAN Natural Capital Status Report: Investing in Sustainable Natural Capital in ASEAN  
Jakarta, ASEAN Secretariat, September 2021  
338.927

1. ASEAN – Environment – Sustainable Development
2. Natural Resources – Natural Ecosystems

ISBN 978-623-6945-41-4



The text of this publication may be freely quoted or reprinted, provided proper acknowledgment is given to the financial support of the European Union, and a copy, containing the reprinted material with the disclaimer, is sent to the Community Relations Division (CRD) of the ASEAN Secretariat, Jakarta. Maps in this publication are indicative and not drawn to scale.

General information on ASEAN appears online at the ASEAN Website: [www.asean.org](http://www.asean.org)  
Copyright Association of Southeast Asian Nations (ASEAN) 2021.  
All rights reserved.

## ACKNOWLEDGEMENTS

The Natural Capital Status Report - Investing in Sustainable Natural Capital in ASEAN - was initiated by the European Commission's Directorate General for the Environment. The Study was conducted with the support of the ASEAN Secretariat and the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI), a development cooperation program funded by the European Union. E-READI facilitates dialogues between the EU and ASEAN in priority policy areas of joint interest.

The report has fulfilled its objective of offering comprehensive analysis on the current status of natural capital among the ten ASEAN Member States (AMS) and proposes recommendations for an ASEAN Natural Capital Roadmap.

The authors of the study, Mr. Paul Steele, Ms. Aidy Halimanjaya, and Ms. Katryn Pasaribu, wish to acknowledge the useful comments and inputs provided by the ASEAN Secretariat, the ASEAN Centre for Biodiversity, the EU Delegation to ASEAN, the EU Directorate-General for Environment, E-READI, participants at the Bangkok Natural Capital Introductory Forum in November 2019 and the Focal Points of the ASEAN Working Group for Nature Conservation and Biodiversity. Any omissions are exclusively the responsibility of the authors.

Further acknowledgment and sincere appreciation go to the following individuals for their technical support to this Study:

- To the ASEAN Center for Biodiversity;
- To the ASEAN Secretariat, under the leadership of H.E. Kung Phoak, Deputy Secretary-General for ASEAN Socio-Cultural Community, ASEC's Environment Division led by Dr. Vong Sok (Head and Assistant Director) and his team members, in particular Ms. Mardiah Hayati, Ms. Natalia Derodofa, and Mr. Dwight Jason Ronan for the professional coordination, facilitation of consultations and stakeholder participation, and feedback to the draft report;
- To the EU Delegation to ASEAN, the EU Commission's Directorate-General for Environment and the team of E-READI, for the unwavering support throughout the Study and feedback to the draft Regional Report;
- To Mr. Paul Steele of the International Institute for Environment and Development (IIED) as the lead-consultant for this Study and author of the Regional Report, and his co-authors, Ms. Aidy Halimanjaya and Ms. Katryn Pasaribu. This Study would not have been possible without their expertise and support.

# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>11</b>
<b>1. INTRODUCTION</b>	<b>15</b>
1.1. Audience and objective	15
1.2. Methodology	15
1.3. Natural capital in ASEAN	17
1.3.1. What is natural capital in ASEAN?	17
1.3.2. Why does natural capital matter in ASEAN?	18
1.3.3. What are the status and trends of natural capital across ASEAN?	19
1.4. Report structure	20
<b>2. ASEAN MEMBER STATES' NATURAL CAPITAL STATUS</b>	<b>21</b>
2.1. Brunei Darussalam	23
2.2. Cambodia	24
2.3. Indonesia	24
2.4. Lao People's Democratic Republic	25
2.5. Malaysia	25
2.6. Myanmar	26
2.7. The Philippines	26
2.8. Singapore	27
2.9. Thailand	27
2.10. Viet Nam	28
<b>3. ASEAN POST-COVID-19 "BUILDING BACK BETTER" USING SUSTAINABLE NATURAL CAPITAL INVESTMENT</b>	<b>29</b>
<b>4. ASEAN REPORTING, ACCOUNTING AND MATERIALITY OF NATURAL CAPITAL INVESTMENT</b>	<b>33</b>
4.1. Natural capital accounting in ASEAN Member States	33
4.2. Natural capital accounting in ASEAN governments	34
4.3. Natural capital accounting by ASEAN business	38
<b>5. RISKS FOR ASEAN SUPPLY CHAINS AND COMPANY REPUTATIONS FROM UNSUSTAINABLE NATURAL CAPITAL INVESTMENTS</b>	<b>39</b>
5.1. Finance	39
5.2. Energy	41
5.3. Food processing and agricultural supply chains	43
5.4. Textiles	44
5.5. Seafood and ornamental fish	44
5.6. Cement and manufacturing	45
5.7. Plastics	45
5.8. Timber, pulp and paper production and furniture	45
<b>6. ASEAN OPPORTUNITIES FOR NEW PRODUCTS AND ECONOMIC BENEFITS FROM SUSTAINABLE NATURAL CAPITAL</b>	<b>47</b>
6.1. Nature-based tourism and ecotourism	47
6.2. Organic agriculture	48
6.3. Sustainable forest plantations	48
6.4. Herbal products	48
6.5. Vegetarian and vegan products	49

<b>7. ASEAN NATURAL CAPITAL GOVERNMENT POLICIES, INCENTIVES AND INSTITUTIONS</b>	<b>50</b>
7.1. Poor people’s access and rights to natural capital	50
7.2. Incentives for sustainable natural capital	51
7.3. Strengthened natural capital institutions	52
7.4. ASEAN Member States’ natural capital policies, incentives and institutions	54
<b>8. ASEAN TRADE, STANDARDS AND INVESTMENT AND NATURAL CAPITAL</b>	<b>56</b>
8.1. ASEAN trade agreements and natural capital	56
8.1. ASEAN standards and natural capital	56
8.2. ASEAN investment and natural capital	56
<b>9. RECOMMENDATIONS FOR THE ASEAN NATURAL CAPITAL ROADMAP</b>	<b>57</b>
9.1. ASEAN Roadmap: commitments to policy actions on natural capital	57
9.2. ASEAN Roadmap: flagship programmes on natural capital	59
9.3. Implementation of the ASEAN Natural Capital Roadmap through the Natural Capital Platform	61
9.4. Implementation of the Roadmap: support of key institutions	61
9.5. Implementation: ASEAN analysis and mapping of status, progress and next steps on natural capital	62
9.6. Implementation: inter- and intra-ASEAN lesson learning and collaboration on natural capital	62
9.7. Conclusions	62
<b>ANNEXES</b>	<b>63</b>
Annex A: Natural capital accounting in ASEAN Member States	63
Annex B: List of consulted stakeholders	74
<b>REFERENCES</b>	<b>76</b>

## LIST OF FIGURES

Figure 1: Online survey respondents across ASEAN Member States	16
Figure 2: Quick pool participants’ responses when asked for one word that defines natural capital	17
Figure 3: Share of respondents defining these as natural capital	17
Figure 4: Natural capital and ecosystem services	18
Figure 5: Wealth of countries that are heavily dependent on natural capital	21
Figure 6: Wealth of countries less dependent on natural capital	22
Figure 7: Brunei Darussalam – Composition of natural capital	23
Figure 8: Cambodia – Composition of natural capital	24
Figure 9: Indonesia – Composition of natural capital	24
Figure 10: Lao PDR – Composition of natural capital	25
Figure 11: Malaysia – Composition of natural capital	25
Figure 12: Myanmar – Composition of natural capital	26
Figure 13: The Philippines – Composition of natural capital	26
Figure 14: Singapore – Composition of natural capital	27
Figure 15: Thailand – Composition of natural capital	27
Figure 16: Viet Nam – Composition of natural capital	28
Figure 17: Major international support related to natural capital accounting across the ASEAN region	34
Figure 18: Cumulative installed capacity across Thailand, Indonesia, Malaysia and the Philippines, by technology	41
Figure 19: Renewable energy capacity by source, Southeast Asia, 2000-2016	42
Figure 20: Stakeholders’ perceptions of the allocation of government budget to natural capital management	52
Figure 21: Survey responses regarding government requirements for commodities standards to improve sustainable supply chains	53

## LIST OF TABLES

Table 1: Summary of private and public initiatives on natural capital accounting .....	33
Table 2: Progress of natural capital accounting in ASEAN Member States .....	35
Table 3: Development of sustainable finance and banking in ASEAN .....	40

## LIST OF BOXES

Box 1: E-survey methodology .....	16
-----------------------------------	----



## LIST OF ABBREVIATIONS

<b>ABC</b>	The Association of Banks in Cambodia
<b>ABS</b>	The Association of Banks in Singapore
<b>ACB</b>	ASEAN Centre for Biodiversity
<b>ADB</b>	Asian Development Bank
<b>AFH</b>	ASEAN Food Industries Human Resource Development Association
<b>AMS</b>	ASEAN Member States
<b>APP</b>	Asia Pulp and Paper
<b>ASC</b>	Aquaculture Stewardship Council
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>AusAID</b>	Australian Agency for International Development
<b>AWGNCB</b>	ASEAN Working Group on Nature Conservation and Biodiversity
<b>BAPPENAS</b>	Ministry of National Development Planning (Indonesia)
<b>BIG</b>	Badan Informasi Geospasial: The Geospatial Agency
<b>BMZ</b>	German Federal Ministry for Economic Cooperation and Development
<b>BPS</b>	National Statistics Office (Indonesia)
<b>CBD</b>	Convention on Biological Diversity
<b>CO2</b>	Carbon Dioxide
<b>DOSM</b>	Department of Statistics Malaysia
<b>EEPSEA</b>	Economy and Environment Programme for South East Asia
<b>E-READI</b>	Enhanced Regional EU-ASEAN Dialogue Instrument
<b>EU</b>	European Union
<b>FAO</b>	UN Food and Agriculture Organization
<b>FDI</b>	Foreign direct investment
<b>FFI</b>	Forest and Fauna International
<b>FLEGT</b>	Forest Law Enforcement, Governance and Trade
<b>FSC</b>	Forest Stewardship Certification
<b>FTA</b>	Free Trade Agreement
<b>GEF</b>	Global Environment Facility
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>GPBB</b>	Global Partnership for Business and Biodiversity
<b>GSO</b>	General Statistics Office (Viet Nam)
<b>GW</b>	Gigawatts
<b>IEA</b>	International Energy Agency
<b>ICF</b>	International Climate Fund

<b>IUU</b>	Illegal, unregulated and unreported
<b>IFC</b>	International Finance Corporation
<b>ISPONRE</b>	Institute of Strategy and Policy on Natural Resources and Environment (Viet Nam)
<b>IUCN</b>	International Union for Conservation of Nature
<b>LCEs</b>	Local Conservation Areas
<b>MEA</b>	Millennium Ecosystem Assessment
<b>MONRE</b>	Ministry of Natural Resources and Environment (Viet Nam)
<b>MPI</b>	Ministry of Planning and Investment (Viet Nam)
<b>NCA</b>	Natural capital accounting
<b>NEDA</b>	National Economic and Development Authority (Philippines)
<b>NEDSB</b>	National Economic and Social Development Board
<b>NP-AEEA</b>	National Plan for Advancing Environmental-Economic Accounting (Indonesia)
<b>NSDS</b>	National Sustainable Development Strategy (Thailand)
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OECMs</b>	Other Effective Area-Based Conservation Measures
<b>PEENRA</b>	Philippine Economic-Environmental and Natural Resources Accounting
<b>PES</b>	Payments for Ecosystem Services
<b>PV</b>	Photovoltaic
<b>REDD+</b>	Reducing Emissions from Deforestation and Forest Degradation
<b>SDGs</b>	Sustainable Development Goals
<b>SCG</b>	Siam Cement Group
<b>SEEA</b>	System of Environmental-Economic Accounting
<b>SME</b>	Small- and medium-scale enterprise
<b>STATCAP-CERDAS</b>	Statistical Capacity Building – Change and Reform
<b>TEEB</b>	The Economics of Ecosystems and Biodiversity
<b>TEI</b>	Thailand Environment Institute
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNESCAP</b>	United Nations Economic and Social Commission for Asia and the Pacific
<b>UNSD</b>	United Nations Statistics Division
<b>WAVES</b>	Wealth Accounting and Valuation of Ecosystem Services
<b>WWF</b>	World Wide Fund for Nature



Foreword by

## **H.E. DATO LIM JOCK HOI**

Secretary-General of the Association of Southeast Asian Nations (ASEAN)

Natural capital is a fundamental source of livelihood, offering vast benefits to peoples and economies through the provision of food, water, energy, and ecosystem services such as natural hazard mitigation, carbon sequestration and ecotourism opportunities. Our societies and businesses heavily depend on the biodiversity and ecosystem resources as the source of raw materials, including the agriculture, mining, pharmaceuticals, and construction industries, among others.

ASEAN is one of the most biologically and culturally diverse regions on the planet. Despite this unique richness, the region is estimated to be at risk of losing between 70 and 90% of habitats as well as between 13 and 42% of species by 2100.<sup>1</sup> Although progress has been made in the implementation of actions to promote sustainable natural capital management and biodiversity conservation, areas for improvement remain, particularly in enhancing coordination and collaboration across sectors, as well as the learning and knowledge sharing of best practices.

Furthermore, the COVID-19 pandemic has posed an unprecedented challenge and disrupted our efforts in the region. The diversion of resources to more urgent COVID-19 responses, combined with public health preventive measures, has reduced the speed and scale of our actions towards achieving sustainable and socially-responsible natural capital investment. As we recover from the pandemic, there is a need to provide guidance for building back better and ensuring that ASEAN develops and maintains sustainable approaches to preserving our natural capital. This is also in line with the strategy outlined in the ASEAN Comprehensive Recovery Framework (ACRF) which was adopted at the 37th ASEAN Summit in November 2020.

This report is designed to offer an assessment of natural capital policies and practices in ASEAN public and private sectors, as well as highlight current gaps and opportunities which aim to advance sustainable collective action and management of natural resources. This publication also presents for consideration the ASEAN Natural Capital Roadmap, a set of flagship programmes, which identifies relevant initiatives of companies and governments in the region, and focuses on economic activity as the catalyst of natural capital development.

This study, led by the ASEAN Senior Officials on Environment, the ASEAN Working Group on Nature Conservation on Biodiversity, and the ASEAN Centre for Biodiversity with the support of the European Union through the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI), is further envisioned to encourage ASEAN Member States to incorporate natural capital into planning and decision-making processes at the national and regional levels.

I hope that the key recommendations presented in this report will contribute to the development of the ASEAN Natural Capital Roadmap, and provide useful guidance to relevant stakeholders in the harmonisation of efforts to actively pursue and invest in sustainable natural capital in our region. By collaborating together, we will better prepare for the future, while building a caring, prosperous and sustainable ASEAN community.

DATO LIM JOCK HOI  
Secretary-General of ASEAN



<sup>1</sup> ASEAN Centre for Biodiversity, the ASEAN Biodiversity Outlook 2 (2017) accessible online at <https://environment.asean.org/asean-biodiversity-outlook-2/>



Foreword by

**H.E. VIRGINIJUS SINKEVIČIUS**

EU Commissioner for the Environment, Oceans and Fisheries

Natural capital is the bedrock of our economy and society. Ecosystems provide a wide range of services essential for our economy and societies to thrive, such as flood control, pollination, climate regulation, and recreation possibilities. But these natural resources and ecosystems are under tremendous strain. Before COVID-19, the need to create more resilient and sustainable economies and societies was clear. Now, it is inescapable.

The pandemic has raised awareness about the interdependence of biodiversity loss and human health. We now know that the risk of emergence and spread of infectious diseases increases as nature is destroyed, and we also know just how much we need nature for our physical and mental wellbeing. Protecting and restoring biodiversity is, therefore, key for boosting our resilience and preventing future pandemics. The recovery from the crisis presents a unique opportunity: a chance to repair our economic, financial, and natural systems, by building a regenerative economy that does not further destroy our life support system but contributes to 'healing it' by conserving and restoring biodiversity, reducing CO<sub>2</sub> emissions, and increasing resilience.

For these reasons, the new EU Biodiversity Strategy for 2030 has become a crucial part of the European Green Deal and the effort to recover from the economic crisis. For the same reasons, this 'ASEAN Natural Capital Status Report' comes as a timely publication. The study assesses the status of natural capital among the ten ASEAN Member States. It provides recommendations for a Natural Capital Roadmap, related flagship programs, and post-COVID-19 economic recovery to be addressed through a regional Natural Capital Platform.

Natural capital provides many benefits to ASEAN's people and economies and is the foundation to ensure inclusive and sustainable development in the region. Despite its unique richness, ASEAN's forests and coastal areas are being rapidly depleted due to extensive exploitation and mismanaged development. While climate change is rising on ASEAN's political and economic agenda, the comprehensive consideration of natural capital, in particular biodiversity loss, urgently requires more attention. The collapse of economic systems, particularly in lower-income ASEAN countries, has left millions without livelihoods, wiped out savings, severed supply chains and destroyed vital commercial sectors such as tourism. And only by addressing biodiversity loss and climate change jointly and with global efforts to 'build back better' can we hope to achieve Sustainable Development Goals (SDGs) and associated targets.

I thank all representatives of the ASEAN Member States, the ASEAN Secretariat, the ASEAN Centre for Biodiversity, and all those involved in the process of completing this study. I am sure that many stakeholders, including policymakers, government officials, private business actors, civil society organisations, academia, practitioners and the wider public, will make good use of it. The EU, through the Enhanced Regional EU-ASEAN Dialogue Instrument, is committed to supporting ASEAN with the implementation of the Natural Capital Roadmap through the development of the Natural Capital Platform.

Virginijus Sinkevičius

# EXECUTIVE SUMMARY

This report assesses the current status of natural capital among the ten ASEAN Member States (AMS) and proposes recommendations for an ASEAN Natural Capital Roadmap. Natural capital covers the vital renewable natural ecosystems and their biodiversity and resources, such as forests, water, air, wildlife, land, and non-renewable resources, like minerals.

ASEAN is one of the most biologically diverse regions on the planet. It is home to 18% of the world's species on just 3% of the world's land area, including an estimated 5% of the world's forests and one-third of the world's coastal and marine habitats.

Natural capital underpins much of ASEAN's prosperity. Yet this crucial biological and environmental wealth is under threat: ASEAN's forests and coastal habitats are rapidly depleting. With business as usual, ASEAN's natural capital will continue to shrink. According to the ASEAN Biodiversity Outlook 2 the region might lose 70–90% of habitats and 13–42% of species by 2100.

ASEAN has progressed in some areas of natural capital management. Exposure to water pollution and indoor air pollution has fallen as investments in clean water and electricity have increased. Many AMS have phased out the most dangerous pesticides. Although biodiversity loss across ASEAN is continuing, it has slowed.

To further decelerate biodiversity loss, AMS should engage in intensified efforts. Sustainable approaches to ASEAN's natural capital are vital. Unlike human-made capital - humankind cannot efficiently produce natural capital, and losses may be irreversible. Ministries of finance and other economic decision-makers can generate jobs and livelihoods, and private companies can generate economic and financial returns from sustainable investments in natural capital.

This report focuses on renewable natural capital resources and ecosystems, looking at a combination of resources (i.e., forests, water, air, wildlife, land) with a set of ecosystems and biomes (e.g., croplands, mountains, wetlands, watersheds, and coastal ecosystems). It analyses the status, trends, threats, and opportunities for natural capital in the ASEAN region, providing detailed country data for the ten AMS and a set of recommendations for the way ahead.

## ■ The ASEAN Natural Capital Roadmap

**The report presents recommendations for an ASEAN Natural Capital Roadmap for accelerating opportunities to sustain natural capital by:**

- Committing to joint policy actions on natural capital, including for a post-COVID-19 green recovery; and
- Establishing flagship programmes on natural capital for AMS and businesses.

ASEAN institutions can play a significant role in sustainable natural capital management across the AMS. The recommendations for the Roadmap are presented for consideration by the ASEAN Secretariat (ASEC), the ASEAN Centre for Biodiversity (ACB), ASEAN Member States (AMS), and the ASEAN private sector and civil society.

The report reviews innovative natural capital initiatives of ASEAN companies and governments, focusing on businesses as the engine of economic activity in ASEAN and, thus, the primary driver of natural capital change. To date, ASEAN has made progress on natural capital reporting and accounting and making natural capital “material” to business operations, but there are opportunities for further improvement. Progress on supply chains addressing risks from natural capital degradation and reducing impacts on company reputations has been mixed, with some movement by the larger agri-producers, some retailers, and manufacturers.

There are some very positive developments in new products and economic benefits from sustainable natural capital investment, but they are still in their initial stages. Nature-based tourism and ecotourism were booming but badly hit by the pandemic. Albeit from a low level, organic agriculture is starting to expand rapidly, and herbal products are a growing niche market. AMS have much to gain from stopping incentives that damage natural capital and accelerate forest clearance, water over-use and overfishing, and from proper funding for sustaining natural capital. There is leeway for AMS finance ministries, development, and investment agencies to pay more attention to sustaining natural capital and properly consolidate and fund natural capital agencies. AMS should consider upscaling promotion in participatory management of forests, fisheries, and protected areas by local people and indigenous communities. For trade, standards, and investment, the ASEC, ACB, and AMS can play a more active role in addressing natural capital.

**The ASEAN Natural Capital Roadmap should cover the following ten recommendations for AMS's policy action, collaborating with the private sector and civil society:**

- Recognise the value of sustainable natural capital investment in promoting the health and livelihoods of ASEAN's people and achieving the Sustainable Development Goals (SDGs) and economic development.
- Recognise the rights of local people and communities and promote their opportunities to sustainably manage natural capital and be consulted and benefit from natural capital use and management.
- Increase dialogue and evidence on the importance of sustainable natural capital among finance and economic ministries led by government agencies working on natural capital (e.g., ministries of environment, natural resources, forestry, parks, etc.) and by the private sector and civil society.
- Enhance knowledge sharing on natural capital accounting by the public and private sectors, particularly concerning planning, budgeting, and investment decision-making.
- Explore using common standards and effective compliance to reduce risks from unsustainable natural capital extraction in supply chains in ways that support smallholders.
- Examine and gradually reform policies and incentives that accelerate natural resource depletion, such as misguided forest clearance and overfishing subsidies.
- Work with businesses to provide more sustainable incentives and support, such as subsidies for investment in sustainable natural products and exports (e.g., organic agriculture, ecotourism, herbal products, and sustainable plantations).
- Work with the finance industry (e.g., banks, stock exchanges, insurers, and asset managers) to promote sustainable natural capital investment.
- Strengthen and better fund agencies in charge of natural capital (i.e., water, air, wildlife, land, and minerals) and consolidate them across governments.
- Explore mainstreaming sustainable natural capital practices into other ASEAN workstreams on trade, standards, and investment by ASEC and ASEAN sectoral bodies with the ASEC engaging sectoral bodies to increase awareness of the benefits of sustainable natural capital and ACB strengthening capacity, skills, and tools for mainstreaming natural capital into sectoral bodies.

**■ Seven flagship programmes**

The report also proposes seven flagship programmes for action by AMS with support from businesses, civil society, and international organisations. These are set out under the headings:

- Healthy ASEAN, healthy environment;
- ASEAN climate resilience through inclusive nature-based solutions;
- ASEAN sustainable forestry;
- ASEAN sustainable oceans;

- ASEAN rivers management;
- Greening ASEAN's financial markets and private sector; and
- ASEAN pro-poor conservation.

## ■ Putting nature at the heart of a post-COVID-19 Recovery

The COVID-19 pandemic has highlighted the links between nature, health, and prosperity. The post-COVID-19 economic recovery offers an opportunity to promote resilience, sustainability, and inclusivity through natural capital investment.

Globally, there is a drive to use the recovery to ensure that the public and private sectors “build back better”. ASEAN can respond to this agenda by addressing the natural capital investment opportunities set out in this report. Achieving impact on this fast-moving agenda will require cross-ASEAN engagement.

### **The report identifies ten crucial actions for post-pandemic recovery:**

- Increase food security by improving sustainable agriculture and fairly distribute products to stabilise food prices.
- Improve alternative employment opportunities in micro- and medium-scale green enterprises in areas such as renewable energy and organic agriculture. Green SMEs in the energy, agriculture, and waste sectors are often pro-poor and can deliver jobs and resilience.
- Halt the ASEAN illicit wildlife trade and support more sustainable food markets. Bringing to an end illegal wildlife trade is widely seen as an essential step to prevent future pandemics. At the same time, informal markets, a lifeline for the most impoverished urban consumers, could benefit from support and better regulations.
- Conserve protected areas as public funds dwindle and tourism stalls. Co-management and employment for local and indigenous people in wildlife protection can enhance livelihoods and nature protection.
- Create accountability in supply chains for more inclusion and sustainability and decentralise ASEAN social protection that draws on ecosystem services.
- Provide debt relief to AMS combined with debt for climate and nature programme swaps, which enable the debt to be swapped for investments to improve climate, environmental, and natural capital outcomes.
- Provide greater access to on-grid and off-grid renewable energy.
- Increase resilience for small scale fisheries, particularly for those seeking alternative livelihoods after tourism employment has declined.
- Increase cross-sectoral coordination between natural capital and health, agriculture, infrastructure, and energy sectors.

## ■ Next steps: Developing and Implementing the Natural Capital Roadmap

The ASEAN Natural Capital Roadmap, once it has been developed, will be implemented through an ASEAN Natural Capital Platform, which will serve as a multi-stakeholder coordination mechanism, facilitating regional activities driven by relevant government agencies, the private sector, and civil society.

The Platform will work under the guidance of the ASEC, ACB, ASEAN Working Group on Nature Conservation and Biodiversity (AWGNCB), and other relevant ASEAN working groups.

The EU should stand ready to support the Roadmap and the Platform via the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI) and other programmes. As a follow-up to this report, E-READI should support the Platform by sharing expertise and best practices, especially concerning the first validation meeting for the Natural Capital Status Report and design for the Roadmap.

Private sector companies operating in ASEAN will also need to be actively involved. The World Business Council on Sustainable Development has already offered to engage its members, and other ASEAN business associations need to be involved.

Sustainably maintaining its uniquely rich natural capital is a challenging task for ASEAN. With positive indications and initiatives to build on, now is the time to consolidate good practice across the region, particularly in the context of “building back better” after COVID-19.



# 1. INTRODUCTION

## 1.1. Audience and objective

The primary audiences for this report are the ASEAN Member States (AMS), ASEAN private sector companies and civil society, the ASEAN Secretariat (ASEC), the ASEAN Centre for Biodiversity (ACB), as well as the EU Directorate-General for Environment, the Mission of the EU to ASEAN, and EU Delegations to the AMS.

E-READI is a demand-driven dialogue instrument supporting ASEAN regional integration by strengthening EU-ASEAN networks and exchanging knowledge and regional integration experience in policy areas of joint interest. In addition to engaging with policymakers from EU and ASEAN institutions and Member States, it aims to facilitate ongoing and new dialogues with civil society, the private sector, and other relevant stakeholders across various policy areas. Natural Capital is one Dialogue Area under an overarching Dialogue on Environment and Climate Change.

The objective of this regional status report is to provide an assessment of natural capital policy and practice in ASEAN public and private sectors with a view to identifying areas for improvement through the development of a Roadmap. This Roadmap may require support from the EU and others including through the E-READI facility.

The primary focus of this review is on the private sector as well as governments' and ASEAN's role in providing an enabling policy context. The E-READI facility is engaging with the EU's global partnership business and biodiversity (GPBB), of which ASEAN is a member. The GPBB is linked to the Natural Capital Protocol<sup>1</sup> and the need to facilitate more countries to set up Business and Biodiversity Platforms.

There is limited awareness in the ASEAN region of how businesses affect natural capital while at the same time depending on it, and how reliance on natural capital creates both costs and benefits not only for businesses, but also for society.

For businesses in ASEAN, it will be important to focus on three areas of the private sector: large ASEAN national companies, non-ASEAN companies with production in ASEAN, and medium and small producers in AMS as the latter form the backbone of the ASEAN economy. In the case of natural capital related small- and medium-scale enterprises (SMEs) these include small-scale agricultural producers, textile enterprises and tourism and service sector firms.

In terms of identifying natural capital private sector initiatives and good practice, the focus in this report is on ASEAN examples (including non-ASEAN companies located within ASEAN).

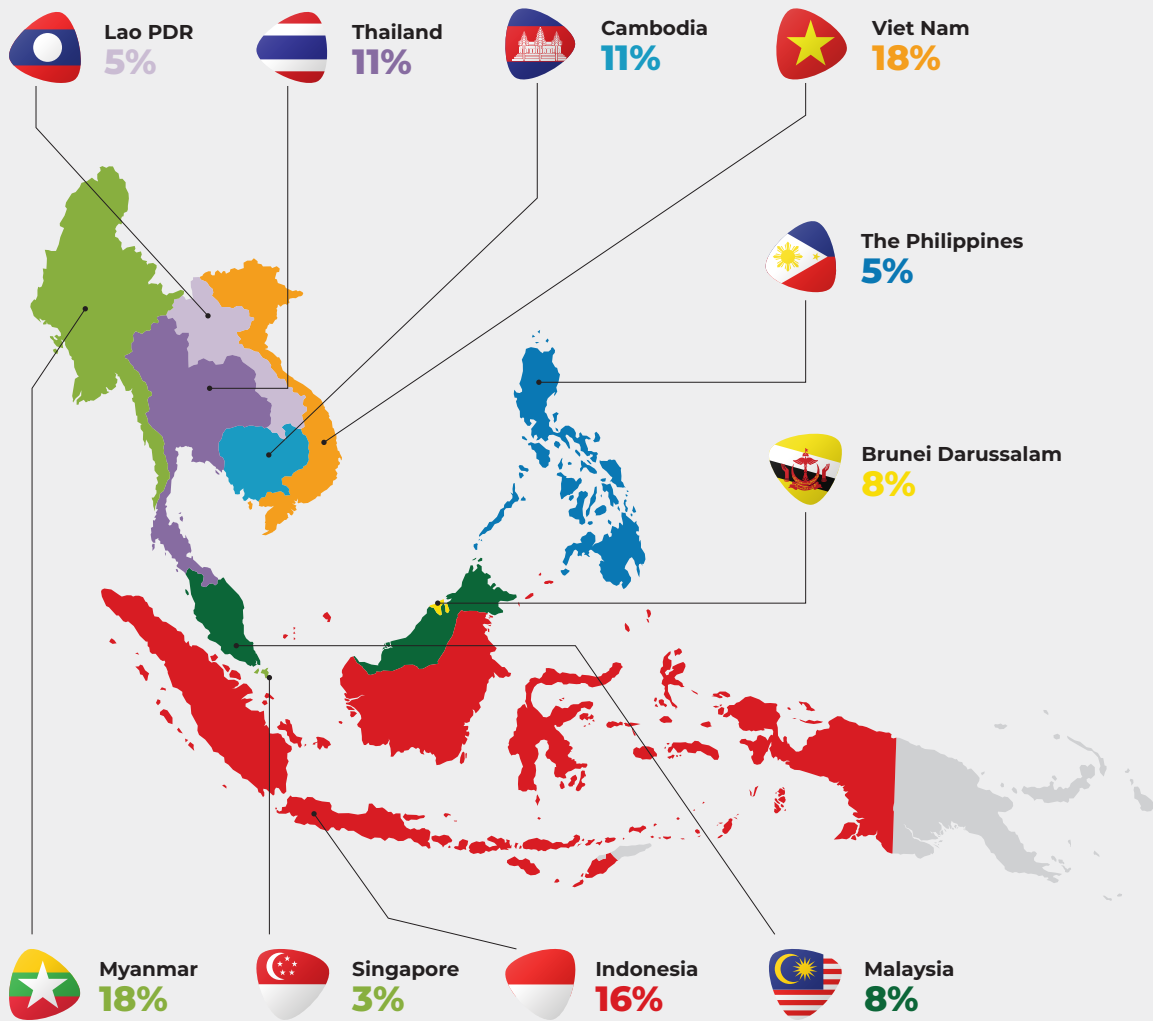
## 1.2. Methodology

The review was conducted by an international senior expert and two regional experts. The review was supported by in-country visits to Indonesia, Lao PDR, Thailand and Viet Nam. It also involved telephone and face-to-face interviews, an online poll during the Bangkok November 2019 Forum and an e-survey (see Box 1). The interview respondents consist of relevant stakeholders from the public and private sector (see Annex) and the 38 e-survey respondents are participants from two ASEAN-related forums: Sixth ASEAN Heritage Parks Conference (AHP6) in Lao PDR on 21-24 October 2019 and the Introductory Forum "Investing in Natural Capital in ASEAN" in Bangkok, Thailand on 27-28 November 2019. The draft findings of this review were presented at the Introductory Forum in Bangkok, which was organised with support from E-READI in collaboration with ASEC, and the ACB.

Box 1: E-survey methodology

The e-survey used a purposeful sampling method from the delegates in two ASEAN forums: the AHP6 in Pakse, Lao PDR in October 2019 and the Introductory Forum on Investing in Natural Capital in Bangkok in November 2019. Using a voluntary mechanism, 38 respondents (45% female, 52% male, 3% preferred not to say) volunteered to join an online survey of natural capital perceptions across AMS. This survey uses a Google form as the media for data collection. All 10 member states are represented in the e-survey with the most respondents from Viet Nam (18%), Myanmar (18%), Indonesia (16%), Malaysia (13%) and Thailand (11%) (Figure 1 below).

Figure 1: Online survey respondents across ASEAN Member States



Source: Author's contributions

### 1.3. Natural capital in ASEAN

#### 1.3.1. What is natural capital in ASEAN?

Natural capital refers to the stock of resources and ecosystems – in this case within the countries of ASEAN. Natural capital covers renewable natural ecosystems and their biodiversity and resources, such as forests, water and farmland, and non-renewables, such as minerals. This ASEAN natural capital status report focuses on renewable natural capital resources and ecosystems, looking at a combination of resources (soil, water, forests and fish) with a set of ecosystems and biomes (croplands, mountains, wetlands, watersheds and coastal ecosystems).

ASEAN policymakers and practitioners’ understanding of natural capital varies across AMS. There is no consensus on its definition, but the majority of the participants at the Introductory Forum associated natural capital with “resources” and “natural resources” (Figure 2).

Figure 2: Quick pool participants’ responses when asked for one word that defines natural capital



Source: Authors contributions

Note: Based on 48 responses of a quick pool during Investing in Sustainable Natural Capital in ASEAN: Introductory Forum in Bangkok, 27-28 November 2019.

This quick pool result during the conference is further explained by the result of our e-survey that took place before and after the event (see Box 1). As shown in Figure 3, 45% of the e-survey respondents understood “natural capital” to mean forest, with 11% understanding it as wildlife and 3% as water. The second-largest percentage (41%) viewed all natural resources, including air, ocean and land, as natural capital.

Figure 3: Share of respondents defining these as natural capital



Source: Authors contribution

### 1.3.2. Why does natural capital matter in ASEAN?

This status report addresses sustainable investment in natural capital, by which is meant the sustainable use, conservation and restoration of natural capital. Sustainable approaches to natural capital are vital as it cannot easily be produced or manufactured like produced or man-made capital. Thus, it is inherently scarce, and its loss is often irreversible.

Natural capital provides services or benefits to the people and economies of ASEAN and is integral to the achievement of the Sustainable Development Goals (SDGs). These benefits include the direct goods and services (provisioning of food, water, energy etc.) and the ecosystem services of the natural capital, which encompass supporting services, regulating services and cultural services (e.g. natural hazard mitigation, carbon sequestration and ecotourism opportunities) (see Figure 4). Natural capital is critical to creating sustainable and liveable cities, for example, providing green spaces for recreation and community engagement and helping to mitigate the risks of flooding under climate change scenarios and urban heat island effects.

Figure 4: Natural capital and ecosystem services



Source: Adapted from Millennium Ecosystem Assessment (MEA 2005)

Natural capital is key to most AMS economies. An estimated 30% of the wealth of Asia Pacific comes from natural capital, while in high-income countries such as those in the OECD only 2% of wealth is derived from natural capital. However, despite its importance to the economy and livelihoods, natural capital is being destroyed rapidly in ASEAN. This will be given particular attention in the context of the CBD COP 15 to be held in Kunming, China, in late 2021.

Most poor people in Asia, particularly women, are dependent on natural capital for their livelihoods, but suffer from inadequate access and declining resource quality. Most of Asia's rural poor depend on agriculture, for which access to fertile soil and predictable water supplies is essential. Yet the status and trends of soil is generally declining across Asia (FAO and ITPS, 2015). World Bank studies in Cambodia, Lao PDR and Viet Nam suggest that there is a strong overlap between highly degradable land and where the poor live (World Bank 2005b). People without access to secure land are, perhaps paradoxically, even more dependent on a wide range of natural resources, as they cannot raise financial capital – and women are disproportionately dependent (Jodha 1990).

Fisheries are the key resource for more poor people in ASEAN than in any other region (Chan et al. 2017), notably in Indonesia and along the great Mekong River, and many farm households augment their food supplies and incomes by fishing. Fishing provides 38% of the animal protein intake in the ASEAN region and more than half of the average animal protein intake in Indonesia and Cambodia (Chan et al. 2017).

### 1.3.3. What are the status and trends of natural capital across ASEAN?

ASEAN is one of the most biologically and culturally diverse regions on the planet and is home to many unique animal and plant species, and ecosystems. However, its natural capital is being rapidly depleted due to extensive exploitation, mismanaged development and growing water, land and air pollution. The fifth ASEAN State of Environment Report reveals that air pollution levels are increasing in the region with the energy sector being responsible for the largest carbon dioxide (CO<sub>2</sub>) emissions and it is predicted that energy-related CO<sub>2</sub> emission levels could rise in the ASEAN region by 61% from 2014 to 2025 (ASEAN 2017). Forest fires have recently severely affected some of the AMS. The considerable marine natural capital in the ASEAN region is threatened by illegal fishing, overfishing and coral bleaching due to climate change (DeRidder and Nindang 2018).

ASEAN's rich environmental management traditions sustained its people for centuries. Practical examples include the rice terraces and irrigation practices of Indonesia and the Philippines, and common property management of inland fisheries in Cambodia and Viet Nam. Some of the greatest Asian thinkers who still influence ASEAN today – Buddha, Confucius, Gandhi and Mohammed – had a profound appreciation of the dependence of people on the natural world.

In the early stages of ASEAN's drive for economic development, Asian environmental traditions were challenged by economic development models – often driven by colonial powers – that promoted the exploitation of natural capital for export. Forests were cleared, first for high-value hardwoods and then for tea, coffee and rubber. Mines were developed in remote biodiversity-rich areas.

Environmental change accelerated with rapid agricultural and industrial growth in the twentieth century, becoming more extreme in recent years. Asian agricultural production rose by 62% from 1990 to 2002. Forests were cleared rapidly, primarily for export crops such as palm oil and rubber. Pollution also grew linked to industrialisation as Asian industrial production rose by 40% from 1995 to 2002, compared with 23% globally.

#### ■ Terrestrial natural capital

Terrestrial natural capital status presents a mixed picture in ASEAN – with general decline, but some slight slowing of the rate of loss over the last few years (ASEAN Biodiversity Outlook 2017).

- Overall, forest areas in the region showed a steady decline over 2000-2015 – from 2.33 million square km in 2000 (51% of the ASEAN land area) to 2.02 million square km in 2015 (44% of the ASEAN land area).
- On average (from 2000 to 2015), Indonesia's forest areas occupied 47% of the ASEAN region's forests, followed by Myanmar at 16% and Malaysia at 10%. (ASEAN Biodiversity Outlook 2017, 54).
- The positive news is that the overall ASEAN rate of forestry loss slowed from 1.2% per year from 2000 to 2010, to 0.26% per year from 2011 to 2015.
- This was caused by some AMS, particularly the Philippines and Viet Nam, increasing their forest cover. In some cases, these were forest plantations replacing old growth natural forests so although forest cover increased, biodiversity and habitat diversity declined.
- Compared to slowing the rate of forest coverage loss, AMS were also less successful in reducing habitat loss, forest degradation and fragmentation, and species decline. Of the total 14,591 species assessed by the International Union for Conservation of Nature (IUCN) in the ASEAN region from 1996 to 2015 about 16% (2,296) of plants and animals were threatened. Of the threatened species, 39% were animals and 61% were plants.
- Plants, mammals, and birds jointly accounted for 84% of all the plants and animals under threat in the region as these were directly affected by deforestation. In particular, threatened plants include larger-sized trees such as teak, trees from the dipterocarp family, and evergreen montane forests as these are valuable tree species in high demand for both legal and illegal logging.

- Of the mammals, tigers, elephants, orangutans and rhinoceros were directly affected by habitat fragmentation. Some fruit-eating birds such as certain species of hornbills were displaced from their habitats due to the loss of tall trees. (ASEAN Biodiversity Outlook 2017).
- AMS need to stop enabling factors that directly affect these habitats such as the conversion of forest for high-value plantation crops particularly oil palm and rubber, illegal logging, and forest encroachment (ASEAN Biodiversity Outlook 2017).
- According to the IUCN, 47% of deforestation in Malaysia between 1972 and 2015 was caused by palm oil. In Indonesia the proportion was 16% but much higher than in Malaysia in some areas. (Economist 2019).
- With business as usual, natural capital loss is estimated to continue. The ASEAN region is estimated to lose 70-90% of habitats and 13-42% of species by 2100 (ASEAN Biodiversity Outlook 2017). This will particularly hit the most biodiversity-rich countries of Indonesia, Malaysia and the Philippines (ASEAN Biodiversity Outlook 2017).
- Particularly in achieving the Aichi Biodiversity Target 11,<sup>2</sup> AMS are implementing various measures to protect its uniquely representative habitats and ecosystems through its ASEAN Heritage Parks programme. As of 2019, a total of 49 ASEAN Heritage Parks had been established.

### ■ Marine natural capital

- ASEAN includes a third of the world's coastal and marine habitats covering vital marine habitats such as coral reefs, mangroves, estuaries, sandy and rocky beaches, seagrass and seaweed beds (ASEAN Biodiversity Outlook 2017, 68).
- There has been a threefold increase in areas declared as marine protected areas in the ASEAN region. A little over 2% (229,534 square km) of the total territorial waters of the AMS have now been allocated to marine protected areas (ASEAN Biodiversity Outlook 2017,75) – but this is well below the total global marine protected area figure of 14%, which is on its way to the Aichi target of 17% of marine area to be protected.

## 1.4. Report structure

The regional status report comprises the following sections:

1. AMS' natural capital status;
2. ASEAN post-COVID-19 "building back better" using sustainable natural capital investment;
3. ASEAN natural capital reporting and accounting in the public and private sectors, challenges and opportunities, and areas for improvement;
4. Risks and opportunities for ASEAN supply chains and reputations with ASEAN and non-ASEAN consumers from sustainable and unsustainable natural capital investment and practices in ASEAN, and how improvements can be made;
5. ASEAN opportunities for new products and economic benefits – GDP growth, employment, revenues, exports etc. – from sustainable natural capital investment and good practice in ASEAN, and how improvements can be made;
6. ASEAN natural capital government incentives, policy and institutions;
7. Links within ASEAN between regional integration and natural capital standards, trade agreements and treatment of natural capital, and attracting foreign direct investment (FDI) in natural capital; and
8. Recommendations for the ASEAN Natural Capital Roadmap and what support countries and companies would like to receive from ASEAN and EU collaboration through E-READI and other programmes.

---

<sup>2</sup> By 2020 at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascape.

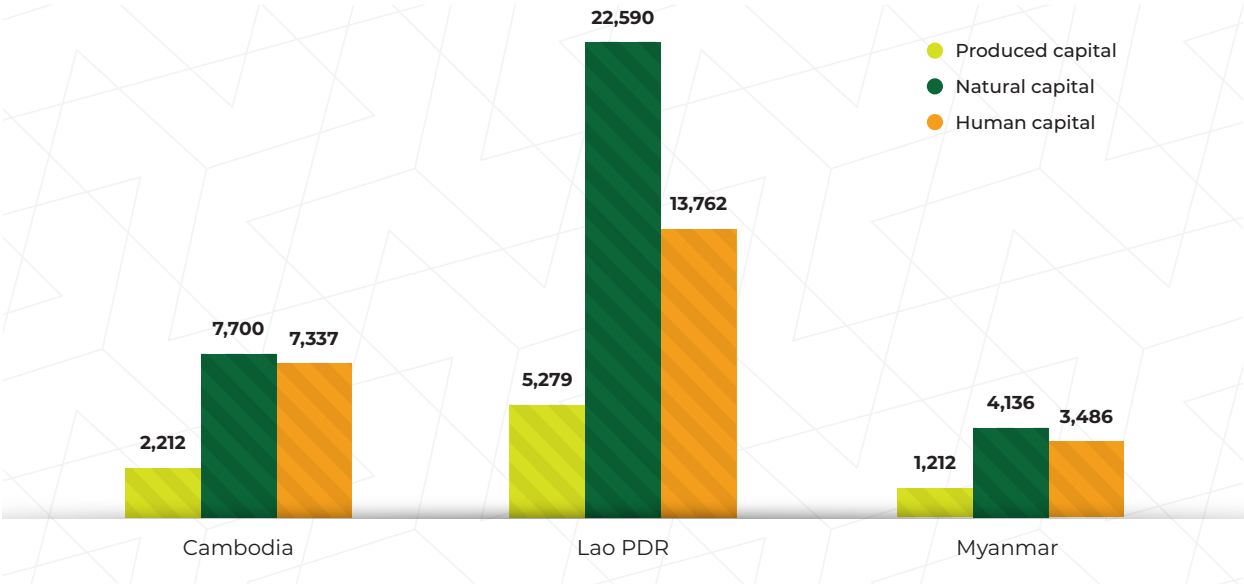
# 2. ASEAN MEMBER STATES' NATURAL CAPITAL STATUS

This section sets out the status, trends, threats and opportunities for natural capital in the 10 AMS based on the Fifth ASEAN State of the Environment Report released in 2017, ASEAN Biodiversity Outlook, the World Bank's The Changing Wealth of Nations 2018 and other references. The World Bank report presents a comprehensive measure of a country's wealth including man-made capital, human capital and natural capital, whilst other reports present recent trends of natural capital as well as biodiversity. In particularly the World Bank report provides measures of the wealth of nations covering 141 countries over the period 1995 to 2014. For the purpose of this regional status review, the estimated wealth data for AMS were sourced from the Changing Wealth of Nations 2018.

In general, there are four types of capital that make up the wealth of a nation: natural capital, produced capital, human capital and net foreign assets. The net foreign assets are ignored in this report as all AMS are developing countries. The natural capital is the present value of natural resource stock owned by each country – including forest land (timber and non-timber resources), cropland, pastureland, protected areas, and subsoil assets such energy and minerals. So marine natural capital is not covered. This terrestrial natural capital is valued purely on productive value which perhaps represents a third of all natural capital and not that of regulating services or cultural services which can be significant in some countries such as Singapore.

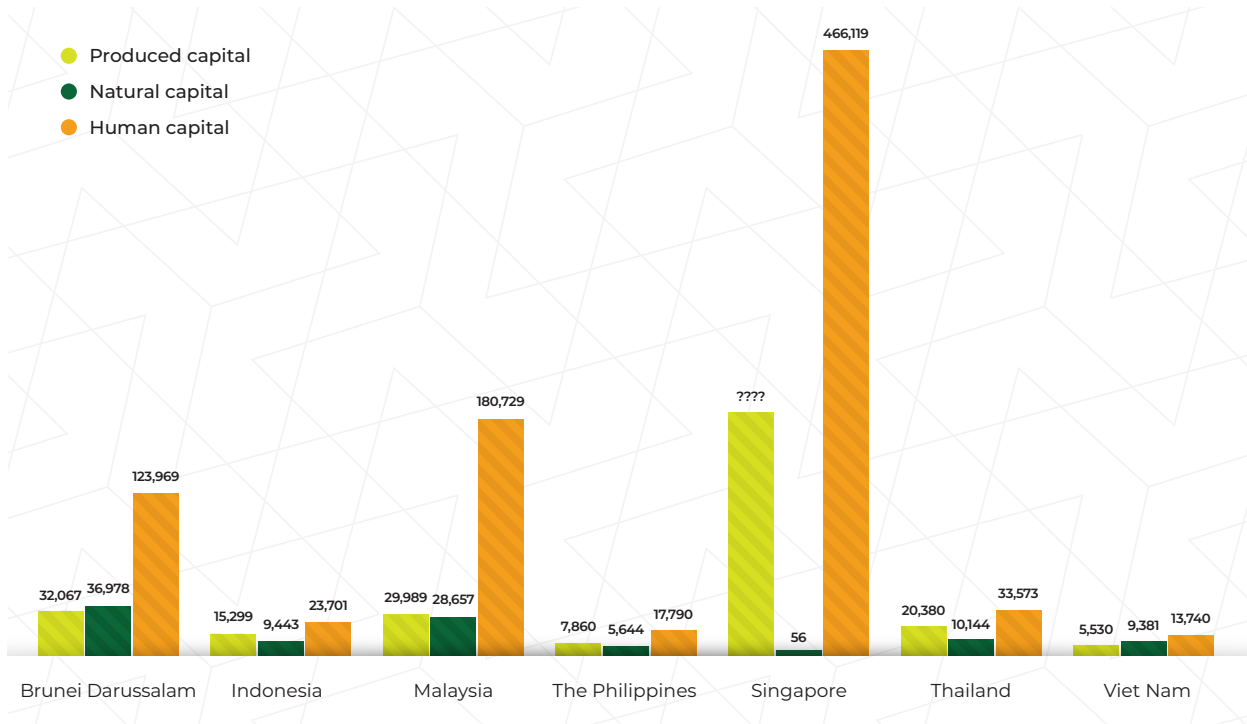
The produced capital is defined as the value of assets that are manufactured or built, such as machinery or infrastructure. The human capital is calibrated based on the share of labour earnings in a country's GDP. Figures 5 and 6 below show the estimated per capita wealth value for AMS in 2014 US\$. Figure 5 shows per capita wealth of AMS that are heavily dependent on natural capital: Cambodia, Lao PDR, and Myanmar. In contrast, Figure 6 displays per capita wealth of the remaining AMS that are less dependent on natural capital.

Figure 5: Wealth of countries that are heavily dependent on natural capital



Source: Authors' calculations based on the World Bank's The Changing Wealth of Nations 2018

Figure 6: Wealth of countries less dependent on natural capital



Source: Authors' calculations based on the World Bank's The Changing Wealth of Nations 2018

It is important to highlight the difference between relative and absolute values in comparing AMS' wealth. Figure 5 indicates that compared with human and produced capital, Lao PDR is heavily dependent on natural capital with a value of US\$22,590 per capita of natural capital, while Figure 6 indicates that Brunei Darussalam is heavily dependent on human capital with a value of US\$123,696, but its natural capital is still higher than Lao PDR in absolute terms at US\$36,978. It can be inferred that relatively Lao PDR is more dependent on natural capital than Brunei Darussalam. However, in terms of absolute value, Brunei Darussalam's per capita dependence on natural capital is higher than Lao PDR.

Figures 7 to 16 show the composition of natural capital in each AMS. As mentioned earlier, subsoil assets (i.e. minerals), pastureland, cropland, protected areas and forest make up what is considered as natural capital. The World Bank estimated the value of subsoil assets by taking the present value of the stream of expected rents from a nation's stock of subsoil non-renewable resource that may be extracted from the resource until it is exhausted. For cropland and pastureland, the monetary value of the natural capital is estimated by taking the present value of returns to land from crop and livestock products. The protected area is valued by using the quasi-opportunity cost of protection per unit area of the protected land. The opportunity cost is approximated using the present value of the minimum of total rents per square kilometre of cropland and total rents per square kilometre of pastureland. Forest capital comprises the value of timber and non-timber products. The timber resources are valued by taking the discounted present value of rents from roundwood production over the expected lifetime of standing forest. The non-timber resources are approximated by taking the present value of ecosystem services from standing wood for several benefit categories, which are non-wood forest products, recreation, hunting, fishing, and watershed protection.

Investing ASEAN's drawdown of natural capital in other sectors of the economy can avoid an economic "boom and bust" scenario. In several AMS such as Myanmar a large share of investment is being directed into the land use and extractive sectors (ASEAN 2018a). However, natural-resource-based economies need to shift towards more service-oriented sectors in the next few decades (Jusoh et al. 2019).

This is particularly the case for minerals and other non-renewable resources, which by definition are declining with extraction. It is clear that if natural capital is simply consumed then it will not lead to sustained improvements to the economy. If, however, profits from natural capital extraction are invested in produced capital (e.g. infrastructure) and human capital (e.g. education) to drive further growth, they might make



a sustained contribution to improved welfare. Where there is a windfall natural resource gain, such as a rapid rise in forest resource price, it can be set aside in a special savings account. This in itself can be beneficial environmentally if future investments in produced and human capital lead to more efficient resource utilisation, thus reducing further pressure on the resource base. Timing is crucial in shifting from pure resource extraction to resource management and diversified income sources before it is too late and the resource collapses. In many cases, the switch has not been made in time – such as over-extraction by some ASEAN timber enterprises and fishing fleets.

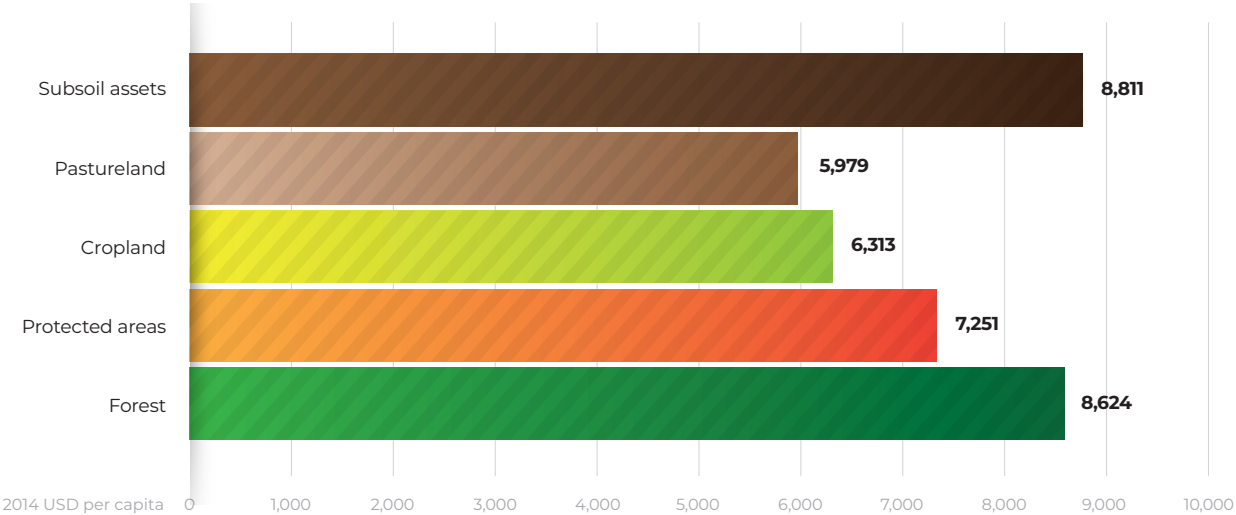
There are also limits to how much drawdown of natural capital is economically desirable. Natural capital in ASEAN is already declining dramatically in both quality and quantity, while produced and human capital continue to grow. Fisheries are depleted, soils eroded and made saline, aquifers dried up, and forests are denuded. These impacts are significant enough to reduce gross national savings by almost one-third in the Philippines and Cambodia, by almost one half in Malaysia, and by nearly 90% in Indonesia (World Bank 2005b). In addition, there are certain ecosystem processes that are critical for their life-supporting services, notably nutrient recycling, air and water purification, pollination and other biological mechanisms. Loss of this “critical natural capital” is irreversible and represents a significant threat to the long-term welfare of the human race. Yet, globally, the Millennium Ecosystem Assessment (MEA) has identified that 60% of environmental services (particularly fresh water, air and water purification, climate regulation, and pest regulation) have been degraded (MEA 2005).

The sections below present the detailed country by country data for each of the 10 AMS.

## 2.1. Brunei Darussalam

Brunei Darussalam consists of two enclaves surrounded by the Malaysian states of Sarawak and Sabah in the North of Borneo Island, the third largest island in the world. Borneo Island has dense tropical forest and indigenous wildlife and the two enclaves of Brunei Darussalam are surrounded by tropical forest reserves and national parks. Over 46% of the country is protected area one of the highest levels of protection in the world. The country is almost entirely supported by exports of crude oil and natural gas, with revenues from the petroleum sector accounting for over half of GDP (Heritage Foundation 2019). The northern coastal areas are dedicated to oil and gas extraction developed with Brunei Shell Petroleum (BSP 2020).

Figure 7: Brunei Darussalam – Composition of natural capital

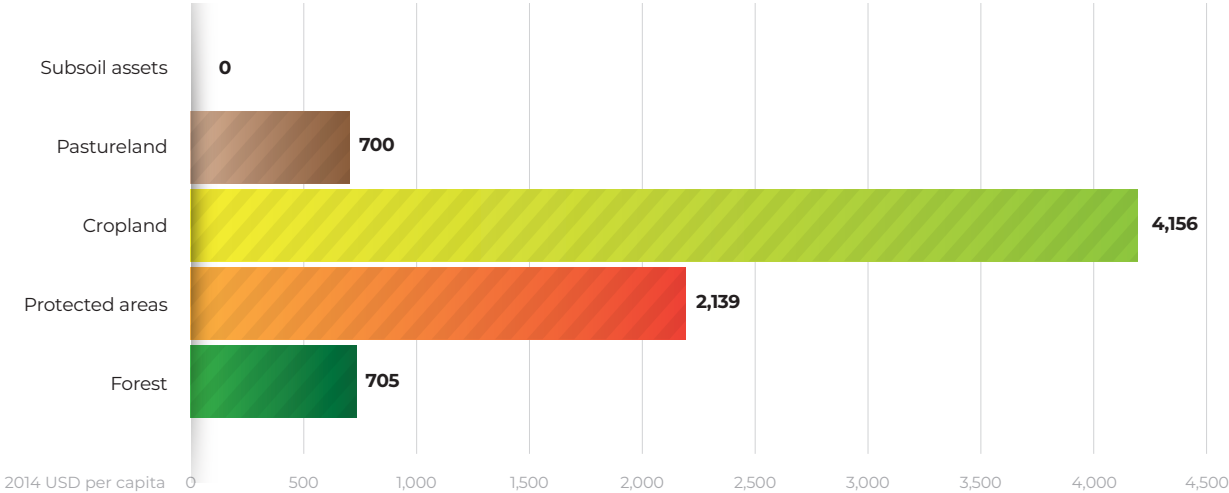


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.2. Cambodia

Cambodia is a largely low-lying country that includes large areas of croplands, the Mekong Delta and the Gulf of Thailand coastland. The economy continues to grow rapidly fuelled by Chinese investment and exports to China. Garments and footwear are major export sectors. However, agriculture continues at over 20% of GDP driven by rice and industrial agriculture (World Bank 2019). Much of the forest has been converted to agricultural plantation concessions of rubber and other crops.

Figure 8: Cambodia – Composition of natural capital

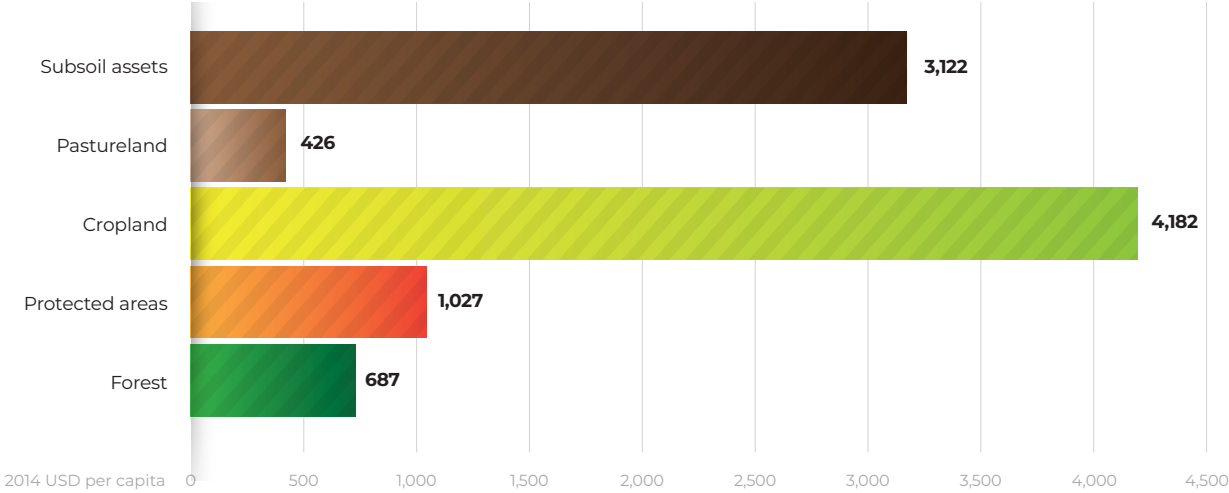


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.3. Indonesia

Indonesia is a large nation, with 120.6 million hectares, or 63% of the nation’s entire land area, designated as Forest Area. For more than five decades, forest resources have played a significant role in facilitating Indonesia’s economic development. Indonesia is also a major gas and coal producer with extensive forests and pasturelands. While the government is making a significant effort at land restoration, its implementation is taking time (BRG 2018). Indonesia’s marine natural capital is twice the size of its forests and is rife with issues including illegal, unreported and unregulated fishing, and destructive fishing practices, despite recent efforts to increase compliance (Ismail 2018).

Figure 9: Indonesia – Composition of natural capital

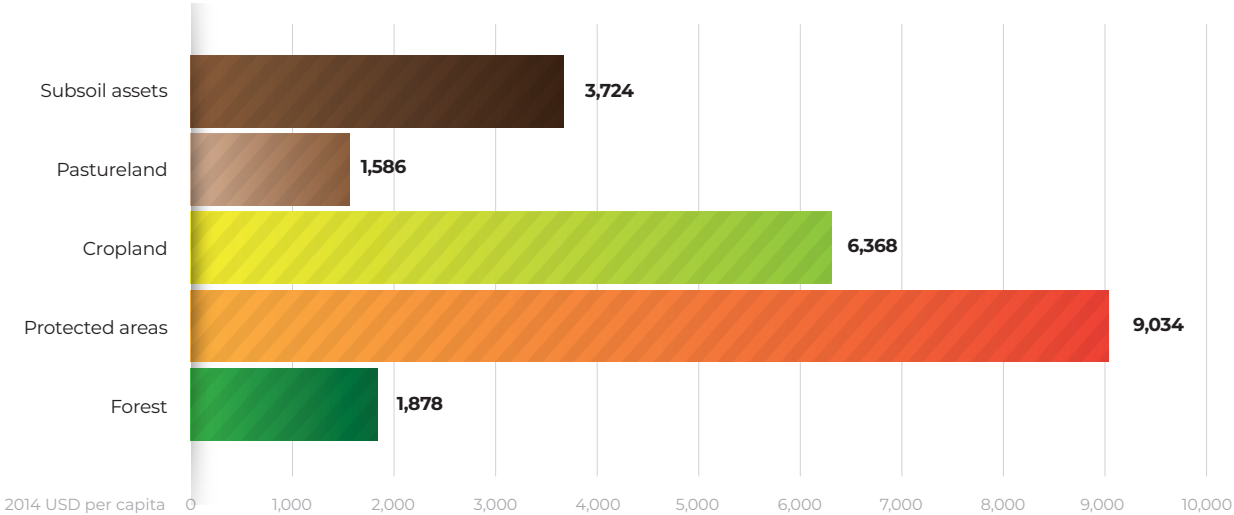


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.4. Lao People’s Democratic Republic

Lao PDR is a landlocked country that mainly relies on natural capital such as mining and agricultural plantations for exports. Investment in natural capital extraction is accessible to both Lao and non-Lao residents. The country has rich biodiversity and is part of the Greater Mekong Subregion. The Mekong River supports the world’s largest inland fishery, which has an annual turnover of US\$1.4-3.9 billion (ADB 2015).

Figure 10: Lao PDR – Composition of natural capital

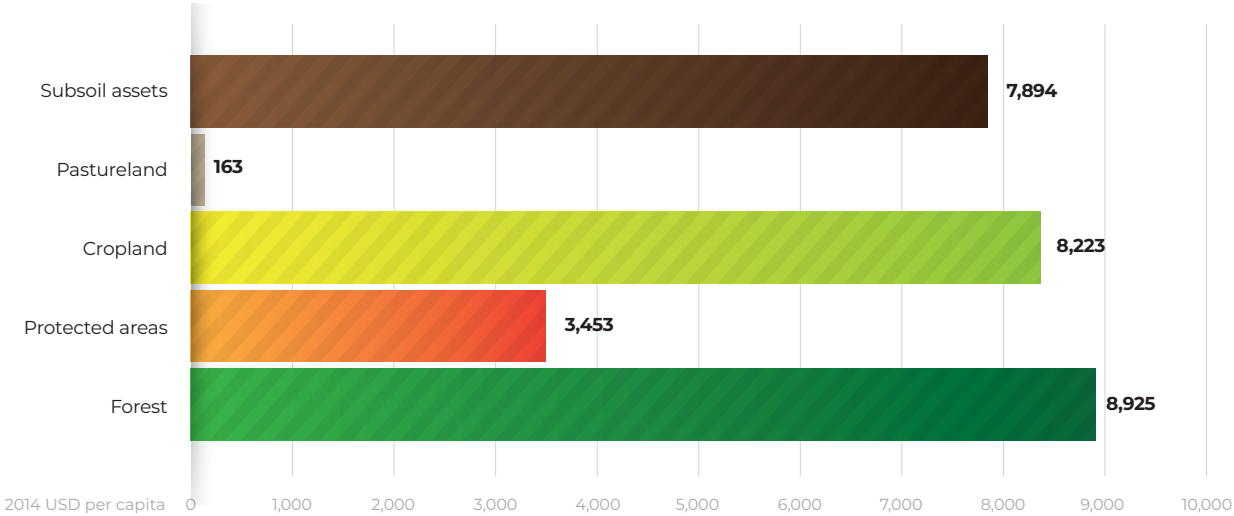


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.5. Malaysia

Malaysia consists of Peninsular Malaysia and the States of Sarawak/Sabah in Borneo. The latter in particular has large nature reserves as well as some of the largest palm oil plantations in the world. In early 2019 the country set up a plan to cap its oil palm plantation area at about 6.5 million ha by 2023 (Yusof 2019). Deforestation and the use of fire to clear secondary forest have damaged the balance of many ecosystems and the carbon cycle (Cheng et al. 2019).

Figure 11: Malaysia – Composition of natural capital

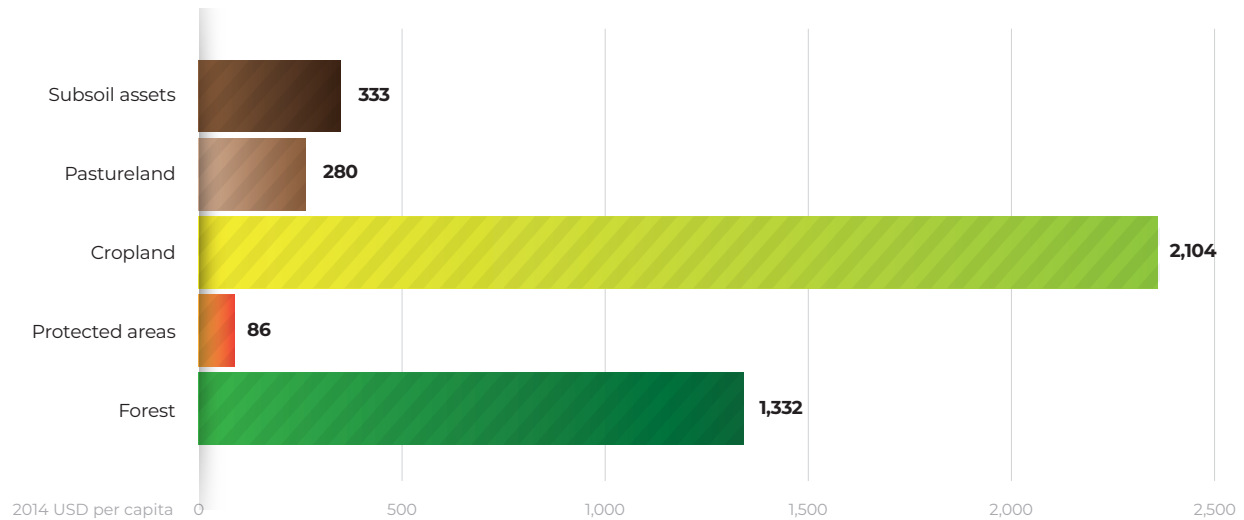


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.6. Myanmar

Myanmar is a large country bordering other vast Asian countries, namely China, India and Thailand. It is rich in natural resources including oil and gas, precious stones and gems, timber and forest products. The country is still heavily dependent on the extractive industry (Shortell 2018).

Figure 12: Myanmar – Composition of natural capital

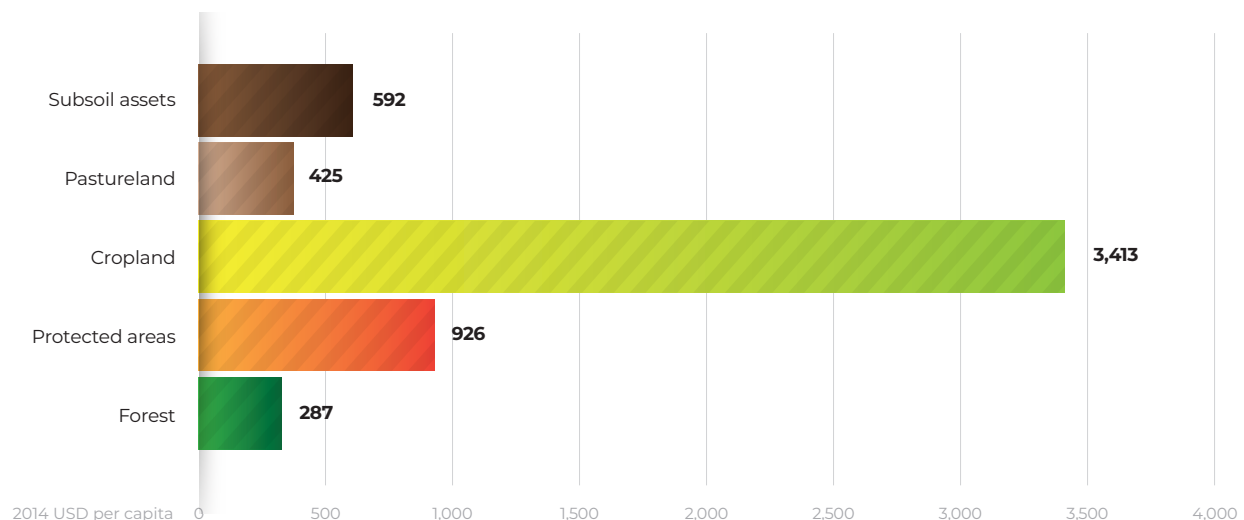


Source: Authors' calculations based on the World Bank's The Changing Wealth of Nations 2018

## 2.7. The Philippines

The Philippines is a large archipelagic country that has undergone a major transition from dependence on agriculture to service and industry provision. According to World Bank data, agriculture accounted for 9.7% of its GDP in 2017, the lowest contribution to GDP in the country's history (Bajpai 2019). The Philippine Statistics Authority reports that in 2019 GDP was mainly driven by trading in and repair of vehicles, motorcycles, personal and household goods, manufacturing, and construction (Philippine Statistics Authority 2019).

Figure 13: The Philippines – Composition of natural capital

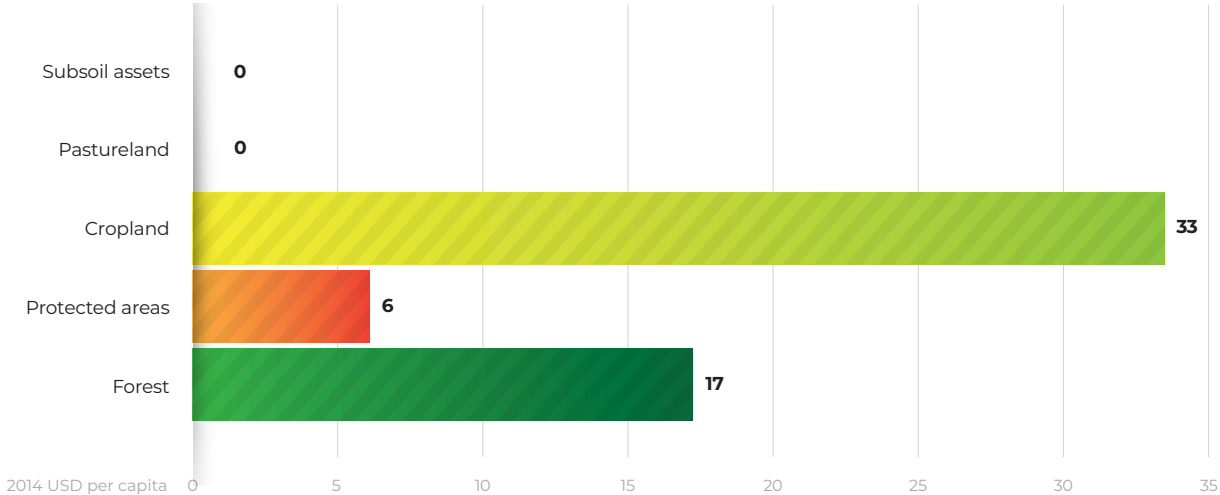


Source: Authors' calculations based on the World Bank's The Changing Wealth of Nations 2018

## 2.8. Singapore

As a city and island state, Singapore is surrounded by water and lies at the end of the Malaysian peninsula. The country has become a modern city with most of its land covered in housing and high-rise buildings. The modern urban ecosystems include gardens and coastal areas. Some man-made ecosystems have been developed to improve economic performance and liveability, and to increase human comfort in this hot, tropical city (ETH 2020). It should be noted that the figures below do not take into consideration marine natural capital and are also estimated purely on productive value which perhaps represents only a third of Singapore’s natural capital. It also does not include the regulating services or cultural services which have an immense value to Singapore.

Figure 14: Singapore – Composition of natural capital

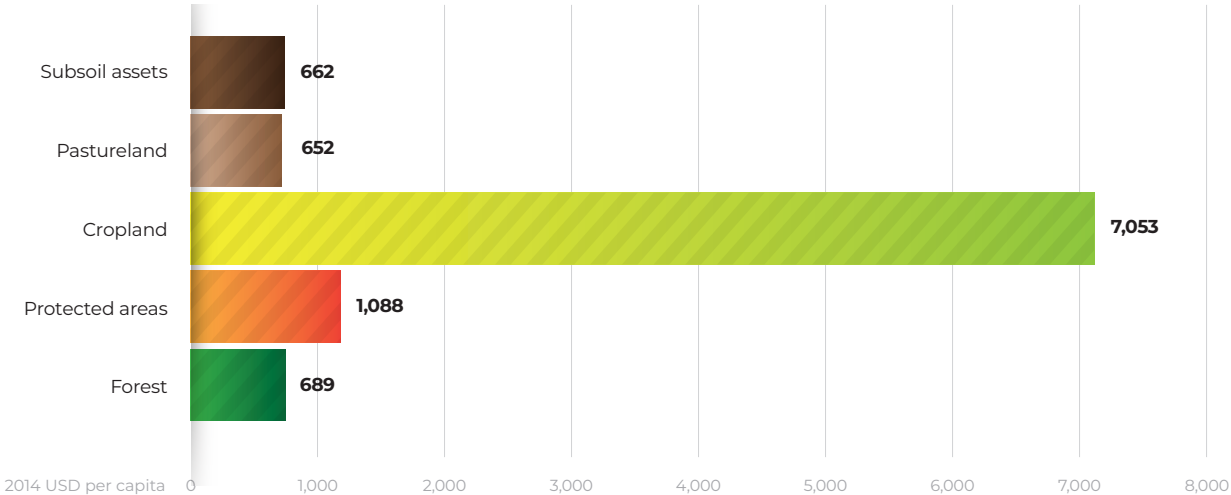


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.9. Thailand

Thailand is part of what is called the “Indo-Burma biodiversity hotspot”, which is home to 15,000 plant species and approximately 2,300 vertebrate animals (IUCN 2018). However, environmental pressure is taking its toll on this rich biodiversity; in Indo-Burma almost 800 species are under threat of extinction (*ibid*). With this rich terrestrial natural capital and its long coastline, the country is benefiting from a growing tourism industry and from agriculture and fisheries that are reliant on natural capital sustainability.

Figure 15: Thailand – Composition of natural capital

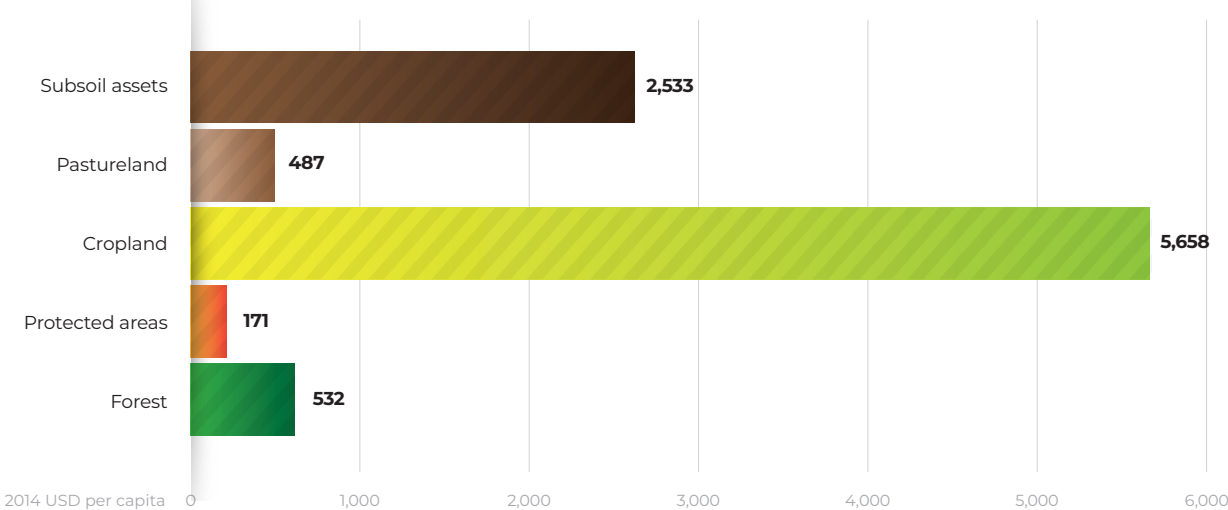


Source: Authors’ calculations based on the World Bank’s The Changing Wealth of Nations 2018

## 2.10. Viet Nam

Viet Nam is part of the Greater Mekong Subregion, which contains vast agricultural land and forest areas on either side of the Mekong River. Its natural capital sustains manufacturing and service sectors such as the thriving furniture industry in Viet Nam, the world's sixth-largest exporter of furniture, and tourism (ADB 2015).

Figure 16: Viet Nam – Composition of natural capital



Source: Authors' calculations based on the World Bank's The Changing Wealth of Nations 2018

### 3. ASEAN POST-COVID-19 “BUILDING BACK BETTER” USING SUSTAINABLE NATURAL CAPITAL INVESTMENT

**The COVID-19 pandemic has already pushed almost 11 million people in South East Asia into absolute poverty living below US\$5.5 per day or less.** The collapse of economic systems, particularly in lower-income ASEAN countries, leaves millions without livelihoods, wipes out savings, severs supply chains and destroys vital commercial sectors such as tourism (Oxfam 2020). A recent UN briefing titled *The Impact of COVID-19 on South-East Asia* (United Nations 2020a) states that “the subregion is now facing a socio-economic crisis following on from the health crisis and response. It is estimated that GDP will contract on average by 0.1% in 2020 compared to a pre-COVID forecast of 4.5% growth. Limitations in the movement of people, including tourism, and reduced flow of goods and services have caused sharp downturns in economic production. Large-scale, comprehensive responses are needed, with a focus on the most vulnerable countries and people. It will be important to apply the lessons of austerity measures following the last recession in order to focus on a people-centred recovery.” The briefing goes on that “the crisis threatens to destroy the livelihoods of South-East Asia’s 218 million informal workers, who represent anywhere between 51 and 90% of the national non-agricultural workforces in countries of the subregion (*ibid*). Without alternative income, formal social protection systems or savings to buffer these shocks, workers and their families will be pushed into poverty, reversing decades of poverty reduction.”

The 10 key actions for integrating COVID-19 into the Natural Capital Roadmap are defined in more details here:

#### **■ Increase ASEAN food security by improving sustainable agriculture to stabilise food prices**

Food markets in ASEAN have shown signs of resilience to COVID-19, and so far, there have not been widespread food shortages. The system is adapting to the new normal. However, informal labour is exposed to food purchasing power and has been hit hard. In addition, malnutrition was a challenge even before the pandemic. The UN concludes: “Approximately 61 million people in South-East Asia are undernourished and this number may increase following the COVID-19 pandemic. Lockdowns and physical distancing have hit vulnerable populations and informal workers the hardest, compelling them to rely on higher-priced supermarkets and formally registered markets rather than informal vendors. While food supplies have been adequate, lower incomes have reduced poor people’s ability to afford diverse and nutritious food. If prolonged, diminished sales and losses of perishable stock may lead to rising debts for producers, traders and retailers. Even before COVID-19, there was a need for a holistic food system enabling food security and nutrition while promoting sustainability.” Boosting the resilience of the food system will entail expanding social protection to its workers. There is a continuing need to shift to more sustainable technologies.

#### **■ Improve employment in AMS through small and medium scale enterprises (SMEs), in green sectors such as renewable energy and organic agriculture**

The UN concludes that “measures to contain COVID-19 have affected the labour market. For instance, unemployment is expected to increase in Indonesia by 2.5 percentage points, Malaysia by 1.5 points, and the Philippines by 1.2 points. Lack of secured income and sufficient social protection could force tens of millions of people into extreme poverty in this region”. **Green SMEs in energy, agriculture, waste and transport are often labour intensive and pro-poor and** provide much-needed opportunities against unemployment in the post COVID-19 context. Government support to these green SMEs can include credit, technical assistance, i.e. training and links to markets.

### **Co-manage ASEAN natural capital as public funds dwindle, tourism dries up and pressure increases**

Budgets for protected areas and other natural capital (e.g. forests and fisheries) will come under growing pressure as government budgets shrink. In addition, tourism for natural capital sites, such as beaches, forests and protected areas has dried up. The ASEAN policy brief issued in April 2020 (ASEAN 2020a) concludes: "As the virus spread rapidly in China, most AMS restricted travel from/to China, which was then expanded to other affected countries such as Japan and Korea, by cancelling flight connections and tightening or even closing border crossings. The immediate and direct impact was thus on travel and tourism. These East Asian economies were among the largest sources of tourists to ASEAN, and as travel restrictions further expanded, they led to mass cancellation of bookings within the tourism industry, affecting businesses and workers. Early cases in the AMS also surfaced, further affecting tourism in the region as fear of contagion turned away tourists. Accordingly, initial stimulus measures rolled out by the AMS targeted those in the tourism and allied industries. Affected hotels, restaurants, airlines, and also small businesses, were granted tax breaks and/or emergency loans; workers were provided subsidies/cash assistance." At the same time increased poverty and unemployment in AMS will increase pressure on the natural capital through informal agriculture and fishing, hunting and charcoal production etc. Those issues can be addressed by increased co-management of protected areas, forests and fisheries with local participation, along with benefit sharing and sustainable alternatives for local people, including indigenous communities. With constrained public budgets, conservation will only be possible by empowering local residents as park, forest and fishery managers.

### **Stop ASEAN illegal wildlife trade and support more sustainable food markets**

Given the contested evidence that the virus started with the illicit wildlife trade in Wuhan, this has added to ongoing attempts to ban the illegal wildlife trade in ASEAN. This is a necessary and essential step to prevent future pandemics and safeguard natural capital. This is, however, quite different from the push to close or ban wet markets. Experience suggests that informal markets – a lifeline for many of the poorest urban consumers and producers – need regulation and support, not to be pushed underground into illegality. For example, Viet Nam's Prime Minister Nguyen Xuan Phuc has issued a directive to ban the Southeast Asian country's trade of wildlife (Reuters 2020). However, the director of Save Viet Nam's Wildlife argues that this has not covered some uses of wildlife such as medicinal use or wild animals being kept as pets (BBC, 2020). This is not yet followed by other ASEAN countries although there is a movement to make this a regional effort (Abano 2020).

### **Achieve post-COVID-19 accountable and inclusive supply chains in ASEAN**

We have seen a widespread loss of jobs at the end of global supply chains with significant poverty impacts. Examples include the global textile industry affecting Cambodia and Indonesia and the furniture industry affecting Viet Nam. A UN briefing titled *The Impact of COVID-19 on South-East Asia* (United Nations 2020a) concludes that "COVID-19 has exposed the fragility of global value-chains by interrupting cross-border trade and transport. As 40% of South-East Asia's exports rely on global value-chains, with strong linkages to multiple nodes, this subregion is the most exposed to supply-chain risks. A reassessment of the value of supplier diversification rather than just "reshoring" may also create opportunities, as South-East Asian economies are potential locations for firms seeking supply diversification and higher flexibility in global value-chains." AMS and ASEAN companies can promote transparency and accountability of these renewed supply chains to improve their social and environmental impacts.

### **Decentralise ecosystem-based social protection to deliver post-COVID-19 recovery in ASEAN**

Social protection and in some cases the push for a universal basic income has already emerged as a key policy issue in OECD and some Asian countries. This is supported by the ASEAN Secretariat through its policy brief *Economic Impact of COVID-19 Outbreak on ASEAN* (ASEAN 2020a) which states that "under such circumstances, safety nets, especially cash transfers, paid leaves, and health insurance, can provide quick financial support to overcome basic needs of vulnerable and poor segments of the society. In the longer term, each AMS and even ASEAN collectively may need to look at ways to further strengthen their social protection for better preparedness for future crises." A UN briefing titled *The Impact of COVID-19 on South-East Asia* (United Nations 2020a) concludes that "all South-East Asian countries have announced



fiscal packages to help affected businesses and households, with a median value of about 3.5% of GDP. Examples of fiscal measures include support to health responders and businesses, or employees through wage subsidies.” But these social protection programmes can also be linked to public employment schemes that benefit natural capital such as reforestation, wildlife rangers or workers to remove alien invasive species from waterbodies.

### **Provide post-COVID-19 debt relief to ASEAN with debt for climate and nature programme swaps which would encompass natural capital protection**

Even before COVID-19, fears were growing over developing country debt which had reached over US\$8 trillion in 2019. COVID-19 has exacerbated these fears, so debt relief has received increasing attention with the IMF taking steps followed by a debt service suspension initiative pledged by the G20. The UN (United Nations 2020a) concludes that “levels of public debt are also expected to increase. Not all South-East Asian countries have the capacity to borrow from domestic or international capital markets. To support increasing spending, South-East Asian countries have consolidated fiscal budgets (Lao PDR), reprioritized government expenditures (Cambodia, Malaysia), and improved efficiency in revenue collection and allocation (Lao PDR). Viet Nam is taking additional measures to accelerate disbursement of public investments.” This is a view shared by authors of the ASEAN policy brief *Economic Impact of COVID-19 Outbreak on ASEAN* (ASEAN 2020a): “A look at the AMS’ macroeconomic fundamentals in 2018 shows that many AMS have sizable debts (more than 30%) in proportion to their GDPs, backed by varying foreign exchange reserves. Should the exchange rate depreciations continue, this could lead to higher debt payments, risking debt sustainability.” In this context, some debt relief may be inevitable. This debt relief could be linked with debt for climate and nature programme swaps (Steele and Patel 2020). This arises when debt is swapped for investments against key performance indicators to improve climate and nature capital outcomes. Such debt swap schemes have been developed at a relatively small scale often with the funds managed by international non-government organisations (NGOs), but the debt crisis of COVID-19 presents the opportunity to significantly upscale the approach with the savings from debt service repayments spent through government budgets for climate and conservation outcomes that also increase growth and reduce poverty. This could be applied to some of the debt-ridden, but also to climate-vulnerable and biodiversity-rich countries of ASEAN such as Indonesia, Lao PDR and Viet Nam. Lao PDR’s debt levels are expected to increase to between 65 and 68% of GDP in 2020, from 59% of GDP in 2019, which will generate higher debt service obligations (World Bank 2020). China, as the upcoming host of the Convention of Biological Diversity’s (CBD) Conference Of Parties and the primary holder of ASEAN debt could be persuaded to promote debt for climate and nature programme swaps as part of its commitment to increase financing for sustainable natural capital and biodiversity.

### **Improve access to renewable energy in ASEAN**

The collapse in the oil price, which is likely to continue for some time, opened the fossil fuel market with both opportunities and challenges for renewable energy. ASEAN must take advantage and identify how to promote renewable energy through, for example, investments in technology and training. The UN’s COVID-19 briefing for South East Asia concludes (United Nations 2020a) that “one key opportunity emerging from stimulus packages is to accelerate transition away from fossil fuels towards low-carbon technologies and support climate change mitigation efforts. Cost declines in renewable energy and energy efficiency make these options better avenues for investment than carbon intensive technologies, with more opportunities for job creation and environmental co-benefits. There are a number of sectors where targeted stimulus can also leverage gains in energy efficiency and reductions in emissions. Current low oil and gas prices offer an opportunity to impose carbon pricing mechanisms and eliminate wasteful fossil fuel subsidies. By phasing out fossil fuel subsidies, countries such as Brunei Darussalam and Indonesia could finance most or all of their current stimulus packages. Such measures would create massive fiscal space and greatly boost low carbon alternatives such as renewable energy and energy efficiency.” The impact of the COVID-19 pandemic on energy systems around the world is immense, but the growth of renewable energy continues, with the share of renewables in global electricity supply reaching nearly 28% in the first quarter of 2020, up from 26% during the same period in 2019 (IEA 2020).

**Increase resilience for small-scale fisheries in ASEAN, particularly for those who move into the sector due to the decline in coastal tourism**

Small-scale fishers and fish workers have always been vulnerable to shocks, lacking alternative sources of income or access to social protection. COVID-19 restrictions have led to plummeting demand for fish, supply chains disrupted, and export markets collapsed. ASEAN experience of economic incentives and social security for small-scale fisheries demonstrates how resilience can be built into fisheries and associated supply chain policy reforms, particularly for those affected by unemployment in coastal tourism to explore new livelihood from the fishery sector. The global fishing activity decreased about 6.5% in 2020 compared to the figure for 2019 (as reported on 28 April 2020) (Clavelle 2020).

**Increase cross-sectoral coordination among natural capital and different sectors such as agriculture, health, infrastructure and energy**

For example, the post COVID-19 response needs to better integrate agriculture, health and natural capital. As the UN briefing on *The Impact of COVID-19 on South-East Asia* (United Nations 2020b) concludes: "All too often, food systems activities undermine biodiversity, contributing to the mass extinction of species, ecocide, soil loss, land degradation, drinking water pollution, air pollution, overdrawn aquifers, greenhouse gas emissions, antimicrobial resistance and the spread of zoonotic diseases. As we address the socio-economic dimensions of the crisis, we should reconsider the ways that we produce, process, market, consume, and handle the waste of foods – and build back better."

# 4. ASEAN REPORTING, ACCOUNTING AND MATERIALITY OF NATURAL CAPITAL INVESTMENT

## 4.1. Natural capital accounting in ASEAN Member States

There has been growing attention globally to reporting and accounting for natural capital in the public and private sector to ensure better-informed decision making. In the public sector, this has focused on the System of Environmental-Economic Accounting (SEEA) led by the UN. In the private sector, corporate accounts and assessments have been brought together by the Natural Capital Protocol (see Table 1).

Table 1: Summary of private and public initiatives on natural capital accounting

Summary	Private	Public
<b>Harmonised approach</b>	Natural Capital Protocol	System of Environmental – Economic Accounting (SEEA)
<b>Focus of analysis</b>	Assessment of business impacts and dependencies on natural capital.	Assessment of depletion and degradation of natural capital at national and sector level, measurement of environmental pressures and policy responses.
<b>Purpose</b>	To help generate trusted, credible and actionable information to inform decisions.	Support policymakers in assuring future growth and welfare, including sector and thematic issues.
<b>Standardisation</b>	The protocol is a generally accepted global standardised framework for business.	UN SEEA Central Framework is the global standard compatible with the System of National Accounts.
<b>Measurement</b>	Companies focused mainly on measuring flows of natural capital.	SEEA measures both stocks and flows.
<b>Monetary valuation approach</b>	Companies use prices and/or values (changes on welfare), depending on the perspective of their assessment (business vs. societal).	Market prices is the most common monetary valuation. A more experimental approach promotes non-market values of ecosystems.
<b>Scale</b>	Companies are starting to assess natural capital at narrow scale (e.g. product or project level). There are also a few companies gathering information in a more systematic way at company level.	There is experience of natural capital assessments at a narrow scale, and at integrating into national accounts for broader decision making.  Ecosystem accounting can be applied at fine spatial scales.
<b>Uptake</b>	The number of actual case studies and applications is growing (see the Natural Capital Hub).	In 2014, out of 85 responding countries, 54 countries had environmental accounting programmes in place and 15 countries were planning them in the near future.

Source: [https://naturalcapitalcoalition.org/wp-content/uploads/2017/11/Natural-Capital-Coalition\\_Combining-forces\\_20172411.pdf](https://naturalcapitalcoalition.org/wp-content/uploads/2017/11/Natural-Capital-Coalition_Combining-forces_20172411.pdf)

## 4.2. Natural capital accounting in ASEAN governments

Although attention has been growing, government policy to support the implementation of natural capital accounting (NCA) is slow, partial and intermittent. In general, there are fragmented efforts on valuation of biodiversity and ecosystem services, e.g. The Economics of Ecosystems and Biodiversity (TEEB). Of the 10 AMS – the Philippines and Indonesia have made an earlier start but are covering only some ecosystems.

International support has been important as shown by Figure 17. The efforts to integrate natural capital accounting in the national statistical system started in the early 1990's. Most recent efforts in the AMS on natural capital accounting include the Wealth Accounting and Valuation of Ecosystem Services (WAVES), which covered Indonesia and the Philippines. WAVES is a project led by the World Bank, which started in the early 2010s and includes a number of countries across the world (World Bank 2019). The Philippines and Indonesia are the main implementing countries in the ASEAN region, with Myanmar, Viet Nam, Lao PDR and Cambodia currently acting as pilot project sites (WAVES 2020). WAVES in the Philippines is built on the country's early work supported by USAID in 1990-1999 and by UNDP in 1992-1995 for the implementation of SEEA.

These initiatives are aligned with the UN 2012 System of Environmental-Economic Accounting (SEEA). The SEEA Experimental Ecosystem Accounting (EEA) endorsed in 2013 is being tested in Indonesia, the Philippines, and Viet Nam. These three AMS also receive Global Environment Facility (currently GEF 7) grants to develop national capital accounting (GEF 2018).

However, despite this international support, implementation for natural capital accounting has been slow and remains ad hoc. For example, Indonesia has a government regulation that mentions the importance of environmental accounting but has not yet developed the operationalisation of this high-level policy for its implementation. The initiatives and pilot projects supported by international agencies such as UNEP, UNESCAP and the World Bank have been carried out at certain locations and ecosystems at local, provincial and national levels but none have addressed accounts comprehensively. Across all initiatives the major gaps are in accounting for shared resources such as the ocean and the air, which cause economic losses when affected by the mismanagement of other accounts or resources such as land and forest fires.

More recently the Philippines, Thailand, Indonesia and Viet Nam developed project concept notes and proposals for the GEF support to continue working on their NCA. Among these, Viet Nam is still at the initial phase due to a much later entry. An endorsement of Viet Nam's project proposal is expected with a total value of US\$1.7 million for a three-year period focusing on marine and coastal area protection and valuation. Other AMS have so far received little assistance to increase their capacity to mainstream NCA into their systems. Malaysia has received some support from the International Climate Initiative, funded by the EU and BMZ focusing on the biophysical impact of agriculture. This project also involves other AMS, namely Indonesia and Thailand.

Figure 17: Major international support related to natural capital accounting across the ASEAN region



Source: An illustration by Aidy Halimanjaya (based on online research)

Table 2 summarises the overall progress of NCA while more details can be found in the annex. Stakeholder awareness of NCA is variable. An online survey indicated that not all stakeholders are aware of their countries' existing NCA initiatives. Of the 38 respondents, 11% declared that they did not know whether their government does NCA and 37% admitted that they did not know whether the NCA leads to changes in government decision making.

Table 2: Progress of natural capital accounting in ASEAN Member States

BRUNEI DARUSSALAM	
Status of NCA development	Very limited work in country. Focus mainly on NCA management related to oil and gas industry
Government demand	Low
Key partners	N/A
Key challenges	<ul style="list-style-type: none"> <li>Limited capacity data and lack of data</li> </ul>
CAMBODIA	
Status of NCA development	Very limited work in country. Focus mainly on regional training
Government demand	Low
Key partners	N/A
Key challenges	<ul style="list-style-type: none"> <li>Limited capacity and lack of data</li> </ul>
INDONESIA	
Status of NCA development	<p>Building environment capacity for last thirty years with an environmental statistics compendium. System of national accounts started with mineral first, then land and energy as a pilot and then forest. WAVES worked on ecosystem accounts involving BAPPENAS, Finance and BPS (Statistics Office), but no publication yet. World Bank scoping mission on ocean account.</p> <p>Work on NCA started in 1997.</p> <p>WAVES Core Implementing Country – strengthening the SEEA system, developing land and pilot water accounts.</p> <p>FAO supporting SEEA for agriculture. The latest workshop was conducted in 2017 and involved some new key partners such as UNSD, ABS and UNESCAP. The World Bank is currently developing some terrestrial and coastal accounting in phase II of WAVES project.</p>
Government demand	High
Key partners	World Bank, FAO (agricultural accounts), CBD, OneMap, UNEP, REDD+ programme, UNSD, Australian Bureau of Statistics, UNESCAP, UNDA
Key challenges	<ul style="list-style-type: none"> <li>Capacity Data management and availability.</li> <li>Coordination across government institutions.</li> <li>Development of accounts at sub-national level.</li> </ul>

## MALAYSIA

Status of NCA development	For fifteen years a compendium on environmental statistics published by the Department of Statistics Malaysia with an environmental statistics unit. Keen on SEEA accounts and built and published energy and water accounts. Working with UN Statistics Division and UNESCAP on water account with scoping. Ocean account pilot underway coordinated by Department of Statistics with a national university.
Government demand	High
Key partners	UNSIAP/UNESCAP, UNDA
Key challenges	<ul style="list-style-type: none"> <li>Data availability, quality and coordination</li> <li>Capacity – training and technical assistance required Funding</li> </ul>

## MYANMAR

Status of NCA development	<p>WWF partnered with UNESCAP to work with Myanmar Central Statistical Office (CSO) and Ministry of Planning. Prioritised forest account and developed proposals for environmental statistical units for Ministry of Environment (which houses forest department), but neither got funding. WWF produced an inventory of forest data in 2018 to develop an account.</p> <p>Partners for Environment Management of Seas of East Asia (headquarters in the Philippines, funded by Korea Maritime Institute) was working on ocean accounts in Myanmar.</p>
Government demand	Medium
Key partners	WWF, UNESCAP
Key challenges	<ul style="list-style-type: none"> <li>Limited capacity and lack of data</li> </ul>

## THE PHILIPPINES

Status of NCA development	<p>Philippines Statistical Authority has a specific unit with a focus on environmental compendium. Have prototyped ecosystem accounts and water accounts. Working with PEMSEA on blue economy accounts.</p> <p>Was one of core implementing countries of WAVES. Implemented NCA during the 1990s and early 2000s. WAVES worked on four priority areas: minerals, mangroves, and land and ecosystem accounts at two identified sites – Southern Palawan and the Laguna Lake basin. In 2017 the Philippines' National Conference on Natural Capital Accounting consolidated the extensive secondary data and analytical work over the five years since the WAVES technical assistance was launched in the Philippines. The conference resulted in the roadmap for the institutionalisation of NCA, which aims to ensure that NCA becomes an integral part of the regular work programme of government agencies. However, the WAVES programme in the Philippines is discontinued. Nonetheless the government has institutionalised the Philippine Economic-Environmental and Natural Resources Accounting (PEENRA) in 2000 which provides government budget support to the Philippine Statistics Authority (PSA) for the Philippine Environmental and Economic Accounting (PEEA).</p>
Government demand	High
Key partners	World Bank, Australian Bureau of Statistics, AusAID, European Space Agency, RECCS, Inc.
Key challenges	<ul style="list-style-type: none"> <li>Capacity development (SEEA, ecosystem services valuation)</li> </ul>

## SINGAPORE

Status of NCA development	In August 2018, the country launched a three-year collaborative research project ( <a href="http://www.naturalcapital.sg/">http://www.naturalcapital.sg/</a> ) funded by the National Research Foundation. The project aims to assess the current status and health of Singapore's major ecosystems (forest and marine habitats), and quantify their economic and societal value. The project is hosted by the Singapore-ETH Centre, which is established by ETH Zurich – the Swiss Federal Institute of Technology Zurich. Several workshops have been conducted in 2019 and research outputs to date are shared on the website.
Government demand	Government led
Key partners	ETH Zurich, National Research Foundation, National University of Singapore
Key challenges	N/A

## THAILAND

Status of NCA development	<p>Working on ocean account pilot linked to water and energy to start NCA. Pilot for Andaman Province in August 2019. Led by Thai National Statistics Office and Ministry of Tourism supported by UNESCAP. GEF project will be led by a research institute.</p> <p>Partners for Environment Management of Seas of East Asia (headquarters in the Philippines funded by Korea Maritime Institute) was working on blue accounts in Thailand with Biotec Research Agency.</p> <p>Recently developed NCA Roadmap but actual work on SEEA accounts yet to start.</p>
Government demand	Medium but support expressed through high level policy documents
Key partners	TEI, IGES, NIES, UNEP, RRC.AP, ADB, EEPSEA
Key challenges	<ul style="list-style-type: none"> <li>Capacity is the top constraint</li> </ul>

## VIET NAM

Status of NCA development	<p>General Statistics Office has been piloting forest and ecosystem accounts for about five years. World Bank financed forest account pilot through ISPONRE. Ocean account pilot underway by ISPONRE.</p> <p>NCA Roadmap to 2020 developed in 2013. NCA National Plan developed in 2015 Satellite Forestry accounts developed. The country developed a Natural Capital Platform (<a href="http://www.naturalcapital.vn/">http://www.naturalcapital.vn/</a>), which is a national multi-stakeholder network convened by the Institute of Strategy and Policy on Natural Resource Environment (ISPONRE) to exchange knowledge and share awareness.</p>
Government demand	High
Key partners	World Bank, ABS, UNDA, UNEP, GIZ, UNDP, ADB
Key challenges	<ul style="list-style-type: none"> <li>Broad-based training and capacity building.</li> <li>Institutional strengthening and collaboration.</li> <li>Data collection, rationalisation and generation.</li> <li>Development of monitoring and assessment frameworks.</li> </ul>

Source: Information is based on desk review of available documents and interviews only so may not capture recently undocumented progress.

### 4.3. Natural capital accounting by ASEAN business

In terms of corporate accounting and assessment by business, apart from a few leading companies, far less progress has been made than on the government side. The World Business Council for Sustainable Development in Asia Pacific held a 2014 meeting welcoming integrated reporting (<https://www.eco-business.com/news/new-coalition-launched-push-sustainability-asean/>). And this was followed up with awareness raising amongst its members by the Indonesian Business Council for Sustainable Development (<https://www.ibcsd.or.id/work-program/natural-capital/>). Positive examples of corporate NCA include Olam (a commodity producer based in Singapore), aspects of the high-value conservation forests of Asia Pulp and Paper from Indonesia, and the environmental accounting of the Siam Cement Group headquartered in Thailand – please see weblinks below for further details:

- **Olam (Singapore), a major agribusiness producer with a natural capital approach**

<https://www.wbcd.org/Programs/Redefining-Value/Business-Decision-Making/Measurement-Valuation/Business-Examples/Olam-Embracing-natural-capital>

This is set out in its Living Landscape Policy

<https://www.olamgroup.com/sustainability/policies-codes-standards/living-landscapes-policy.html>

Further examples are provided in the Olam Annual Report 2018 on Natural Capital

<https://www.olamgroup.com/content/dam/olamgroup/investor-relations/ir-library/annual-reports/annual-reports-pdfs/Olam-annual-report-fy18-3-in-1.pdf#page=101>

- **Siam Cement Group (SCG), Thailand, has a sustainable approach**

<http://www.scgsustainability.com/en/sustainability/sustainable-development/>

SCGs Annual Report 2018 includes an “Environmental Accounting Report”

<https://scc.listedcompany.com/misc/ar/20190225-scc-ar-2018-en-03.pdf> p24.

- **Another set of examples of natural capital corporate accounting comes from plantation companies using high carbon stock and high conservation value methodology: High Carbon Stock (HCS)**

<http://highcarbonstock.org/the-high-carbon-stock-approach/>

Based in Malaysia this methodology rolled out in 2005 was originally developed by the Forest Stewardship Council (FSC) with guidelines in 1999 under Principle 9 of the FSC’s Principles and Criteria of Forest Stewardship. Members using the high carbon stock approach include Indonesia’s Asia Pulp and Paper (although this has now stopped) and other large Indonesian and Malaysian plantation companies.

- **High Conservation Value methodology is based at a Secretariat in Oxford, UK and examines environmental and social values of landscapes under pressure.**

Since 2013 the two approaches have come together (<https://hcvnetwork.org/projects/our-ongoing-collaboration-with-the-high-carbon-stock-approach/>) and a joint manual has been produced: [https://hcvnetwork.org/wpcontent/uploads/2018/05/HCV\\_HCSA\\_Manual\\_Final\\_Eng.pdf](https://hcvnetwork.org/wpcontent/uploads/2018/05/HCV_HCSA_Manual_Final_Eng.pdf)

This provides plantation companies with a way to identify sites for plantation expansion and conservation in ways that sustain forest carbon and biodiversity stocks and work with the local community and smallholders. The approach was presented at a natural capital meeting in Spain in 2016: <https://asiapulppaper.com/news-media/press-releases/app-participates-largest-event-about-natural-capital-spain>



## 5. RISKS FOR ASEAN SUPPLY CHAINS AND COMPANY REPUTATIONS FROM UNSUSTAINABLE NATURAL CAPITAL INVESTMENTS

Some ASEAN-based companies are starting to take notice of risks to supply chains and consumer reputations from unsustainable natural capital investment, ranging from the leading agricultural producers (e.g. Cargill, Sime Darby of Malaysia and Wilmar) to retailers (e.g. IKEA, Carrefour) and manufacturers (e.g. LafargeHolcim Cement and Danone Waters). The fishery sector has been slower to respond but there are some exceptions (e.g. Thai Union, one of the world's largest fish producers), while the textile sector shows little progress. The banking sector has also shown slow progress in beginning to address its lending operations related to natural capital, with western banks starting earlier, but also some ASEAN banks (e.g. Siam Commercial Bank of Thailand) now becoming engaged.

In the more vertically integrated sectors (e.g. agricultural producers) where large firms have established continuous links with their suppliers, smaller companies are in some cases joining in and being supported by the larger companies. But there is slower progress in textiles where vertical integration between large firms and their suppliers is lacking.

Some AMS have also been active in addressing risks from unsustainable supply chains. For example, in Thailand there have been initiatives to engage the private sector, such as that of the IUCN and Toyota in Thailand under the Bio-Diversity Network Alliance (B-DNA). In Myanmar, the Myanmar Centre for Responsible Business was developed in 2013 as a platform for advocacy promoting responsible business conduct with a focus on natural capital, including impact assessment in the oil and gas, telecommunication, tourism and mining sectors.

### 5.1. Finance

Private finance to encourage more sustainable natural capital management is key, but its availability is limited. The ASEAN banking sector, and the financial sector more broadly, have made a strong commitment to ensure that their financial lending supports sustainable business activities by reducing impact on natural capital. Their commitment is driven by the Sustainable Finance Initiative (WWF 2020a) supported by several development agencies, including Switzerland's State Secretariat for Economic Affairs (SECO) with the World Bank's International Finance Corporation (IFC), and the UK's International Climate Fund (ICF), and by international NGOs such as the World Wildlife Fund (WWF), World Resources Institute, Climate Bonds Initiative and many others. These organizations are connected through the Asia Sustainable Finance Initiative led by WWF (ASFI 2020). WWF has released a report about sustainable banking in ASEAN, outlining the involvement of six AMSs in the ASFI initiative: Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam (Chen et al. 2019). Cambodia has a similar initiative under the Association of Banks in Cambodia. Under these initiatives these seven countries' banks have made a significant commitment to sustainable banking, transforming their operations to adhere to the principles of sustainable finance (see Table 3). These principles will redirect the actors who intensely use or impact natural capital to incorporate sustainability criteria to reduce their impacts. Below we summarise the information provided for three countries (Indonesia, Singapore and Cambodia) that have advanced more recently in this topic.

Table 3: Development of sustainable finance and banking in ASEAN

AMS	Initiative in sustainable finance and banking
<b>Cambodia</b>	The association of banks in Cambodia issued the Cambodia sustainable finance principles and its implementation guidelines in March 2019.
<b>Indonesia</b>	Launched a sustainable finance policy and a green bond policy in 2017 and become mandatory for the banks to provide sustainable finance report in 2019.
<b>Malaysia</b>	Bank Negara Malaysia issued the Value Based Intermediation Financing and Investment impact assessment Framework (consultative document) for Islamic banking.
<b>The Philippines</b>	Banko Central Ng Pilipinas is planning to issue a sustainable finance policy framework.
<b>Singapore</b>	Launched a Green Finance Action Plan in November 2019.
<b>Thailand</b>	The Thai Bankers' Association issued Sustainable banking guidelines – responsible lending.
<b>Viet Nam</b>	State Bank of Viet Nam issued directive 03/CT-NHNN on promoting green credit growth and environment – social risks management in credit granting activities.

Source: Chen et al. 2019

**Indonesia's** Financial Service Authority (Otoritas Jasa Keuangan, OJK) has issued two regulations: POJK No. 51 Year 2017 on sustainable finance regulation, and POJK No. 60 Year 2017 on green bonds (see Indonesia's policies in Figure 18). These follow the sustainable finance roadmap issued by OJK and supported by its partners, WWF, AusAID and UK ICF. As a result, from 2019 onwards, all commercial national banks in Indonesia must issue an annual sustainable finance report. In parallel, a sustainable finance project run by the IFC is successfully promoting the issuance of US\$150 million green bonds by a private bank in Indonesia and the IFC became the sole buyer of the bond issued (Yuniarni 2018). These private bank bonds have been used to pay for several green building development projects in Jakarta and the treatment of wastewater from several textile factories in Bandung, West Java. With the commercial banks' strong commitment, the OJK and IFC will continue to develop sustainable finance programmes to incentivise global investors to enter Indonesia's green bond and green "sukuk" markets (IDN Financials 2019). The availability of financing based on sustainable criteria, such as green loans (green sukuk and green bonds) will help incentivise actors to use natural capital more sustainably.

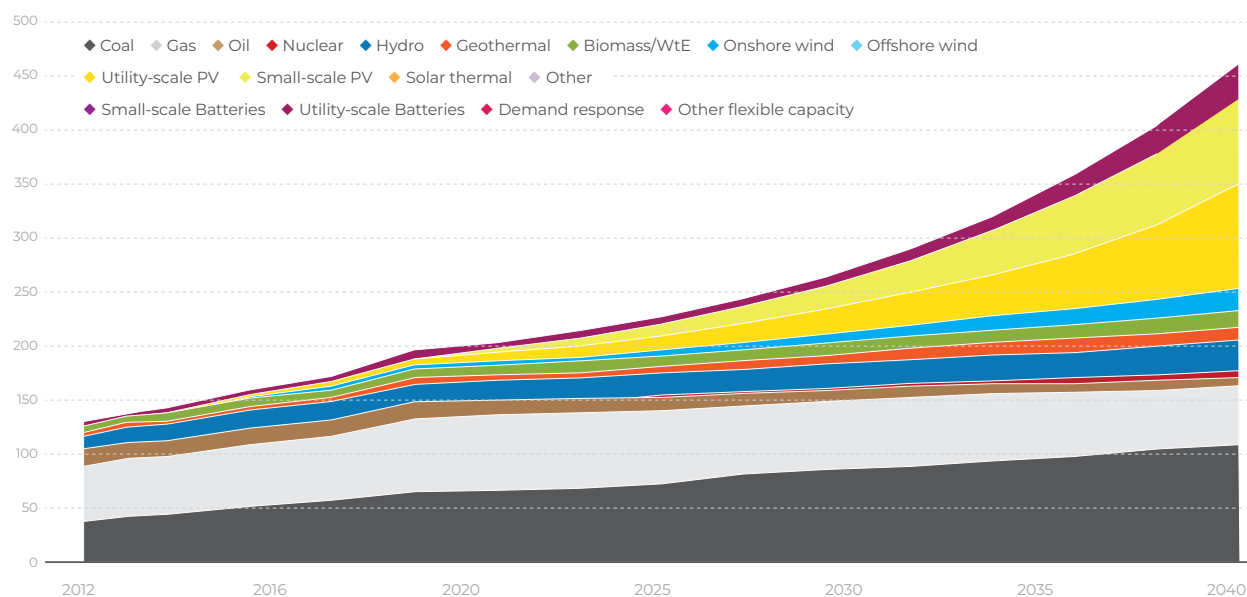
**Singapore** launched a Green Finance Action Plan in November 2019. The initiatives under it will support the financial sector in channelling capital towards lower carbon sectors, and also support decision making and financial flows aligned with more sustainable use of natural capital. Key initiatives include introducing environmental risk management guidelines for the banking, insurance and asset management sectors; grant schemes to support green and sustainability-linked loans; a green investment programme to invest in public market investment strategies with a strong green focus. In addition, they are catalysing the use of promising fintech solutions and partnerships through the Global Fintech Innovation Challenge and anchoring centres of excellence, such as the Singapore Green Finance Centre, which was launched in October 2020; and anchoring centres of excellence with recognised research institutes and universities to contribute to Asia-focused climate research and training programmes. This is in addition to existing support for green bonds through the Sustainable Bond Grant Scheme which has been in place since 2017 and defrays 100% of the expenses attributable to obtain an external review for green, social and sustainability bonds. Earlier green financing developments include the issuance of the Guidelines on Responsible Financing by the Association of Banks in Singapore (ABS) in 2015. Local banks have since adopted the guidelines, and have made sustainability reporting a common feature in their annual reports. In a similar spirit, WWF Singapore is promoting sustainable finance with banks as key enablers of AMS' achievement of both their Sustainable Development Goals and their commitments under the Paris Agreement (WWF 2020b).

In **Cambodia**, the Association of Banks in Cambodia (ABC) has shown leadership in sustainable finance. In March 2019, the ABC along with the Cambodia Microfinance Association launched the Cambodia Sustainable Finance Principles and its Implementation Guidelines (ABC 2019b). The guidelines refer to good practice including the Natural Capital Declaration, global financial institutions' commitment to include natural capital considerations in financial-sector reporting, accounting, and decision making (ABC 2019a). Although there is a clear commitment from Cambodian banks to move towards sustainability, implementation of these sustainable finance principles is still voluntary and will require continuous capacity building in the banking sector to mainstream them into their operations.

## 5.2. Energy

The energy sector in ASEAN is dependent on natural capital in the form of both non-renewable fossil energy such as coal and oil and, more recently, renewable natural resources including hydro, wind, biomass and solar. The share of renewable energy in ASEAN's power generation has gradually increased over the years. In 2017, about 55% of the region's new power capacity additions, about 10.8 gigawatt (GW), came from renewables (ASEAN 2019a). Based on the International Energy Agency's (IEA) South East Asia Outlook 2019, the share of renewables in power generation is expected to rise from 24% in 2018 to 30% by 2040 with wind and solar photovoltaic (PV) set to grow rapidly. A recent review of Southeast Asia's renewable energy by the Centre for Strategic and International Studies shows that installed renewable energy capacity in Thailand, Indonesia, Malaysia and the Philippines is expected to rise from about 130 GW in 2012 to 450 GW in 2040, driven largely by an increase in solar PV and wind capacity (see Figure 18 below). Key stakeholder interviews consistently revealed that the energy sector determines the sustainability trajectory of the region and is equally important to land use and the forestry sector.

Figure 18: Cumulative installed capacity across Thailand, Indonesia, Malaysia and the Philippines, by technology



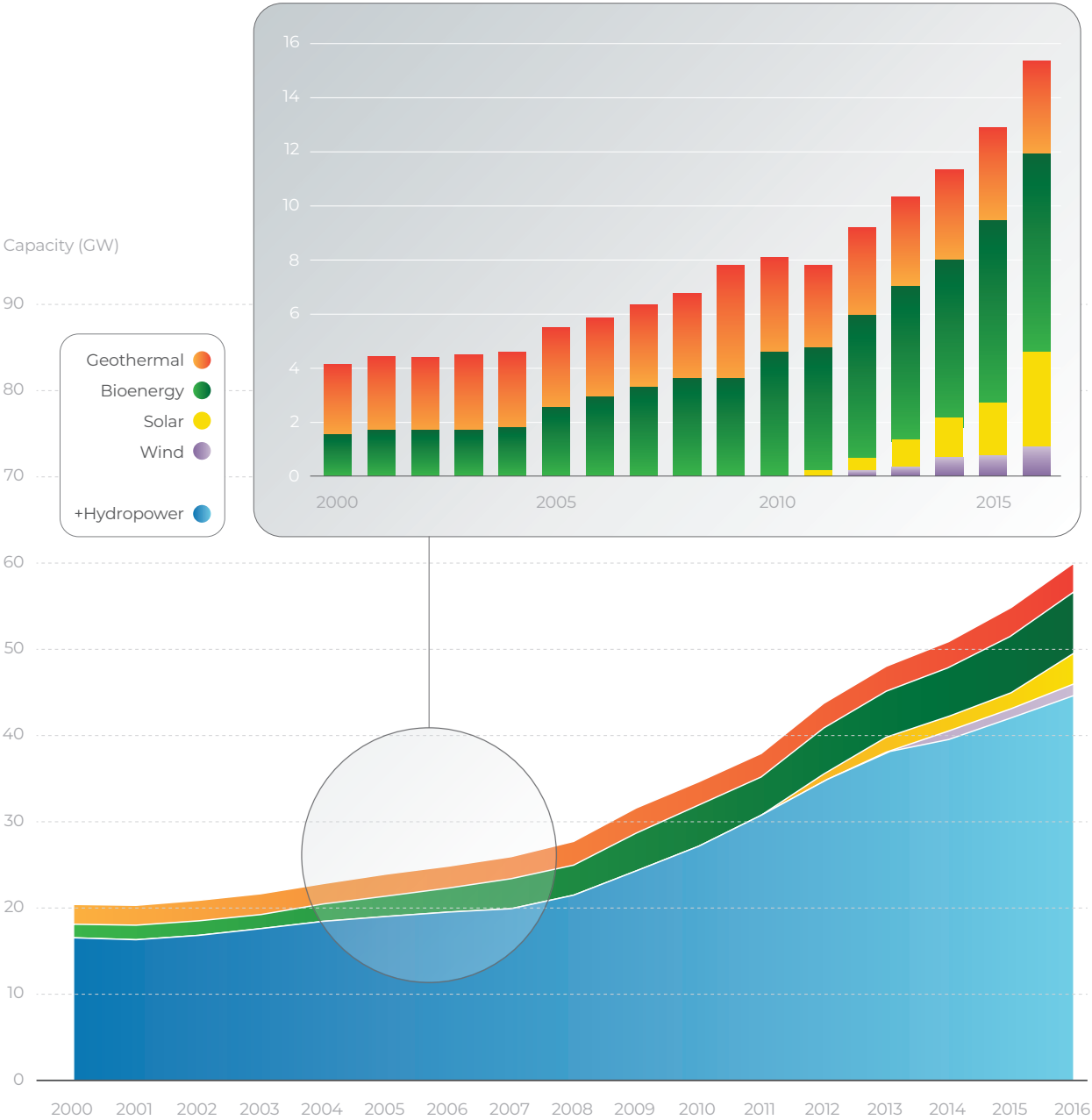
Source: Bloomberg New Energy Finance, New Energy Outlook, 2020

In terms of energy and power supply, the ASEAN region is a highly regulated market that is mostly controlled by its governments with single-buyer models apart from the Philippines, Singapore and Viet Nam. With government involvement in the energy sector, the Southeast Asian electricity sector is a major focus for foreign investment (Naimoli & Nakano 2018). According to the International Energy Agency, modernising the regional electricity infrastructure will require the investment of US\$2.5 trillion between 2019 and 2040 (IEA 2019). China, Japan, Korea and multilateral banks are investing large sums in the region: for example, the World Bank and the IFC have collectively invested over US\$2 billion in Southeast Asia's renewable energy since 2009, and the Asian Development Bank has invested over US\$1 billion (International Renewable Energy Agency, IRENA 2018).

So far, Southeast Asian countries' renewable energy comes from several sources, namely hydropower, geothermal and modern bioenergy, and with more recent development in solar and wind power (see Figure 19). The region has the second- (Indonesia) and third- (the Philippines) largest geothermal powerhouses in the world (Lectura 2019). A consortium comprising Indonesia's state-owned enterprise in the energy sector PT Pertamina and national and international companies, namely PT Medco Power Indonesia, the Itochu Corporation, the Kyushu Electric Power Co. and Ormat International, is involved in the development of Indonesia's largest geothermal power plant (EBTKE 2017).

The Philippines has mega geothermal power plants in Leyte (the Tongonan Geothermal Project, with an output of 700 megawatts) and Batangas (the MakBan Geothermal Projects, producing 490 megawatts). The country's largest geothermal producer, the Energy Development Corporation, states that one of the major issues with geothermal energy in the country is the tariffs, as the Philippines does not want to apply a feed-in tariff or a purchasing price agreement of energy from the energy supplier (Lectura 2019).

Figure 19: Renewable energy capacity by source, Southeast Asia, 2000-2016



Source: International Renewable Energy Agency, 2018

### 5.3. Food processing and agricultural supply chains

Agriculture is one of the sectors with the biggest impact on ASEAN natural capital. Of the 38 ASEAN key informants interviewed, 26% said that agricultural commodities significantly impact natural capital. Most AMS run land rent schemes based on a certain period of time such as land concessions for palm oil, rubber, pulp and paper. The ASEAN region produces 85% of the world's palm oil (from Indonesia and Malaysia) and over 80% of the world's natural rubber. Palm oil has contributed to over 60% of deforestation in parts of Indonesia (the Economist, 2019; MoEF 2018).

These agricultural commodities are dominated by large corporations, while the production of rice and horticultural products, including vegetables, is managed by small local producers and farmers (Kusano 2018). There are also a number of smallholders involved in palm oil and rubber. In Thailand there are an estimated 1.4 million rubber farmers and 300,000 rubber tappers (Bangkok Post 2019). Typically, these smallholders have much lower productivity – for example the average smallholder yield for palm oil is only 2 to 3 tonnes of palm fruit per hectare, compared with the 20 tonnes per hectare by large plantation operators.

A number of large agribusinesses across the ASEAN region have committed to sustainability and to greening their supply chains, in particular with zero-deforestation pledges. This is including committing to national and international certification schemes namely Roundtable Sustainable Palm Oil (RSPO), Malaysian Sustainable Palm Oil (MSPO), and Indonesian Sustainable Palm Oil (ISPO). Cargill, the biggest producer of palm oil in Indonesia, has committed to zero deforestation by 2020 and has helped more than 16,500 of its 21,600 smallholders in South Sumatra and West Kalimantan gain Roundtable on Sustainable Palm Oil certification (Cargill 2020). The largest agribusiness in Asia, Wilmar International, with headquarters in Singapore, has made the same commitment with its focus on its No Deforestation, No Peat and No Exploitation policy (Wilmar 2018). Malaysia's Sime Darby, the world's largest producer of sustainable palm oil, has a long-standing commitment to sustainability (SimeDarby 2020). Such commitments extend beyond palm oil to rubber and other commodities such as pulp and paper: the Viet Nam Rubber Group has committed to Forest Stewardship certification for the production of all of its 400,000 ha of rubber in Viet Nam, Cambodia and Lao PDR (VNA 2019).

However, monitoring the implementation of sustainable sourcing of commodities and traceability of SMEs remains a major challenge. Most large companies producing certain commodities such as palm oil have certification, but the high cost of the auditing and other administrative tasks involved act as disincentives to SMEs. A major barrier for them is having to provide proof that their products or commodities come from sustainable sources, i.e. legal land (not from protected forest areas) where the commodities are harvested. Lack of access to spatial data also constitutes a barrier to large companies' verification of the location of SME plantations and makes it difficult to claim that 100% of their commodities originate from sustainable sourcing.

A number of initiatives related to food processing and the food value chain in the ASEAN region offer a strategic opportunity for collaboration and the integration of sustainable practice. The ASEAN Food Industries Human Resource Development Association (AFH) promotes human development in the food value-chain business. It runs seminars for food-processing industries across the AMS (AFH 2020). Sustainability is not yet strongly featured on the curriculum and this is a good opportunity to include it. Case studies of local producers related to the food value chain in the ASEAN region have revealed several ways of improving sustainability in food processing, namely through sustainable production, improved productivity, and organic farming of key major commodities including rice, milk and dairy products, seaweed and seafood (Kusano 2018).

## 5.4. Textiles

Textiles have a major impact on natural capital through water pollution and use of raw materials and fossil fuel energy. The worldwide trend driven largely by developed countries' consumer campaigns for more sustainable products (European Parliament 2019) backed by an international UN alliance calling for sustainable fashion (UNEP 2019) is incentivising textile businesses to incorporate sustainability into their operations. Factors such as biodegradability, the circular economy – reducing waste and reusing materials – and recyclability are receiving much attention to move the textile and garment industry towards sustainable approaches (Carp 2019).

Several AMS, namely Viet Nam, Cambodia, Indonesia, Thailand and Myanmar, have large textile and garment-manufacturing industries, which contribute significantly to their GDP and to the region's export volume (Invest ASEAN 2020). The free trade agreement among AMS gives the textile industry a bigger opportunity to attract FDI (Lokhin Group 2020). With its large contribution to regional GDP the textile and garment industry in ASEAN has an opportunity to be a world leader in moving towards sustainable practice. For this, the industry should move away from polluting the atmosphere by using renewable energy rather than coal or gas, avoid polluting rivers by recycling used water, and reduce its use of groundwater.

Supported by international financial institutions, several ASEAN textiles companies and industry associations are early movers towards sustainability. The Viet Nam Textile and Apparel Association (VITAS) is working with WWF, funded by HSBC, to green Viet Nam's textile sector by improving its water management and energy sustainability (WWF 2018). The project focuses on improving the awareness of industry players and achieving better river-basin governance to improve water quality (*ibid*). A similar project is supporting the textile industry in Cambodia with GIZ support (Fibre2Fashion 2019).

## 5.5. Seafood and ornamental fish

Fish in the ASEAN region comes from both offshore capture fisheries and aquaculture and is predicted to be 25% of the world's total by 2030. There are estimated to be over 6 million fishers in the ASEAN region (SEAFDEC 2018), but a broader definition of those indirectly involved in the fishing industry gives much higher figures such as over 6 million people working in fishing in Indonesia alone (MSC 2018). About two thirds of ASEAN fisheries still come from capture fisheries and one third from aquaculture, but aquaculture is rising fast (Chan et al 2017). Sustainability in fisheries has been a growing issue in terms of both quantity and quality of the natural capital stock due to overfishing and pollution, and habitat destruction caused by fish farms, particularly for shrimp, which was a third of the aquaculture in ASEAN (Chan et al. 2017).

Among capture fisheries (Chan et al. 2017), Thai Union, the world biggest seafood producer, based in Thailand, which includes US Chicken of the Sea and Jack Tuna in the UK, has a major focus on sustainability. Their radical sustainability strategy is called "sea change" (<https://seachangesustainability.org/>). Other companies making progress are Alliance Select Foods International, based in Manila, Philippines, which ranked "good" in Greenpeace's recent tuna report.

In aquaculture, sustainability standards have been set by the Aquaculture Stewardship Council (ASC). The ASC logo informs the consumer that the fish has been responsibly farmed with the minimum possible adverse impact on society and the environment. Thus, certification also acts as a strategic marketing tool, and companies are investing in it to differentiate their products and cater to changing consumer preferences. Since its launch in 2012, ASC certification has been approved for 6,289 products in 58 countries and demand is steadily growing. One example is Regal Springs, the largest vertically integrated tilapia producer in the world and a market leader in sustainable aquaculture. In 2012 Regal Springs' tilapia farms in Indonesia were the first to receive ASC certification for both their farm operations as well as their chain of custody.

Ornamental fish production is inherently risky in terms of natural capital as some of the wild species are rare coral species. However, a Marine Aquarium Council exists and Aquascapes Philippines Co. is one of the few major ornamental fishery exporters in ASEAN with a Marine Aquarium Council certificate (<http://www.aquascapes.net/aboutus.htm>).

## 5.6. Cement and manufacturing

Cement manufacture in ASEAN often involves mining limestone outcrops or “karsts”. Emerging evidence shows that karsts – with their dry soils surrounded by a wet ecosystem have a unique contribution to biodiversity and natural capital providing habitats to endemic species such as snails and bats as well as mammals and plants.

In the ASEAN cement market, Singapore has no manufacturing plants, but Brunei Darussalam has one cement production plant which does not involve mining limestone outcrops. Raw materials like clinker, gypsum and slag are all imported and processed to produce Portland cement in the plant. The remaining eight cement-producing countries can be divided up into mature (Thailand and Malaysia), emerging (Viet Nam, Indonesia and the Philippines) and frontier (Lao PDR, Cambodia and Myanmar) (One Stone Consulting 2019). It is likely that cement production in ASEAN will grow in line with GDP by over 5% a year. Western companies such as LafargeHolcim are starting to divest to local companies such as Siam Cement Group, while Chinese investors are also beginning to enter the industry (One Stone Consulting 2019).

Some cement companies (e.g. LafargeHolcim) are developing a group-wide policy on environmental karst management and are working with biodiversity organisations on biodiversity management (LafargeHolcim 2017, <https://www.lafargeholcim.com/southeast-asia-biodiversity>). However, typically companies have focused on rehabilitation after a mine closes rather than careful site selection to minimise natural capital loss before mining starts.

## 5.7. Plastics

Plastics are a major source of solid waste and can contribute to litter in cities, rural areas, and oceans and other waterbodies. Plastic waste in ASEAN is exacerbated by the import of plastics from wealthier nations (ASEAN Post 2020). The problem of plastic waste increased in ASEAN from 2018 onwards when China banned waste imports. Data shows that half of the plastic waste exported from the US in the first months of 2018 was sent to Malaysia, Thailand and Viet Nam (*ibid*).

As a result of growing consumption and plastic imports, ASEAN has become a major contributor to marine plastics. In response Malaysia and Viet Nam have now banned plastic waste imports and Thailand will follow in 2021 (ASEAN Post 2020). To reduce domestic plastic generation, ASEAN governments have introduced bans and refund schemes to reduce plastic bags. There have been a number of public-private partnership schemes set up to reduce plastic waste. For example, in Viet Nam, Dow Viet Nam is developing a scheme to create the first use of plastic waste in roads to make them more durable (Dow 2019).

To respond to the problem of marine debris, ASEAN adopted the Bangkok Declaration on Combating Marine Debris in the ASEAN region in June 2019 (ASEAN 2019a). This declaration is supported by the ASEAN Framework of Action on Marine Debris.

## 5.8. Timber, pulp and paper production and furniture

Timber, pulp and paper, and furniture production can be either from natural forests with accompanying pressure on natural capital or from plantation forests. While plantations may have benefits in reducing expansion into natural forests, they may initially be planted on land that was cleared of natural forests. Some AMS such as Viet Nam count plantation forest as forest cover so replacement of natural forests by plantations is not identified as deforestation.

The production of pulp and paper continues to grow in ASEAN. While newsprint production is falling, packaging is growing. The pulp and paper industry in ASEAN is dominated by a few major players. In Indonesia, despite the negative environmental record, the government is keen to work with industry to expand capacity from just under 8 million tonnes to over 10.5 million tonnes (Setyawati 2017).

The largest paper company in Indonesia and one of the largest in ASEAN is Asia Pulp and Paper (APP). APP with its parent company Sinar Mas (including companies in China and a growing presence outside Asia), has a total production capacity of just under 20 million tonnes. After a dismal environmental track record where it is estimated to have cleared 2 million ha of rainforest, it announced major reforms in 2013 with a Forest Conservation Policy. This committed the company to a zero-deforestation policy and in 2019 it won the best sustainability report. But this is marred by the company's OKI plant built in Southern Sumatra in 2017 with a 3-million-ton capacity, which has limited sustainable supply and continuing ties to suppliers with mixed track records. These continuing negative aspects have led the FSC to begin the process of "disassociating" itself from APP and a number of NGOs to raise concerns (Environment Paper Network 2019).

Indonesia's next biggest pulp and paper producer is Asia Pacific Resources International Limited (APRIL). As with APP, APRIL announced a major set of reforms in 2015 to move towards zero deforestation. But as with APP, NGOs have raised concerns about APRIL's links with dubious suppliers and the company has been "disassociated" by the FSC.

Wood production in ASEAN is primarily for domestic use. One exception is Viet Nam which is the biggest exporter in ASEAN with exports targeted by government to be US\$11 billion in 2019. To meet its demand for raw wood materials, Viet Nam has planted 3.5 million ha of plantations, but these will take 5-10 years to mature. In the meantime, Viet Nam is importing wood materials for its furniture industry, including from the US. There have also been accusations that Viet Nam has been importing illegal timber from its neighbours such as Cambodia, but this should be reduced by the recently agreed voluntary partnership agreement with the EU (Forqay 2019).

Timber plantations are increasing and can be sustainable with certification by the FSC. IKEA, which with 400 stores across the world and its vast furniture production consumes 1% of the world's roundwood timber, has committed to having 100% of its timber FSC certified by 2020. In Viet Nam IKEA is working with WWF and local forest smallholders to subsidise certification and produce guaranteed purchasing with over 15,000 ha certified (WWF 2017).

In timber trade, Indonesia and the EU established a Voluntary Partnership Agreement (VPA), a legally-binding bilateral trade agreement that aims to improve forest governance and promote trade in legal timber from Indonesia to the EU under the EU Forest Law Enforcement, Government and Trade (FLEGT) Action Plan of 2003. This agreement came into force in 2014 and effectively started in 2016 (EU FLEGT 2017).

Growing rubber is another major source of land use in ASEAN with a major impact on natural forests as many rubber plantations replace forests and involve heavy use of pesticides to kill off snakes (Ecobusiness 2019). With global demand for natural rubber growing at 5% a year, it is estimated that another 5 million ha of forest in ASEAN could be lost to rubber plantations by 2024. Around 90% of the almost 14 million tonnes per year of natural rubber tapped worldwide came from ASEAN. 70% of this rubber is used for car and aircraft tyres (GPSNR 2019). Over 80% of this natural rubber in ASEAN is produced by smallholders, so compliance with standards, and monitoring and traceability present major challenges for sustainability. Thailand, the world's largest rubber exporter, has 2 million workers in the industry, many of them migrants from poorer neighbouring countries (Ecobusiness 2019).



## 6. ASEAN OPPORTUNITIES FOR NEW PRODUCTS AND ECONOMIC BENEFITS FROM SUSTAINABLE NATURAL CAPITAL

There are some ASEAN developments in opportunities for new products and economic benefits from sustainable natural capital investment, but they are still in initial stages. Nature-based tourism and ecotourism is a booming sector including national park visitation with safaris, diving and agricultural, village-based tourism and homestays. This ecotourism includes both large hotel chains as well as SMEs. Organic agriculture is starting to grow in ASEAN, although from a very low level including certified rice, coffee, vegetables and other food products. Herbal products are a growing niche market.

The economic benefits of sustainable natural capital investments include GDP growth, employment, government revenues and exports. Government revenues from sustainable natural capital have increased including timber and fishery taxation, tourist park entrance fees and other tourism taxes, and taxes on certified agricultural production.

Supporting natural capital-based SMEs to lift people out of poverty is a major opportunity for ASEAN. Job creation is one of ASEAN's major challenges, and many new jobs will continue to be in the SME sector. To lift themselves out of poverty, poor people wish to use their major assets – often natural capital – and aim to add as much value as possible. They may need to group into associations to negotiate better terms and improve sustainable management. Past attempts by governments to form producer cooperatives around subsidised inputs, such as in fisheries, have often failed due to political interference and elite capture with the inputs not reaching the poor. A more successful approach is to provide an enabling business context through secure resource rights, support for common property management, improved access to markets and transport, streamlined regulations, and technical support. But since they tend to be dispersed, natural capital-based SMEs are challenging to support and difficult to regulate for their environmental impact.

### 6.1 Nature-based tourism and ecotourism

The ASEAN region's territorial waters are three times the size of its land and they attract visitors from across the world to experience marine life at its best. Thailand, Indonesia, Malaysia and the Philippines host visitors who come to enjoy their rich marine biodiversity (Jaya & Chin 2017). Lying in the tropical region with dense rainforest, the AMS are also rich in terrestrial biodiversity and wildlife; however, management of this resource has deteriorated (Ly & Bauer 2014). Tourists have become increasingly aware of responsible tourism practices, that is, enjoying the rich biodiversity while also preserving it (Gaia Discovery 2017).

Under the ASEAN Tourism Strategic Plan 2016-2025, it is projected that the GDP contribution of tourism will increase from 12% to 15%; tourism's share of ASEAN employment will increase from 3.7% to 7%; and per capita spending by international tourists will rise from US\$877 to US\$1,500 by 2025. While it is hard to estimate exact numbers and currently the tourism market has collapsed due to COVID-19, much of these tourism values are linked to ASEAN's rich natural beauty.

Recognising this potential, AMS have declared their commitment to develop ecotourism and their nature-based tourism corridors further through the Pakse Declaration on the ASEAN Roadmap for Strategic Development of Ecotourism Clusters and Tourism Corridors (ASEAN 2016). The roadmap builds on various ASEAN initiatives that precede it, such as the 2003 ASEAN Declaration on Heritage Parks, which as of 2019 resulted in the creation of 49 ASEAN heritage parks (ASEAN 2019b). This has led to measures to encourage tourism providers to demonstrate the sustainability of their nature-based tourism through the ASEAN Sustainable Tourism Award (ASEAN 2018b). There are many other opportunities to integrate successful initiatives related to nature-based tourism with a country's economic system, by considering the value of biodiversity and avoiding the overdevelopment and overuse of natural attractions across AMS (Frost et al. 2014).

## 6.2. Organic agriculture

Organic farming is an agricultural cultivation system that relies on natural resources without using synthetic chemicals. Although still considered a niche market, the approach has grown significantly, using increased land area and the consumer market is expanding. All ASEAN countries currently have less than 1% of their agricultural area under organic farming, with the exception of the Philippines which has the largest share in ASEAN at 1.6% (Hasnan 2019). To promote this practice ASEAN has produced its own standards for organic agriculture known as ASEAN Standard for Organic Agriculture (ASOA) (ASEAN, n.d.) and some AMS have introduced organic labels (e.g. VECO Viet Nam, GOVPH) (Philippine Rice Research Institute 2019). The governments of certain countries have started to engage in organic farming policies, although with some reluctance from farmers due to a belief that chemical agriculture is more productive than organic farming and that organic commodities have a smaller market (Holzhacker and Agussalim 2019). Nonetheless the common ASEAN organic strategy might bring about export opportunities due to ASEAN farmers' increased awareness of the sustainable benefits of organic farming: reduced expenses, higher yields, increased income, and safer and healthier food for the community (Bopp 2017; Philippine Rice Research Institute 2019). The ASEAN organic strategy includes some standards for several commodities like plant (including mushroom) production, wild harvest (excluding honey), post-harvest, processing, handling, storage, transport and labelling of organic produce, and processed products for human consumption (ASEAN, n.d.).

## 6.3. Sustainable forest plantations

From 2012 to 2015, the FSC-certified forest areas in ASEAN increased at a rate of 14% per year, from 21,045 square km in 2012 to 31,059 square km in 2015. About 68% of these FSC-certified forest areas are located in Indonesia, followed by 21% in Malaysia. The remaining 11% of FSC-certified forest areas are located in Lao PDR, Viet Nam, Thailand and Cambodia (ASEAN Biodiversity Outlook 2017). Since 2001, Indonesia has developed a national initiative for verification and certification of timber legality guarantees, namely the SVLK (Timber Legality Verification System). This standard was developed to support the eradication of illegal logging, to promote legal timber trade, and to support good forest governance.

SVLK is a system ensuring timber legality and forest sustainability to assure international markets that products made of timber of Indonesian origin come from legal and sustainable sources. Indonesia began implementing SVLK compulsorily from 1 January 2013. For the credibility and acceptance of the SVLK system in the international market, the long process to develop such instruments involved wide multi-stakeholder participation. This made the EU recognise and accept SVLK as an instrument to verify timber legality of Indonesian timber products for export to the EU within the framework of the Agreement in the Indonesia-European Union Voluntary Partnership Agreement signed on 30 September 2013.

## 6.4. Herbal products

The fast-growing herbal and medicine plants market offers a promising future for the ASEAN economy and its sustainable natural resource management. IndustryARC estimates that the market for Asian and ASEAN herbal medicines will reach over US\$48 billion by 2023, increasing from US\$15 billion in 2017 (marketwatch.com, 2019). There is an increasing demand for all-natural alternatives to conventional medicine. Herbs like other commodities in the trade market can be categorised into various quality standards and by their environmental impact (Sustainable Herbs 2020). However, cultivating and preserving herbal medicine and plants in a sustainable way is also helpful in maintaining cultural traditions and biodiversity of plants across ASEAN landscapes (Pitsuwan 2010).

ASEAN started an initiative to gather knowledge on herbal and medicine plants in 2010. So far, this has led to a two-volume publication compiling herbal and medicine plants across AMS entitled "ASEAN Herbal and Medicinal Plants Volume 1 and 2". The first volume was published in 2010 and the second in 2017 (ASEAN 2017). The report provides a useful insight of vernacular, habitats, indigenous usage and relevant scientific data of 159 species in AMS.

## 6.5. Vegetarian and vegan products

With growing interest in vegetarian and vegan diets, research by Oliver's Travels (2017) ranked countries according to vegetarian and vegan diets and restaurants. Thailand and Malaysia were ranked first and second in ASEAN. According to the study, Thais only eat 25.8 kg of meat per year and have access to 908 vegetarian restaurants. Thais also observe a vegetarian diet in the month of October, in conjunction with a Chinese Buddhist tradition. Although Malaysians enjoy eating meat with 52.3 kg consumed each year on average, the nation boasts the most vegetarian restaurants in the region with 1,185 outlets. Singapore ranked sixth with Cambodia in seventh place. Buddhist Cambodians eat very little meat at only 15.5 kg per year, but the low ranking is due to the fewer number of dedicated vegetarian restaurants, at just 153. Plant-based food companies, like Hungryroot in Singapore and Kawkawveg in Malaysia, are entering the market through meal kits and meal deliveries to conveniently offer consumers more vegetarian and vegan options.

## 7. ASEAN NATURAL CAPITAL GOVERNMENT POLICIES, INCENTIVES AND INSTITUTIONS

As in other parts of the world, policies, incentives and institutions are key to addressing natural capital management in ASEAN. The underlying causes of many broader-scale natural capital problems arise primarily from the political, economic and social systems that drive existing production and consumption patterns. Many natural capital assets – fisheries, forests, aquifers and wildlife – are both finite and scarce but suffer market failures (they are “unowned”, unvalued, and/or unmarketed), which requires government intervention. In many cases where these assets are exploited by private operators, these operators may be wealthy elites who benefit from corruption and illegality to ensure that their natural capital contributes far less than it should to the national economy. Government control to overcome this market failure is not necessarily the solution as governments may be inefficient, underfunded and themselves closely allied with wealthy private sector operators.

There has been a significant effort in the past decade to develop frameworks for better management of natural capital across the ASEAN nations. Policy frameworks and plans have been established across the countries, but to date the plans have often been tested on a pilot scale and the monitoring of natural capital management is not sufficiently strong. Progress of policy development on natural capital and resource management across ASEAN is variable, influenced by each country’s priorities and external pressures including international support. This is also supported by ASEAN’s The Economics of Ecosystems and Biodiversity (TEEB) study which finds patchy progress regarding policy development on natural capital and resource management across AMS (ACB 2012).

Institutional and governance change for natural capital management to drive a competitive, legal, transparent private sector and an efficient, well-funded government to manage natural capital is key. Here the focus is on three main governance reforms to achieve this:

- Policies to improve **poor people’s access and rights** to natural capital.
- **Incentives** to sustainably manage natural capital and **remove perverse subsidies** that undermine sustainable natural capital investment.
- Institutions to **strengthen natural capital government institutions** and provide them with sufficient funding, capacity and powers of enforcement and compliance.

### 7.1. Poor people’s access and rights to natural capital

Loss of natural resources can impose high economic and social costs. Thus, some AMS have limited the extraction of key land and sea resources, as well as introducing completely protected areas where extraction is forbidden (such as national parks). These often represent significant conservation gains. But in some cases, these have been introduced at high social costs for poor people, who may suffer from blanket harvesting restrictions, as in most national parks, or from human wildlife conflict. Protected areas can be managed in ways that ensure neighbouring poor people still receive substantial benefits and are compensated for any loss of existing natural resource use rights and human wildlife damage. Nature tourism is a fast-growing industry with the potential to provide revenues and employment for poor residents, as well as to preserve ecosystem services.

Indigenous peoples comprise approximately 5% of the total population in ASEAN, and for many individual countries they form more than 10% of national population: 30-40% in Myanmar, 20-29% in Indonesia, 35-70% in Lao PDR, 10-15% in the Philippines, and 13.8% in Viet Nam (Chakma et al. 2010). Adapted to the forest, mountain, lowland and coastal areas they inhabit, their livelihoods are directly dependent on natural capital for subsistence and income generation through small-scale agriculture, farming, livestock

raising, hunting and gathering, fishing, and the trade of local handicrafts, among others. The natural capital relationships, knowledge and management systems that have evolved over many centuries are very diverse and intricate, and tightly tied to the geographical, cultural and socio-economic context of the regions and the groups that have inhabited them.

Indigenous communities particularly rely on forests for habitat, hunting, and gathering of water, wild food, fuel wood, medicinal plants and other non-timber forest products. They have developed a holistic understanding of the ecosystems they inhabit, evident in traditional agroforestry systems of high productivity and species diversity (Parrotta and Troster 2012). Agriculture in the form of rice fields, vegetable gardens and other crops provide for the livelihoods of many indigenous groups in the region, mostly for subsistence but also for the market (Chakma et al. 2010).

Forests are valued in other essential functions as well and are managed accordingly. For many indigenous people in the region, forests are used as fire and wind protection strips between cultivation areas to aid productivity with the microclimate they provide (Ramakrishnan et al. 2012; Chakma et al. 2010). Last but not least, forests are often endowed with sacred, spiritual and cultural values and thus serve in preserving those communities' unity and cultural identity. Such functions often preclude the use and extraction of natural resources through strict rules and social conventions, and regions conserved are worshipped as homes to multiple deities. The Nagoya Protocol on Access and Benefit-sharing and Traditional Knowledge reaffirms these sacred, spiritual and cultural values and acknowledges that benefit sharing must be based on mutually agreed terms (CBD 2012). The Protocol contains guidance for the sharing of benefits arising from the use of traditional knowledge associated with genetic resources, as well as benefits arising from the use of genetic resources in accordance with domestic legislation (*ibid*).

However, despite these well documented links between local, often indigenous people and natural capital, the state has been slow to relinquish control and participatory management has been limited. So far only an estimated 4% of the total forest area of ASEAN is managed through community or social forestry (RECOFTC 2017). This is despite the fact that 312 million people or 54% of the population has association with the forests. So just over half the population is constrained to depend on just 4% of the officially designated forest lands. (RECOFTC 2017).

Capture fisheries have same bias in national legislation and policy against smallholders. Since the 1950s all AMS have focused on large-scale industrial fisheries (Teh and Pauly 2018) to the detriment of small-scale fisheries, despite the fact that small-scale fisheries provide livelihoods to many more people. Overall industrial fisheries now provide a larger share of catch than small-scale fisheries, but about 30% of industrial fish catch is diverted for fish meal for livestock feed (Teh and Pauly 2018). In addition, there are national variations, for example in Indonesia over 95% of the US\$3.6 billion fishery sector was provided by artisanal fisheries (MSC 2018).

## 7.2 Incentives for sustainable natural capital

Private sector investment in sustainable natural capital requires an enabling policy context with appropriate incentives and fiscal policies. There is a growing body of experience on introducing incentives and environmental fiscal reform (to reduce overuse of scarce, inefficiently priced resources, such as water) and payments for environmental services (to reward those who protect, for example, biodiversity and watersheds). It is important for governments to signal to the private sector that it should be moving towards sustainability and for the private sector to know the real price of natural capital and resources and include it in its businesses, such as in the water and tourism sectors. Some of the perverse incentives and subsidies that harm natural capital include:

- 7.2.1. Subsidies **for inputs of production** often can lead to overuse, for example energy subsidies can lead to overuse of groundwater, subsidies for fertilisers or pesticides in agriculture can lead to overuse, and externalities and subsidies for bottom-trawl fleets can have a major negative impact on the habitat of fish species.
- 7.2.2. Subsidies for **outputs** of already underpriced natural resources. For example, the provision of water and timber at low subsidised prices can lead to excessive consumption and often waste.

- 7.2.3. Sometimes **lax or low tax collection** of natural resource taxes can act as an implicit subsidy, such as uncollected forestry taxes increasing deforestation. Thailand for example grants tax concessions for high-value paper production such as packaging and tissues but no longer for traditional paper production.
- 7.2.4. There are other **regulations** that are forms of perverse incentives beyond subsidies. For example, requirements to remove forests as a precondition to receive land tenure or titles, or laws that threaten “idle” lands with higher taxes.

The elimination of these harmful subsidies can increase efficiency – and free up considerable funds that could be used to address environmental and social needs. However, reform of subsidies requires careful management, and in many cases, compensatory policies, such as more targeted subsidies to replace the more expensive uniform subsidies.

Examples of some of the additional payments required to increase incentives for sustainable natural capital management include hydroelectric companies legally required to make contributions for protection of headwaters, for example in the Water Resources Law (1996) in Lao PDR. But few of these schemes are on a national scale in ASEAN with the exception of Viet Nam’s national Payments for Forest Ecosystem Services. This type of economic incentive is not exclusive for national or regional scale since it has also been developed at the city level, such as a green cities legislation in Thailand (ACB 2012).

### 7.3. Strengthened natural capital institutions

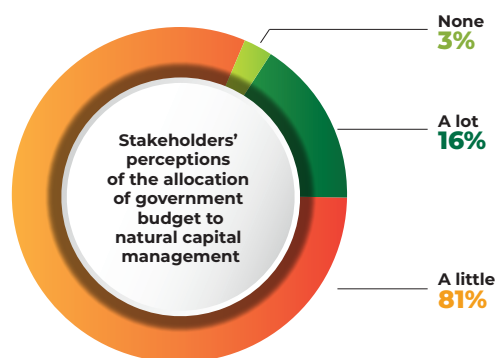
Institutional strengthening can be addressed by institutional reforms such as the creation of a Ministry of Natural Resources that brings together relevant natural resource departments. However, the key activities that affect natural capital may still lie outside these departments’ control, for example, agricultural or urban activities impacting on coastal resources or agricultural expansion impacting forests. Even when there are a limited number of ministries, management may be complex. For example, management of protected areas in Viet Nam is split between the Ministry of Agriculture and Rural Development, the Ministry of Natural Resources and local governments, leading to conflicting objectives (GEF 2015).

The spatial challenge of responsibility for natural capital cutting across different administrative boundaries requires an integrated spatial approach for natural capital. Examples include integrated water resource management, integrated watershed management and integrated coastal resource management. More recently there have been attempts to address this through an even broader spatial approach with a “landscape” approach. While these integrated and landscape spatial approaches have some advantages, they can also have disadvantages such as increased complexity with higher transaction costs and the pros and cons need to be carefully considered.

Strengthening institutions for natural capital management requires natural capital agencies with sufficient funding, capacity and powers of enforcement and compliance. On funding, more than a half of the 48 stakeholders mentioned in Section 1 said that the financial resources of the government institutions in their country for managing natural capital are low.

The key stakeholder interviews revealed that public finance is also scarce. Of the 38 respondents, 81% claimed that their governments allocate only a small budget to natural capital management (see Figure 20), showing that this has not been a priority for many AMS.

Figure 20: Stakeholders’ perceptions of the allocation of government budget to natural capital management



Source: Author’s calculations based on stakeholder survey

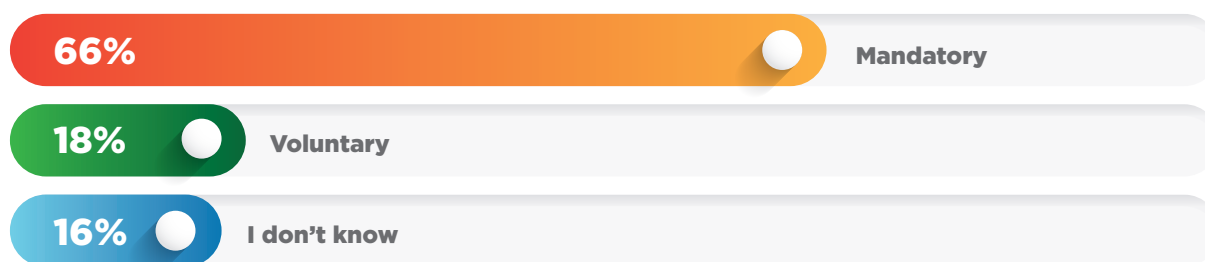
Many governments have weak and disempowered ministries in charge of natural capital with a vicious cycle of under-resourcing leading to further limited capacity and limited implementation. This can be addressed by making natural capital agencies self-financing so that they have an incentive to improve performance and increase their funding base. Thus, some agencies responsible for forestry, fisheries, parks and wildlife may be able to retain their own user fees and reinvest them to sustain the natural resource base.

Some of the revenues from natural capital subsidy reforms and taxes are being spent on sustainable natural resource management, for example forest funds and conservation funds. There are arguments for and against setting aside a share of government revenues collected by taxation for sustainable natural resource management. Generally, Ministries of Finance prefer not to reserve revenues for a particular purpose. But for natural capital management, such dedicated or earmarked funds can ensure that sufficient funds are spent to maintain and preferably increase future benefit streams. These revenues provide a “virtuous circle” of incentives to invest in further sustainable management. Such funds include forest funds in many countries including Indonesia, Lao PDR, the Philippines and Viet Nam. For example, Indonesia’s Reforestation Fund has spent US\$5.8 billion on reforestation, plantation development and rehabilitation of lands.

While the transition develops slowly, there is a need to closely monitor and sustainably maintain existing natural resources so that they do not disappear. About 76% of the e-survey stakeholder respondents perceived monitoring by private companies with permission to manage the natural resource sector as either ineffective or not very effective. Companies lack the capacity to enforce the law when, for example, plantation concessionaires violate land-use rules (Purnomo et al. 2019).

Some countries have commodity standards for improving practice on the ground and the impact of the supply chain so that business activities are less harmful to natural capital; however, these standards may be ineffective where monitoring is weak. The e-survey results give a general picture of some countries having implemented these standards as mandatory. Standards can also be voluntary, leaving businesses to decide whether they want to adopt them or not (see Figure 21 below). For example, in Indonesia a policy of business licensing for using legal timber has been developed and adherence to it is mandatory for businesses exporting timber products to European markets, while the palm oil national standard or international standards known as the Indonesia Sustainable Palm Oil (ISPO) initiative is adopted on a voluntary basis but has not yet become a mandatory regulation.

Figure 21: Survey responses regarding government requirements for commodities standards to improve sustainable supply chains



Source: Author's calculations based on stakeholder survey

Another challenge with monitoring supply chains of natural resources may be illegality and crime. Often this may be made difficult or even dangerous due political interference. These challenges can be overcome by appropriate funding for monitoring and enforcement. The funding can come from penalties, fees and confiscated assets from those who were caught practicing illegal activities. This can include illegal offshore fishing fleets whose auctioned assets contribute to fishing inspection or wildlife fines being used for wildlife monitoring. A share of the fines can also be used for those at the front line of enforcement, such as wildlife rangers taking on poachers, to provide an incentive for this otherwise low-paid and dangerous work.

## 7.4. ASEAN Member States' natural capital policies, incentives and institutions

This section outlines the overall policy and institutional context for natural capital in each of the 10 AMS:

### ■ Brunei Darussalam

Brunei Darussalam has strong policies for natural capital particularly protected areas and forest protection, while continuing to rely on fossil fuel extraction for its economic performance (Government of Brunei Darussalam 2020).

### ■ Cambodia

Cambodia depends significantly on major agricultural concessions for its economic performance leading to detrimental impacts on natural capital with major deforestation and loss of biodiversity. However, in the inland fisheries sector it has cancelled commercial concessions and moved towards community management.

### ■ Indonesia

In 2019 the Ministry of Planning, or BAPPENAS, released its report *Low Carbon Development: A Paradigm Shift towards a Green Economy in Indonesia* (BAPPENAS, 2019). This report mainstreams and incorporates the concept of natural capital. The Ministry of Finance places high importance on natural capital management and has incorporated an environmental performance-based budgeting policy or *Transfer Anggaran Provinsi berbasis Ekologi* (TAPE) (Government of Indonesia 2019). TAPE is an incentive mechanism in the form of budget transfer from the national government to provincial governments whose budgets are determined by how well the provincial government is performing in managing natural capital and resources.

### ■ Lao PDR

Although Lao PDR faces several challenges on its path to green growth including a high dependence on natural resources for growth, unsustainable use of its resources and increasing impacts of climate change, the country has set the National Environment Strategy 2020 with associated five-year Action Plans. The primary goal of this strategy is to ensure appropriate management and sustainable use of natural resources. The specific goals include increasing public awareness and participation in environmental management and strengthening international and regional cooperation (MONRE 2012). Other long-term policies implemented include the Forestry Strategy 2020, National Biodiversity Strategy 2020 and Action Plan 2010, National Policy on Environment and Social Sustainability of the Hydropower Sector in Lao PDR, Policy on Water and Water Resources, and Water Sector Strategy and Action Plan (*ibid*).

### ■ Malaysia

There are numerous policies related to natural capital. More recently the Government of Malaysia issued its Biodiversity Action Plan 2016-2025, (Ministry of Natural Resources and Environment 2016). The Government is very firm about moving towards natural capital principles and is creating many strategies to implement this, including strengthening the law and legislation, improving the capacity and capability particularly of monitoring and reporting, and raising awareness.

### ■ Myanmar

Myanmar has just released a new policy document known as the "National Environmental Policy of Myanmar". The document provides long-term strategic guidance for achieving a sustainable future for the country (Government of the Republic of the Union of Myanmar 2019). It also serves as a guide to mainstream environmental protection into planning and decision making at all levels of government and in all sectors. Its detailed principles respect livelihood needs and development objectives while at the same time recognising the full value of Myanmar's ecosystems and the implications of climate change. One of the principles in this policy document is that environment and natural resource management will recognise the critical roles that Myanmar's natural capital and ecosystem services play in the country's society and economy (Government of the Republic of the Union of Myanmar 2019).



## ■ The Philippines

There is a high government demand for indicators, tools, and methodologies that will help to determine the sustainable use of natural resources and to inform about development planning and policy analysis. Approaches such as Natural Capital Accounting (NCA), market-based instruments, environmental valuation, and payments for ecosystem services (PES) are mentioned in the 2011-2016 Philippine Development Plan and the National Climate Change Action Plan. The Philippines Development Plan recognises the importance of natural capital for reaching the objective of inclusive growth.

The Philippines have made some policy changes related to protected areas. Its 1992 landmark legislation was amended in 2018 to include an additional 94 protected areas. There are currently 244 protected areas in total under the National Integrated Protected Areas System. Those 244 protected areas cover approximately 7.76 million hectares of land and marine ecosystems. Out of these, 107 protected areas covering 4.38 million hectares supported by congressional enactment/legislation, not including areas managed as Local Conservation Areas (LCAs) and Other Effective Area-Based Conservation Measures (OECMs).

## ■ Singapore

Singapore has a vision to become a 'City in Nature' to provide Singaporeans with a better quality of life, while co-existing with the flora and fauna of the country. This will be done by (1) extending Singapore's natural capital, (2) intensifying nature in gardens and parks, (3) restoring nature into the urban landscape, and (4) strengthening connectivity between Singapore's green spaces. Singapore's four nature reserves form the core of its natural capital, and the country has converted more than 350 hectares of forested areas surrounding the nature reserves into nature parks to safeguard them. To extend Singapore's natural capital, the government plans to continue growing the nature park network aiming to have an additional 160 hectares of nature parks by 2030 as well as plant a million trees across Singapore over the next ten years.

As a highly urbanised city-state, Singapore is still home to rich biodiversity, but has to conduct all its biodiversity conservation efforts within this small area of just 724.2 square km (as of 2018). These efforts are guided through the implementation of two key strategies – the National Biodiversity Strategy and Action Plan (NBSAP 2009, updated in 2019) and the Nature Conservation Masterplan (NCMP 2015). These plans are supplemented by the Marine Conservation Action Plan (MCAP 2015) for coastal and marine biodiversity conservation efforts, and the Integrated Urban Coastal Management framework for broader management of Singapore's waters.

The Sustainable Singapore Blueprint <https://www.nccs.gov.sg/media/publications/sustainable-singapore-blueprint> has a number of targets linked to ecosystem services and natural capital, and outlines numerous initiatives designed to enhance Singapore's natural capital such as the ABC Waters Programme that uses the ecosystem services of natural streams to clean water as well as manage runoff volume.

## ■ Thailand

Thailand has made progress in planning for sustainable development, evident in its publication of a National Sustainable Development Strategy (NSDS). The *National Sustainable Development Strategy – A Guidance Manual* was published in 2008. It is a long-term strategic policy document for the years 2007-2036, developed through stakeholder consultations with UNEP, Thailand Environment Institute (TEI) and the National Economic and Social Development Board (NEDSB). NEDSB is the leading institution responsible for formulating five-year National and Economic Development Plans (NEDPs) out of the NSDS. The current 12th National Socio-Economic Development Plan (2017-2021) focuses on sustainable development, recognises the effects of climate change and reiterates the priority of transitioning to low-carbon growth while securing the natural resource and environmental bases.

More recently there has been some private sector involvement in sustainable natural capital management. Siam Cement Group, a mining company operating in Thailand, has mainstreamed biodiversity conservation into its mining areas. Another company, ACG, supports the government with recycling and reuse.

## ■ Viet Nam

The government has promulgated a number of policies that promote the development of natural capital related tools and mechanisms, such as the Party Resolution to Responding to Climate Change, Environmental Protection and Natural Resources Management, the National Green Growth Strategy, the Sustainable Development Strategy for 2011-2020, and the National Strategy on Environment Protection to 2020.

## **8. ASEAN TRADE, STANDARDS AND INVESTMENT AND NATURAL CAPITAL**

### **8.1. ASEAN trade agreements and natural capital**

ASEAN has been active in negotiating free trade agreements (FTAs). However, the mainstreaming of sustainable development and natural capital into these FTAs is limited. ASEAN's six ASEAN-plus FTAs are as follows: ASEAN-Australia-New Zealand FTA, ASEAN-China FTA, ASEAN-India FTA, ASEAN-Japan FTA (or commonly known as AJCEP – ASEAN-Japan Comprehensive Economic Partnership), ASEAN-Republic of Korea FTA, and a recently signed FTA with Hong Kong known as ASEAN-Hong Kong, China FTA. Finally, ASEAN has successfully concluded negotiations on the Regional Comprehensive Economic Partnership with its FTA Partners in 2019. AMS have also negotiated a number of bilateral and multilateral FTAs. Viet Nam and Singapore lead the region, each with over 15 FTAs negotiated. These have helped to contribute to rapid economic growth in both countries.

In the EU, trade agreements have sought to contribute to more sustainable natural capital as international environmental commitments are enshrined in a specific chapter of EU FTAs. ASEAN can learn from this experience.

### **8.1. ASEAN standards and natural capital**

The ASEAN Standards and Conformance Strategic Plan 2016-2025 addresses regional policies for the development and implementation of standards and conformity of assessments including accreditation, inspection, testing, certification, and calibration.

For natural capital, standards could be used to promote sustainability within ASEAN. There should be a stocktaking of existing international and regional standards, and these standards need to be mapped out. There is a need to have more harmonised standards across ASEAN and for financial support to encourage SMEs to meet standards.

### **8.2. ASEAN investment and natural capital**

Foreign direct investment (FDI) in ASEAN has always been market-driven to boost the economy. AMS have different levels of policies, institutional set-up and capacity when it comes to FDI preparedness, which involves natural resources such as land and commodities used for production (ASEAN 2018a).

Until recently, FDI in natural capital has created environmental degradation. Investment in "high deforestation risk" sectors in ASEAN was over US\$60 billion in the six years between 2014 and mid 2019 or about US\$10 billion per year in the sectors of palm oil, pulp and paper, rubber and tropical timber (Forest and Finance 2020). Now attitudes are shifting towards concern with the environment and more countries are looking for sustainable FDI. Through enabling regulations, laws and policies, FDI could support the sustainable management of natural capital in ASEAN.

## 9. RECOMMENDATIONS FOR THE ASEAN NATURAL CAPITAL ROADMAP

ASEAN institutions can play a significant role in the sustainable natural capital management across their member states, which can be set out in the proposed Natural Capital Roadmap. This Roadmap can be supported by technical and financial assistance from the EU, including through the E-READI facility, and other development partners.

AMS, with support from the EU and others, have the opportunity to accelerate existing activities and scale them up to the regional level to develop a Natural Capital Roadmap covering two main areas:

- ASEAN commitments to joint policy actions on natural capital including a post COVID-19 green recovery.
- ASEAN flagship programmes for AMS and business on natural capital.

The Roadmap will be implemented through:

- Creation of a natural capital platform.
- Support from the ASEAN institutions with the EU and business sector.
- ASEAN analysis and mapping of status, progress and next steps on natural capital.
- ASEAN region wide and South-South, North-South lesson learning and collaboration on natural capital.

### 9.1. ASEAN Roadmap: commitments to policy actions on natural capital

The ASEAN Natural Capital Roadmap should cover the following 10 recommendations for policy action among ASEAN Member States working together with business and civil society:

**9.1.1. AMS to recognise the value of sustainable natural capital investment** in promoting the livelihoods and health of ASEAN's people and ASEAN's pursuit of the SDGs and economic development aligned with the Post-2020 Global Biodiversity Framework on Mainstreaming Biodiversity (CBD 2020). There is growing interest in natural capital across the region, but from a low base. Drawing from available information and stakeholder consultations in the ASEAN region, the governments of all AMS have a growing demand for sustainable NCA policies and institutional reforms. This is expressed primarily through direct government statements often linked to high-level policy and strategy documents, but increasingly through implementation. Key stakeholder interviews revealed that there is an opportunity for linking interest in natural capital in specific key sectors to country priorities and national objectives such as the SDGs and sustainable economic growth.

#### (c) Tools and solutions for implementation and mainstreaming

12. Reform incentives, eliminating the subsidies that are most harmful for biodiversity, ensuring by 2030 that incentives, including public and private economic and regulatory incentives, are either positive or neutral for biodiversity.
13. Integrate biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts, ensuring by 2030 that biodiversity values are mainstreamed across all sectors and that biodiversity-inclusive strategic environmental assessments and environmental impact assessments are comprehensively applied.
14. Reform economic sectors towards sustainable practices, including along their national and transnational supply chains, achieving by 2030 a reduction of a least [50%] in negative impacts on biodiversity.

Source: CBD Draft Framework, 2020

- 9.1.2.** AMS and business to recognise and implement the **rights of local people and communities** to sustainably manage natural capital and be consulted and benefit from natural capital use and management. While in the past much natural capital in ASEAN was managed by local people – including indigenous peoples – through traditional common property regimes, many of these were undermined by colonialist policy and subsequent state intervention. There is a need to increase participatory management of natural capital such as forests, fisheries and protected areas. So far, only an estimated 4% of the total forestry area of ASEAN is managed through community or social forestry.
- 9.1.3.** AMS **to increase dialogue and evidence** on the importance of sustainable natural capital for Ministries of Finance, Economy and Planning by ministries working on natural capital (Ministries of Environment, Natural Resources, Forestry, Parks) and by civil society and business. Ministries of Finance, which lead on financial allocation and spending decisions, have traditionally prioritised infrastructure and produced capital over investing in natural capital. There is a need for Ministries of Environment and Natural Resources and related agencies to increase their economic skills and engagement and be able to make the case for the economic contribution of sustainable natural capital investment to Ministries of Finance.
- 9.1.4.** AMS to explore knowledge sharing on **natural capital accounting (NCA)** by government and business to influence economic decision making and promote sustainable investment. NCA is a demanding undertaking and requires extensive data. For example, the basic data requirements for a land account and associated indicators are: satellite imagery data, land ownership, national parks information, business data (e.g. type of business, employment size and location information) and household data. In some cases, such as land ownership, this information will be disputed or not in the public domain. Thus, it is vital that NCA is undertaken not for its own sake, but to actually influence decision making. There is broad agreement across the countries reviewed on the challenges of NCA and hence the areas where support could be best targeted. These are: (1) capacity to undertake accounting, (2) data availability, quality and management; (3) coordination across government institutions; (4) development of accounts at sub-national level; (6) public awareness and involvement; (5) funding; and (6) development of monitoring and assessment frameworks.
- 9.1.5.** AMS to explore using standards and compliance for business to reduce risks from unsustainable natural capital extraction in supply chains. This can be done both by ASEAN members on their own or ASEAN members with support from trading partners such as the EU. In both timber and fisheries, the EU has been supporting AMS to take a more proactive role in the development of standards and enforcement (see sections on forestry and oceans below). There is a need to make it easier for small-scale producers such as small-scale fishers, small-scale palm oil producers and small-scale rubber producers to comply with standards and certification. The Marine Stewardship Council estimates that it costs fishery producers between US\$15,000 to US\$120,000 for the entire certification process (MSC, 2019b). It is also important for the environmental and natural capital agencies to cooperate with the agencies responsible for crime, security and trade. On 1 October 2015, illegal timber trade and illegal wildlife crime was added by ASEAN Security Ministers to their remit of transnational crime at the ASEAN 10th Ministerial Meeting on Transnational Crime in Kuala Lumpur. This needs to be followed up with effective implementation through appropriate incentives, resources and training.
- 9.1.6.** AMS to **carefully reform subsidies** that cause unsustainable natural resource destruction. ASEAN along with many other parts of the world, has many subsidies in place that promote unsustainable natural capital extraction. This includes in particular subsidies for agricultural commodities whose production often replaces natural forests, for example, input subsidies on fuel, fertilisers and infrastructure and output subsidies to support prices of the final products. There are also subsidies driving overfishing such as fuel subsidies, vessel and equipment subsidies, and processing subsidies. The top six fishing nations in ASEAN provide US\$2.1 billion of harmful fishing subsidies (Wen and Viswanathan 2016). The process of reforming such subsidies needs to be carefully managed to avoid social costs and to compensate poorer groups who may be negatively affected. Effective political dialogue and public awareness campaigns are needed to inform affected people about the rationale for reforms and what compensating policies will be provided.

- 9.1.7. AMS to work with business to provide more **incentives and support** for investment in sustainable natural products and exports (e.g. organic agriculture, ecotourism, herbal products, and sustainable forest plantations). This will help to fill the financial gap in ASEAN's agricultural and natural capital initiatives and turn ideas into implementation. Many working groups are focusing on agricultural and forest issues in AMS; however, despite coming up with some good ideas there is often limited finance to implement them.
- 9.1.8. AMS to work with the **finance industry** (e.g. banks, stock exchanges, insurers and asset managers) to promote sustainable natural capital investment. While climate issues are increasingly mainstreamed in bank lending, natural capital has received less attention and many banks are still financing deforestation (Forest and Finance 2020). However, this is starting to change with, for example, a growing number of banks with explicit policies to control lending for palm oil.
- 9.1.9. AMS to **strengthen natural capital agencies** (i.e. water, coasts, land, and wildlife) and consolidate them across government. There is a pressing need for natural capital agencies to have the funds, capacity and enforcement to effectively and sustainably manage natural capital.
- 9.1.10. ASEC and different ASEAN sectorial bodies to explore mainstreaming sustainable natural capital practices into other ASEAN works on **trade, standards and investment**. The ASEAN Natural Capital Roadmap could facilitate the development of three key areas related to ASEAN: (1) regional integration and natural capital standards; (2) trade agreements and treatment of natural capital; (3) attracting FDI and investment in natural capital. ASEAN could assist and lead this process, backed by corporations that operate sustainable businesses. Also trade policy is linked to paper production with accusations that Indonesia has unfairly subsidised its paper exports in 2020 and dumped them on the world market. Key interviewed stakeholders suggested that on trade-related issues, the ASEAN Natural Capital Roadmap is useful as a coordination tool in efforts to tackle cross-boundary illegal trade related to natural resources (i.e. illegal fisheries, forestry and wildlife etc.) within and between countries. The ASEAN Secretariat (ASEC) needs to engage different ASEAN sectorial bodies (with different mandates in each respective areas of work) to increase their awareness on the benefits of sustainable natural capital. The ASEAN Centre for Biodiversity (ACB) needs to promote or strengthen development of capacity, skill and tools for mainstreaming the natural capital into different ASEAN sectorial bodies.

The post COVID-19 green recovery action areas were presented in section 3.

## 9.2. ASEAN Roadmap: flagship programmes on natural capital

The Roadmap would cover the following seven flagship programmes for action by AMS with support from business, civil society and international organisations:

- 9.2.1. **Healthy ASEAN, healthy environment.** With the COVID-19 pandemic, health is now a top priority in ASEAN. Environmentally induced diseases such as lung cancer and malaria though, are likely to continue to be a larger cause of health issues in ASEAN compared to COVID-19. Environmental health improvements in air and water pollution can lead to major falls in death rates and other health benefits.

However, in 2019 the Pollution and Health Metrics report (Global Alliance on Health and Pollution 2019) concluded that of the almost 233,000 recorded pollution-related deaths in Indonesia, over 123,000 were attributed to air pollution and 60,000 to water pollution. There are a number of promising public-private partnerships across ASEAN to increase access to clean water and air and these can be expanded.

- 9.2.2. **ASEAN climate resilience through inclusive nature-based solutions.** Nature-based solutions such as carbon sequestration through afforestation are emerging as important responses to climate change. But these need to be designed and implemented to be inclusive and improve biodiversity as well as promote climate responsiveness.

- 9.2.3. ASEAN sustainable forestry.** Many agri-processing companies pledge to move to zero deforestation by 2020. This positive trend needs some policy support to halt deforestation across ASEAN and illegal logging that costs AMS billions of dollars in lost revenue and harms poor people. The Asian Forest Law Enforcement and Governance (AFLEG) initiative of the EU addresses supply- and demand-side incentives for illegal logging and assures wood is traded from legal sources alone. Established in 2009, the EU's Forest Law Enforcement, Governance and Trade (FLEGT) Asia Regional Programme Facility promotes good forest governance and sustainable management of natural resources in collaboration with existing regional trade initiatives and partnerships in Asia. Indonesia was the first AMS to sign up to a Voluntary Partnership Agreement (VPA) under the FLEGT Asia Programme for the export of "legally" harvested timber to the EU and other markets such as China, Japan, and South Korea. Lao PDR, Malaysia and Thailand are also implementing FLEGT in various stages (ASEAN Biodiversity Outlook 2). FLEGT may be usefully supplemented with efforts to encourage ASEAN consumers to discriminate in favour of good environmental practice and fair trade, through certification. So far, in the main forested countries of ASEAN an estimated 11% of the production forest area and less than 6% of forest plantations is certified (World Bank 2012). However, as many as 80% of the larger palm oil producers have committed to zero deforestation, although compliance is contested. There is also a need to phase out subsidies and risky bank lending for palm oil, rubber, pulp and paper, and tropical timber that contribute to deforestation. For example, Thailand is planning a US\$0.75 billion subsidy to benefit its rubber farmers (Bangkok Post 2019).
- 9.2.4. ASEAN sustainable oceans.** Given the importance of both fish production and fish consumption in ASEAN, improved management of oceans and waterbodies is vital. In ASEAN region, there are two relevant initiatives: the Coral Triangle Initiatives (CTI) and the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA). Another innovative approach is fisheries certification. This is now beginning – but in 2015 only covered 14.2% of the world's catch, 11% in Asia, and much less in ASEAN as the bulk of certification in Asia has happened in Japan, India and China (Potts et al. 2016). Without such approaches, the long-term future of ASEAN fish producers is threatened. There are some developments with the Marine Stewardship Council agreeing a Memorandum of Understanding with the Government of Indonesia (MSC 2019). Just prior to this, the Sorong Pole and Line Skipjack and Yellowfin Tuna fishery in West Papua province, with 35 pole and line vessels employing 750 fishers, became the first Indonesian fishery to be MSC certified (MSC November 2018). As with timber, the EU has recently introduced trade restrictions on countries with illegal, unreported and unregulated fisheries and this has affected a number of ASEAN companies, most recently in Thailand. Responding to these pressures, in 2016 the AMS jointly declared war on illegal, unreported and unregulated (IUU) fishing and pledged to enhance sustainable fishing in the region at the ASEAN-Southeast Asian Fisheries Development Center (SEAFDEC) Regional Cooperation Forum in Thailand (The ASEAN Post Team 2019). Some successes have been shown in Indonesia, which has the world's second biggest marine catch after China and has had a robust campaign against IUU fisheries leading to a 25% drop in effort and a measurable increase in profits for the legal operators remaining (Cabral et al. 2018).
- 9.2.5. ASEAN rivers management.** Transboundary rivers pose a major challenge in ASEAN. They are critical assets for growth in the countries that share them, but without effective cooperation, the environmental services they offer will be undermined. Where means for cooperation are secured, such as in the Mekong River Commission, they can provide a useful vehicle for larger regional cooperation. There is scope to strengthen work in these established forums and to extend such approaches to other basins in ASEAN.
- 9.2.6. Greening ASEAN's financial markets and private sector.** Asia's private sector is booming and interest in environmental management is growing. This interest in the environment can be stimulated through the commercial and investment banking sectors, export markets and private sector accreditation. The OECD markets are vital for ASEAN exports and can provide important incentives for environmental improvements.

**9.2.7. ASEAN pro-poor conservation.**<sup>3</sup> Since Asia has already invested over 7% of its land in protected areas, there is an urgent need to both demonstrate and secure their potential contributions to pro-poor growth. One approach is to reduce human wildlife conflict through innovative schemes such as village fencing and insurance. A second approach is for development partners to capitalise local environmental conservation and nature tourism funds that can trigger larger environmental investments.

### 9.3. Implementation of the ASEAN Natural Capital Roadmap through the Natural Capital Platform

**These 10 recommendations and seven flagship programmes of the Roadmap can be implemented through the ASEAN Natural Capital Platform,** which can provide a virtual platform with regular face-to-face meetings. It would serve as a multi-sectoral and multi-stakeholder coordination mechanism that facilitates future regional activities on natural capital, driven by relevant government, private sector and ASEAN stakeholders. The platform will work under the guidance of ASEC, the ACB and the ASEAN Working Group on Nature Conservation and Biodiversity (AWGNCB), as well as other relevant ASEAN working groups. It will also oversee the conducting of regular Natural Capital Dialogues where Indonesia, Malaysia and Thailand could be potential pioneers in collaboration with the Natural Capital Coalition (NCC). The Roadmap and Platform can be linked to the ongoing ASEAN Resources Panel (United Nations, 2017).

### 9.4. Implementation of the Roadmap: support of key institutions

**ASEAN institutions will need to gear up to take forward this Natural Capital Roadmap.** The ASEAN Environment Division will need to coordinate activities with the ASEAN Multi-Sectoral Framework on Climate Change, Agriculture and Forestry towards Food Security and act as a bridge between the ASEAN Social Cultural Community and the ASEAN Economic Community. The Natural Capital Bangkok Forum held on 27-28 November 2019 and the Status Report fed into the next AWGNCB meeting and the next EU-ASEAN High-Level Dialogue on Environment and Climate Change in November 2020. The ACB will need to consider extending its mandate beyond biodiversity to provide a role in coordinating natural capital related activities, where relevant and appropriate.

**The EU has an ambitious Biodiversity Strategy and Action Plan for 2030 (EU 2020) which provides a framework for protecting nature and restoring ecosystems and can inspire the ASEAN Natural Capital Roadmap.** In the context of COVID-19, the Biodiversity Strategy and the EU Green New Deal will contribute to a green recovery that AMS can learn from.

**The EU through E-READI and other programmes will need to stand ready to support the Natural Capital Roadmap.** The EU will need to coordinate with the EU Partnership Instrument project on TEEB AGRIFOOD and verify if the project could contribute to the Natural Capital Roadmap.

**E-READI can also consider supporting the first Regional Platform Meeting** and present, for validation, the recommendations of this Natural Capital Status Report and the outline of an ASEAN Natural Capital Roadmap.

**The private sector companies operating in ASEAN will need to be engaged in the implementation of the Natural Capital Roadmap.** The World Business Council on Sustainable Development, with its ASEAN regional office in Singapore, has offered to engage its members in the ASEAN Natural Capital Platform. ASEAN-related business councils can also play a role.

---

<sup>3</sup> Pro-poor conservation considers linkages between poverty alleviation and conservation and rests on the often overlooked fact that conservation can be as important a tool for poverty reduction as it is for protecting endangered species and critical habitats (Roe and Elliott, 2006).

## 9.5. Implementation: ASEAN analysis and mapping of status, progress and next steps on natural capital

E-READI should consider supporting the Roadmap and following up this Natural Capital Status Report by analysis and mapping on:

- **AMS increasing dialogue and evidence** on the importance of sustainable natural capital for Ministries of Finance, Economy and Planning by ministries working on natural capital (e.g. Ministries of Environment, Natural Resources, Forestry, Parks etc.) and by civil society and business.
- **AMS incentives and fiscal policy** for sustainable natural capital and reducing subsidies for unsustainable natural capital destruction.
- AMS options to increase upscaling of participatory management of natural capital (e.g. forests, fisheries, and protected areas).

## 9.6. Implementation: inter- and intra-ASEAN lesson learning and collaboration on natural capital

**All AMS need technical assistance and support with capacity development.** Key stakeholder interviewees suggested that the roadmap should address this by inter- and intra-regional collaboration among AMS and with the EU. The varying natural capital capacity and levels of development across the region imply that there is scope for South-South learning. There is also a need for different levels of tailored support to meet the needs of the different categories of countries, with some countries requiring considerably more bottom-up technical support than others. Key informant interviews suggest that the learning can be extended to cover EU-ASEAN knowledge exchange, such as on the EU-wide ecosystem accounting in the water sector, the EU's cost-benefit analysis of its proposed investment, which includes social and environmental impacts, and the promotion of best practice among AMS in key areas such as ecotourism. At the landscape level good practice is needed regarding, for instance, successfully engaging and improving communities' livelihoods while protecting their biodiversity. At the policy level, the collaboration could include sharing good practice that is applicable to multiple countries, such as on participatory natural resource management.

There are already many partners involved in regional collaboration and national initiatives. The stakeholder interviews highlight the wide range of partners engaged in natural capital across the region, including the UN Food and Agriculture Organization (FAO), the UN Statistics Division (UNSD), the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), the UN Environment Programme (UNEP), the Asian Development Bank (ADB), the World Bank and the German Corporation for International Cooperation (GIZ). The interviews revealed some collaborative opportunities, including engaging with ASEAN projects – for example, adding natural capital assessment as a criterion in the evaluation of national heritage parks. Collaboration can also be extended to cover relevant issues such as climate change programmes that can contribute to sustainable natural capital through inclusive nature-based solutions.

For NCA, the following targeted areas of support could be provided by ASEAN lesson learning and exchange: (1) training in SEEA to build capacity (this could be through regional training sessions, technical support and study visits); (2) exchange of lessons on policy applications – such that NCA activities are targeted at key policy areas. This should be developed not only for statisticians and policymakers but also for businesses to help them to understand how the information can be used to inform policy and business decisions; (3) facilitated peer-to-peer policy dialogue; (4) training and guidance on how to strengthen basic statistics and data for sub-national level.

## 9.7. Conclusions

AMS face an urgent task to maintain the remaining stock of their uniquely rich natural capital, but there are some positive indications and initiatives to build on. Now is the time to promote good case practice across the region, which the Natural Capital Roadmap can set out and the Natural Capital Platform can facilitate.



# ANNEXES

## Annex A: Natural capital accounting in ASEAN Member States

### BRUNEI DARUSSALAM

Limited engagement with NCA. Brunei Darussalam has discussed natural capital as a concept, although the discussions have not yet been developed into initiatives. Some existing initiatives focusing on natural resource management have not yet fully integrated NCA into their planning and development. Various government departments are responsible for the country's natural resource management, but there is no leading NCA institution.

### CAMBODIA

Cambodia has been actively engaged in mapping and measuring natural capital to guide the implementation of its national policy on green growth (Kingdom of Cambodia 2010). Cambodia is supported by key actors, namely WWF, Fauna and Flora International (FFI) and Conservation International (WWF 2009). Since the late 2000s, these key actors have supported Cambodia to promote its natural capital as a resource of the country through the following activities: spatial mapping, analysis and planning tools and expertise, natural capital concepts training, natural capital measurement and valuation, support for policy development, natural capital conservation, intervention, design and execution, conservation-based business development, sustainable financing mechanisms for natural capital conservation, including equitable benefit sharing, and access to resources and capacity building. Some project examples include the promotion of rattan as a sustainable commodity by WWF, the implementation of FSC for specific companies by Conservation International, and the development of a range of scenarios under which the financial costs of improved catchment and forest management are quantified by FFI (*ibid*). Some regional support is also provided by the ADB in the valuation of the Greater Mekong Subregion. The work was reported in 2015 and includes some mapping of policies and financial allocation undertaken in the subregion to promote sustainable natural capital by surrounding countries, namely Cambodia, Lao PDR and Myanmar (ADB 2015). More recently WWF is being supported by USAID to launch a platform called InVEST, which stands for Integrated Valuation of Environmental Services and Tradeoffs. This platform is expected to promote sustainable investment in Cambodia. The platform is being developed by the Natural Capital Project – a partnership of WWF, The Nature Conservancy, the University of Minnesota and Stanford University (WWF 2013).

### INDONESIA

#### Status of NCA development

The National Statistics Office (BPS) started work on NCA in 1983 and adopted the SEEA framework when it was first published in 1997. When the World Bank team in Indonesia undertook an Adjusted Net Savings study, they found that although data were available it was weak. This drove the discussion to develop SEEA. The WAVES programme of the World Bank started in Indonesia in 2013. WAVES Indonesia's priorities are: (1) assisting BPS with the adoption of the SEEA 2013 framework. This includes expanding the coverage and improving data flow; (2) supporting the development of land and water accounts. Pilot water accounts are being developed at the river basin scale with the intention of replicating across all 54 river basins; (3) building land accounts to manage the currently unstructured land governance and management system; (6) supporting the further application of the Adjusted Net Savings macroeconomic sustainability indicator; and (5) linking statistical data with effective policy decision making.

WAVES 1.0 was completed in July 2019. WAVES 2.0 focuses particularly on terrestrial peatland ecosystems and came into operation in 2020. WAVES 2.0 has three aims: (1) strengthen economic accounts; (2) inform policy decisions to understand the link between the economy and the environment, the trade-off, and how to make ecosystem accounts usable; and (3) support NCA including options for managing lowland

in Kalimantan, and explore coastal ecosystems including seagrass and mangroves. The first WAVES 2.0 stakeholder workshop was conducted in October 2019. WAVES 2.0 is focusing on several activities in pilot areas, starting in Nusa Tenggara Timur. Its first mission to gather stakeholders, conduct needs assessments and identify potential activities, was carried out in December 2019. The study resulting from the mission identifies possible financial instruments such as a blend of public and private finance to support coastal communities. Some of the sectors explored were tourism and fisheries, but no final decision has been made on the sector focus, which will depend on the Indonesian government.

### **Government policies and institutions on NCA**

According to the April 2015 National Plan for Advancing Environmental-Economic Accounting (NP-AEEA), there is already significant work happening in terms of preparation for building and implementing NCA in Indonesia, supported by a strong demand and a comprehensive strategy consisting of clear, detailed phases of implementation (BPS – Statistics Indonesia 2015). The NP-AEEA is aimed at focusing and coordinating the efforts of the key institutions involved such as BPS, the National Statistical System and international agencies, towards developing an integrated statistical system (based on the SEEA framework) that will help Indonesia achieve its sustainable development policy objectives as laid out in its Medium-term Development Plan (RPJNM 2015-2019). Furthermore, it identifies the rationale, the priorities and opportunities, as well as the foundational work that needs to be done so that Indonesia successfully implements NCA.

The NP-AEEA regards NCA development as crucial to meet the country's following key priorities: (1) improvement of food, energy and water security through sustainable development; (2) development of marine and ocean resources; (3) maintenance of its carbon stocks and other bioresources; (4) regional and rural pro-poor development; and (5) disaster management. There is a pressing need for integrated and coherent information under an inventory of natural resources that will allow policymakers to monitor progress and development impact. Such an inventory will be accessible to the public and will thus facilitate public participation in policy decision making.

Accounts on land use, cover and ownership are deemed of chief importance to minimise land-tenure conflicts and support land-reform initiatives. Other desired outputs include: (1) development of water, carbon stock and flood protection accounts; (2) an improved Adjusted Net Savings economic aggregate; (3) biodiversity and other ecosystem services accounts as well as case studies on the state of different ecosystem services (optional); and, (4) knowledge communication through accessible data, publications and public participation.

At the national level, developing and institutionalising indicators is regarded as a necessary complement to a number of policies such as the Long-Term Development Plan (RPJPN 2005-2025), the Medium-Term Development Plans (RPJMN 2015-2019, RPJMN 2020-2024), the Green Economy Program, the Law on Protecting and Managing the Environment (UUPPLH 2009), the Spatial Planning Law (UUPR 26/2007), the One Map (land cover data) and One Data Programs (data integration across technical ministries/institutions). It is also vitally linked with global initiatives such as the Reducing Emissions from Deforestation and Forest Degradation (REDD+) programme in Indonesia and the World Bank WAVES Indonesia project.

### **Government institutions for NCA**

The Indonesia WAVES programme's lead government agency is BAPPENAS, the Ministry of National Development Planning, which is responsible for land management and for monitoring progress towards green development. Other key institutions are the Ministry of Environment and Forestry and Directorate General of State Assets in the Ministry of Finance, which can benefit from NCA work, for example by monitoring progress towards its National Action Plan for Climate Adaptation (2014) or reporting on the financing of climate change initiatives. Representatives from those three ministries form the members of the Steering Committee.

### **Overview of environmental statistics**

In 1997 BPS published SISNERLING (system of environmental and economic accounts), which provides data for nine commodities associated with the energy, forest and mineral sector (Tasriah 2013). In part this has become a separate project and has been produced annually for the past eighteen years. However,

its uptake and use has been minimal. It is supported by the Ministry of Environment and Forestry but does not have significant buy-in. Recently there has been some public discussion about exploring the integration of environment and economic balance sheets. This is aligned with the Ministry of Environment and Forestry's publication of its State of the Environment report, thus developing some NCA capacity by linking environmental conditions with socio-economic drivers.

BPPT, the agency for the assessment and application of technology, conducts resource accounting for mining, forest and land suitability for agriculture. LAPAN, a remote sensing agency, supports Indonesia's Carbon Accounting Initiative by providing detailed land-cover change data. There is a strong need for coordination and data consolidation among these institutions.

The new Presidency in 2014 put forward the Statistical Capacity Building – Change and Reform (STATCAP-CERDAS) Project, which, funded by the World Bank, is a five-year development plan to strengthen the country's environmental statistics (World Bank 2018). However, the link between this project and the project funded by the World Bank through WAVES is not clear.

### **International support for NCA**

UNSD is preparing a plan with BPS to help Indonesia building environmental accounts and the FAO is working with the Ministry of Agriculture on SEEA 4 Agriculture.

Future support in data collection will be provided by a number of sources (WAVES 2015). The OneMap programme will be providing a cohesive data system and an accurate map of land cover essential for NCA. The REDD+ Agency will provide up-to-date information on forest cover, status and carbon stocks. In turn, NCA could support the REDD+ programme by providing documentation for its co-benefits. The Gazetting Forest Lands Program will also provide information on forest land cover and use, for example through the BIG (Badan Informasi Geospasial: the Geospatial Agency), which is working on marking and gazetting 100% of the forest territory. The World Bank Extractive Industries Transparencies Initiative and the Capturing Coral Reef and Related Ecosystem Services project will also support the development of some of the resource accounts. Additional statistical support will be provided by the Forest Investment Program and the Forest Carbon Partnership Facility Carbon Fund.

Donor support to the REDD+ programme is provided by the Government of Norway. Other organisations that will participate in coordination and are related to the SEEA-Experimental Ecosystem Accounting (EEA) are the UNEP TEEB Office and the CBD Secretariat.

### **Challenges**

- **Ongoing capacity building.** Notwithstanding a range of capacity-building initiatives supported by WAVES, a greater number of qualified people are needed to build the accounts. Additional/ongoing training and capacity building in environmental-economic accounting is required. The WAVES programme is contributing to a scheduled capacity building programme (with the Australian Bureau of Statistics, ABS) including attendance of officials at ABS's regional training course (10 people have attended so far), training for staff at the statistics agency and other ministries responsible for data provision and training on the setting up of land accounts. A number of steps have been taken by the government towards NCA institutionalisation, capacity building, and networking. They include in-house training sessions for national accounts staff, introduction/socialisation of the SEEA framework to stakeholders, a regional workshop on SEEA-EEA for the Asia-Pacific, and meetings with academia, research institutions and other stakeholders.
- **Data usage, availability and management.** According to the NP-AEEA, data related to land cover, use and ownership are scattered and do not always match across the different registration systems involved. An information system is required that addresses the significant data gaps, inconsistencies, and lack of statistical infrastructure. Some stakeholders also find that use of the data generated is limited since the data are not fully compatible with existing government systems.
- **Stronger coordination** between different levels of governments, institutions and donor agencies.

- The **engagement of relevant stakeholders** that are going to be using or benefiting from the accounts.
- There is also growing demand from the 34 regional provinces for environmental statistics. The Ministry of Home Affairs tried to set up development of provincial and sub-provincial natural accounts but only two have been completed to date.

## LAO PDR

Limited engagement with NCA. Lao PDR has discussed natural capital as a concept, although the discussions have not yet been developed into initiatives. Some existing initiatives focusing on natural resource management have not yet fully integrated NCA into their planning and development. Various government departments are responsible for the country's natural resource management, but there is no leading NCA institution.

## MALAYSIA

### Status of NCA development

Malaysia intends to produce SEEA accounts and is in the process of developing SEEA energy accounts (2014-2015), SEEA water accounts (2015-2016) and a residual account – greenhouse gas emissions (CO<sub>2</sub>) (2016-2017). Water and energy were selected as a priority as both are considered essential to equitable and sustainable development (Talib et al. 2013).

A number of ecosystem valuation studies have been undertaken in Malaysia over the past two decades (particularly related to terrestrial forest and mangroves) and there is capacity within national universities to undertake such assessments. As of 2013 the government was engaged in formulating a national policy on Payments for Ecosystem Services (PES) led by the Economic Planning Unit and the Prime Minister's Department.

### Government policies and institutions for NCA

Key government institutions involved in NCA are the Department of Statistics Malaysia (DOSM) and Ministry of Natural Resources and Environment. A steering/main user committee and technical working group has been set up to support development of SEEA. To leverage private sector investment in environmental conservation, in 2014 the government established its National Conservation Trust Fund with multiple contributions: 10 million Malaysian ringgit or (equivalent to US\$2.5 million) from the federal government were used to develop the trust fund and to support valuation. Through this fund the government provides seed funding with the expectation that it will incentivise more private sector investment in conservation activities. It announced at the end of 2019 that in 2020 it will match-fund any private sector investment in conservation.

### Overview of environmental statistics

DOSM's vision is to become a leading statistical organisation internationally by 2020. Continuous steps and measures have been implemented to strengthen statistical compilation by improving and updating the business registrar as well as manual references and classifications. DOSM is developing new products, namely Malaysia's Early Warning Signals, Updating Input-Output Tables and the System of Environmental-Economic Accounting. It is also upgrading existing products such as GDP by States, GDP by Income Approach, Core Inflation, Wages and Salary Survey, Index of Services, as well as producing new products such as a Tourism and ICT Satellite Account (Talib et al. 2013).

The Ministry of Natural Resources and Environment manages the following data systems: Geo Information for Natural Resources and Environment (G4NRE), which consists of (1) spatial data, maps and satellite images to inform development planning; (2) forest, water, environment, biodiversity, land and mineral inventories; and (3) Malaysia's Clearing House Mechanism (MyCHM) for Biological Diversity, which facilitates the reporting and transfer of biological diversity and conservation related information both nationally and internationally.

A 2018 midterm review shows that the DOSM came up with two accounts, water and energy, using the SEEA at the national level. The department has a green index but there is a lack of clarity on how biodiversity is captured in these two accounts. In parallel the WWF has carried out some assessment of natural capital, with the support of state governments in Sarawak and the northern states, which expressed some interest in mapping natural capital. The WWF is using the landscape approach as there is a central forest spine and it is interested in looking at the connectivity between the two states. The project uses a multi-stakeholder approach involving the state governments and the private sector, mainly relating to palm oil, timber and durian commodities. In the state of Sabah WWF is taking a jurisdictional approach to palm oil with a sustainability approach involving local communities and several companies. The point of entry for private company involvement is conflict between their operations and wildlife; for instance, in Sabah the WWF persuaded companies using a scientific approach to carry out a High Conservation Value assessment. The WWF shows the companies the historical records of, for instance, the existence of elephant corridors. Conflict has been reduced where companies have calculated the potential cost savings and protect High Conservation Value areas by setting aside some land to protect the wildlife.

### **International organisations involved in NCA**

Malaysia is collaborating on NCA with the UN Statistics Institute for Asia and the Pacific and UNESCAP, international non-profit organisations such as WWF and well known international and national universities.

### **Challenges with data:**

- Issues of data availability and quality.
- No centralised system to store biodiversity and forestry data (although there are plans to establish a National Biodiversity Centre).
- Data coordination across 3 regions – Peninsular, Sabah and Sarawak. Under the federal constitution biodiversity and forestry are under state jurisdiction.
- Detailed breakdown information is not available by industry.
- Data from various agencies, for different purposes, need to be standardised and coordinated.

### **Capacity:**

- Staff at DOSM have had limited training and technical assistance and implementation guidance is needed.
- No transparent mechanism to increase the confidence of the private sector, which is reluctant to contribute further since it is not included in the government trust fund.

### **Financial:**

- Lack of financial resources for DOSM to produce accounts.
- Further knowledge needed on how financial resources can be most effectively utilised.

## **MYANMAR**

### **Status of NCA development**

There has been significant support provided to Myanmar to conduct ecosystem assessments and to develop tools to account for natural capital. This was developed based on the request of the former president of Myanmar who asked to identify areas that needed to be protected. Based on this request, the natural capital project of Stanford University produced a series of natural capital maps in 2015 and continued working with the Ministry of Finance and Planning, which became the focal point for NCA. Together the team has started upgrading the System of National Accounts. WWF was requested to incorporate NCA into the government system. So far, some aspects of the SEEA have been developed, but it is not fully connected to the national accounting system. WWF worked with the UK Department for International Development and other development partners to support the Ministry of Finance and Planning with NCA in 2017-18. However, since then NCA has slowed down.

## **Government policies and institutions for NCA**

The government of Myanmar has a new policy document known as the *National Environmental Policy of Myanmar*, which provides long-term, strategic guidance for achieving a sustainable future for the country (Government of the Republic of the Union of Myanmar 2019). One of the guiding principles is that environment and natural resource management will recognise the critical roles that Myanmar's natural capital and ecosystem services play in the country's society and economy (Government of the Republic of the Union of Myanmar 2019), however, there is no explicit mention of NCA.

## **Overview of environmental statistics**

With some international support from the Forest Department and partners from the Natural Capital Project at Stanford University and the Center for Climate Systems Research at Columbia, WWF with the government of Myanmar has developed the InVEST tool, which is used to map and quantify the biophysical provision of ecosystem services. The tool is helping the country map where and how its natural capital contributes to clean and reliable drinking water sources, reduced risks from floods inland and storms along the coasts, and maintaining the functioning of reservoirs and dams by preventing erosion (Mandle et al. 2016).

## **International organisations involved in NCA**

WWF is supporting the government to assess their assessment capacity to collect and make a use of the natural capital data and mainstream the information into policy processes. In 2016, WWF published a report on the connection of natural capital to the economy, explaining how the environment affects the future of the country. In 2018, UNESCAP developed a report on how to conduct data dissemination.

## **Challenges**

There are different initiatives that provide some spatial data, such as the Myanmar biodiversity atlas, but their use is limited.

- It is difficult to translate the information into government relevant policies.
- There is a lack of understanding of NCA and where to start.
- Training and inventory focus on environmental statistics with no connection to financial budgeting systems.

## **Data:**

- Companies cannot use the environmental portal because there is no map that can be overlaid to result in a meaningful analysis.
- There is a lack of data, and in many cases, it is not possible to compile data that are not harmonised, and it is too expensive to recollect data that can be aggregated.
- Pilot forest accounts in the form of a spreadsheet have significant missing information, especially in the services value (timber extraction) – there is no value on carbon, flood risk reduction and tourism sector.

## **Capacity:**

- There is a limited capacity to improve public awareness so that the government can explain the benefit of protecting natural capital for people and environment.
- With the support of some organisations, the country can integrate information into a budgeting and national accounting system. The information is designed for an environmental audience, so it is less user-friendly/appropriate for other key actors, especially economic decision makers that determine the budget and fiscal policies.

## THE PHILIPPINES

### Status of NCA development

The Philippines is one of the few countries that implemented NCA in the 1990s and early 2000s, supported by some international donors such as USAID. The two major Philippine initiatives in environmental accounting were the Environmental and Natural Resources Accounting Project (ENRAP) and the Philippine Economic-Environmental and Natural Resources Accounting (PEENRA) Project. Both started in the 1990s and continued to about 2000. ENRAP was led by the Department of Environment and Natural Resources, funded by USAID, focusing on data use for public policy. PEENRA, which started later, was implemented by the National Statistical Coordination Board, which used the SEEA framework for environmental accounting, with the UN providing financial and technical support. As a result of this early initiative, considerable government capacity and technical skills remain, and the Philippines are therefore in a position to provide insights to other countries in the region.

The Philippines is one of WAVES core implementing countries. The WAVES initiative has identified the following priority areas for local NCA: minerals, mangroves, and land and ecosystem accounts at two identified sites: Southern Palawan and the Laguna Lake basin. So far, initial physical mineral accounts have also been produced for gold, copper, nickel and chromium, from 2000 to 2012. In terms of ecosystem accounts for Laguna Lake, it is proposed to include the following categories: (1) a land account containing land cover and changes; (2) an ecosystem condition account indicating various water quality indicators, soil types, changes in bathymetry, and sediment loading; (3) an ecosystem production account looking at the flow of ecosystem services like fishery production, water supply, flood retention, and soil erosion regulation; and (4) an ecosystem asset account focusing on water and fish stock. Accounts for Southern Palawan consist of land cover accounts by class and ownership; ecosystem condition accounts for terrestrial and coastal ecosystems and hydrological services; and ecosystem production accounts for upland, lowland, and coastal ecosystems. The following outputs have been accomplished for both ecosystem accounts: a data gap and availability analysis; the consolidation of secondary data into a geospatial database; draft technical reports for initial set of accounts; and the development of detailed work plans.

In the Philippines WAVES demonstrates the implementation of accounts in a local area and how the secondary data that is collected can be managed. The government, led by the National Economic and Development Authority (NEDA), has expressed interest in integrating the local accounts into the government system and scaling this up to more sites. The government of the Philippines has a high latent capacity in NCA from previous initiatives, while academic and private organisations have the necessary skills for ecosystem accounting. WAVES has supported extensive capacity building through training and hands-on workshops on natural capital and ecosystem accounting covering concepts, data compilation, modelling, account compilation and policy analysis and uses. Training participants have included the Philippine Statistics Authority, regional statistics offices, NEDA, the Department of Environment and Natural Resources, the Palawan Council for Sustainable Development and the Laguna Lake Development Authority.

To continue the work initiated by WAVES the country proposed a grant from the GEF, which was approved by the GEF7 at the end of 2019. The project funded by the GEF aims to establish NCA in the protected areas of one large landmass, using a landscape approach. This project expects that NCA will be extended to cover the Tourism Satellite Account. One plan is to integrate PES into tourism activities. The Philippines' Planning Bureau under the Statistical Department supervises this project.

### Government policies and institutions for NCA

The WAVES lead government agency is NEDA. The WAVES Country Steering Committee comprises: representatives from the Department of Budget and Management – designated as vice-chair; Department of Finance; Department of Environment and Natural Resources; Department of Agriculture; Philippine Statistics Authority; Climate Change Commission; Office of the Presidential Adviser on Environmental Protection; and the Union of Local Authorities of the Philippines. In the Philippines the Ministry of Agriculture is in charge of marine resources related to food security, that is, fisheries. There is now a natural capital roadmap led by the Philippines Statistical Authority with an environmental accounts department.

## **International support for NCA**

Additional donor support to WAVES in the Philippines is provided by the Australian Bureau of Statistics (ABS), the Australian Agency for International Development (AusAID) and the European Space Agency (ESA). ABS and AusAID provide technical support and training, and ESA has provided satellite imagery and analysis for the two ecosystem accounts. There are also a number of ongoing World Bank projects supporting ecosystem management and valuation (e.g. covering forest, coastal resources and coral reefs).

## **Challenges**

Despite the Philippines' relatively long engagement with NCA and WAVES support, capacity building is still a priority to develop a pool of expertise in the compilation and application of the SEEA across sectors and agencies. High turnover in the government has interrupted the continuity of NCA development in the Philippines.

To engage private sector actors and communities, their awareness of NCA needs to be improved. The private sector, notably mining industries, which are causing so much damage, needs to be encouraged to mainstream NCA into its projects. An environmental safeguard is needed to limit these industries' damage to natural capital. Current environmental safeguards are not very effective. There are also safeguards in the energy sector that apply to geothermal, solar, wind and other non-renewable energy sites in protected areas.

Alternative livelihoods for small businesses and local communities are needed so that they do not need to rely on natural resources. Local communities also need financial support through a programme of biodiversity-friendly enterprises and livelihoods in the area to help them to move away from destructive activities.

## **SINGAPORE**

### **Status of NCA development**

Singapore is a city-state, which has only recently embarked on developing a natural capital framework for the nation. It has funded a three-year research project to build scientific evidence on which to base this framework. This is a collaborative research project supported by the National Research Foundation and the Prime Minister's Office. Currently the project is focusing on data collection.

### **Government policies and institutions for NCA**

The concept of ecosystem services that underpin natural capital in cities are embedded in measures implemented by the Singapore government such as the Singapore Index on Cities' Biodiversity (or City Biodiversity Index) and targets in the Sustainable Singapore Blueprint (2015) overseen by the Ministry of the Environment and Water Resources. The Housing and Development Board (HDB), which is responsible for creating living spaces for citizens, has adopted a Biophilic Town Framework to guide the design of housing areas that draws heavily on ecosystem services concepts and indicators.

### **Statistics**

The Natural Capital Singapore project is currently the focal point of Singapore's natural capital research activities and engages closely with the Government of Singapore. It is made up of an interdisciplinary team of architects, biologists, ecologists, economists, geographers, and software engineers from Singapore ETH Centre, the National University of Singapore, Nanyang Technological University, the National Parks Board's Centre for Urban Greenery and Ecology, and ETH Zurich. Natural Capital Singapore is supported by a grant from the National Research Foundation (part of the Prime Minister's Office). The project is in the final stages of analysing data. It has explored the novel use of satellite and social media data and utilised social surveys and participatory workshops to elucidate the value or importance of ecosystem services to people. The project is also developing a prototype 3D decision support tool to integrate the fine-scale and complex 3-dimensional data characteristic of cities into decision-making. Some research outputs are already provided on the project website [www.naturalcapital.sg](http://www.naturalcapital.sg).

### **Challenges**

- Data availability and access.



## THAILAND

### Status of NCA development

Thailand has been developing NCA for a while and has recently developed a roadmap. The Ministry of Environment has delivered several presentations on NCA and a number of people have attended training in Japan as well as a three-day conference at UNESCAP. However, work to actually build SEEA accounts has not yet started. Thailand's National and Economic Development Plan (2012-2016) expresses a strong demand for the development of NCA.

More recently Thailand received US\$2 million from the GEF to support a 4.5-year project implemented by the Office of National Environmental Policy (ONEP). The project is currently focusing on two sectors linked to natural capital: tourism and the water sector. It aims to set up a regulatory framework to incorporate NCA by involving private businesses and assessing the value of the natural capital in these two sectors, for example calculating how much waste water comes from the hotel trade and calculating the cost of water use. The project is spending the first year on a baseline study. In parallel there is also a project known as BIKAM, which is related to ecosystem assessment. BIKAM is doing an assessment in Talutao National Park and the Eastern Forest Complex.

### Government policies and institutions for NCA

NESDB (National Social and Economic Development Board) is responsible for developing statistical indicators. The National Statistical Office is responsible for generating national accounts. Other important institutions are the Ministry of Natural Resources and Environment, the Ministry of Information and Communication Technology and the Ministry of Agriculture and Cooperatives.

### Overview of environmental statistics

A National Environmental Performance Assessment Report was prepared for Thailand in 2008 by the Ministry of Natural Resources and Environment (Department of Environmental Quality Promotion), the UNEP Regional Resources Centre for Asia and the Pacific, ADB, the Institute for Global Environmental Strategies (IGES), and the National Institute for Environmental Studies. It was prepared as part of the National Performance Assessment and Subregional Strategic Environment Framework (SEF II) project led by ADB and UNEP. It reports indicators on the state of each of the country's resources under "environmental concern", their relation to economic development, and also provides conclusions and recommendations (MNRE 2008). The report's main aim was to serve as an evaluation tool that would promote greater transparency in management policies as well as the continuation of policy dialogue on sustainable development.

### International support for NCA

ADB, UNESCAP and UNDP have been active in supporting NCA in Thailand.

### Challenges

Capacity issues are the main bottleneck. There are a limited number of environmental economists with practical experience. Other challenges include the fragmentation of programmes and strategies, lack of horizontal cooperation among government agencies, political instability, corruption and distrust of government.

## VIET NAM

### Status of NCA development

In 2013 the Government of Viet Nam developed *The Viet Nam Natural Capital Accounting Roadmap up to 2020*, which focuses on six priority sectors (forestry, land, water, waste, fisheries and minerals/energy). The Roadmap's aim is to prepare for NCA by setting out the necessary steps to fulfil the objective of an integrated national accounting framework, in support of a green economy and sustainable development in Viet Nam. The Roadmap built on the development of a forest satellite account supported by a World Bank Technical Assistance project. This project-built expertise in NCA and promoted both the creation of a cross-sectorial commitment and an institutional structure to develop further national accounts. The following priority areas for NCA development were identified: (1) further development of the forest satellite accounts; (2) a pilot land account in the central highlands; and (3) water accounts.

More recently UNSD and UNEP have been working with the General Statistics Office and key stakeholders to develop a NCA Action Plan for Viet Nam (UNSD and UNEP, 2015). The Action Plan identifies ecosystem extent (land cover) accounts, water accounts, biodiversity accounts, carbon stock accounts and ecosystem services supply and use accounts (especially with respect to carbon sequestration, water provision and regulation, fish provision and erosion control) as priority areas and recommends an institutional structure for NCA.

Most of the projects above are completed and the new batch of support to continue the work is at an early stage of development. The WAVES 2.0 project focused on coastal areas in 2020. Under UNEP, Viet Nam brings NCA to the provincial level, working with two wetland areas in two provinces. The project aims to inform policymakers about the benefits they get with or without protected areas.

Compared with the Philippines, Thailand and Indonesia, Viet Nam is still further behind in receiving GEF support. The GEF project is still at the stage of the concept note, which is being developed by the Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE) under the Ministry of Natural Resources and Environment (MONRE). It proposes a project proposal for US\$1.7 million for three years, focusing on marine and coastal areas.

### Government policies and institutions for NCA

As stipulated in Viet Nam's Green Growth Strategy (No. 1393/QĐ-TTg) and reiterated in the Viet Nam Green Growth Action Plan (No: 403/QĐ-TTg), MONRE will lead on NCA. Other key institutions are the Ministry of Planning and Investment (MPI), which has a coordinating role for implementing green growth and its General Statistics Office, which is tasked with deriving a Green GDP index. The Ministry of Finance, which shares responsibilities for budget allocation under the Socio-Economic Development Plan with MPI, is also key to the NCA agenda.

ISPONRE established the institutional arrangements to implement the WAVES Technical Assistance project, including the inter-ministerial NCA Policy Working Group and the Data Working Group. The NCA Policy Working Group coordinated by ISPONRE consists of 11 agencies and was set up to ensure that the accounts proposed in the Roadmap align with key economic policies. ISPONRE has set up a natural capital platform for Viet Nam: <https://www.naturalcapital.vn/>

### Environmental statistics

As part of the WAVES Technical Assistance a detailed review of forest data was undertaken to determine which forest accounts could be developed and the key data gaps. The review concluded that existing data are not sufficient and are inconsistent across the data sources. While comprehensive forest area data are available, input data for other accounts such as timber, carbon sequestration and other environmental services are limited. The Management Information System for Forestry Sector in Viet Nam (FORMIS) database will potentially be an additional key data source. At present FORMIS operates with restricted access.

In addition, the NCA Roadmap provides an overview of data availability for priority accounts (land, water, fisheries and minerals). For the development of a land account satellite data for land cover/land use is available from SPOT/LANSAT. Viet Nam holds cadastral land cover and land use data, although data quality is a concern. According to a World Bank 2013 report, between 70% and 90% of records for privately held land are readily identifiable from maps in the registry, and less than 50% of ownership information is up to date. Land prices set by the state are between 10% and 70% of the market price. Viet Nam has a register of businesses but it only records data for some 300,000 businesses, which is a very small sample of the total number of businesses. However, this may cover a relatively large proportion of GDP. Household data from the census is available. There is limited public access to land information.

Viet Nam does not have a complete overview of its mineral reserves due to limited capacity in survey and mapping, hence mineral reserves are at best estimations. Data are available on the volume of minerals produced annually, demand, major operating companies, the location of facilities, annual capacity, amount of labour and trade value. Data on the economic and social impacts of mining are lacking.

### **International support for NCA**

Viet Nam has worked with the World Bank, ABS (through WAVES) and UNSD. UNEP is setting up a global initiative on NCA, with 10 participating countries including Viet Nam. In terms of Ecosystem Valuation, GIZ has an ongoing programme and forthcoming initiatives are planned by UNDP and ADB.

### **Challenges**

According to the NCA Roadmap key areas for development are:

- **Broad awareness raising and training programmes** at the central and provincial level to build support for NCA initiatives. Training is required in NCA methodology, with training in valuation methods considered to be a priority.
- **Institutional strengthening and collaboration.** Collaboration among line ministries/sectors such as MONRE, the Ministry of Agriculture and Rural Development, the Ministry of Construction, the Ministry of Industry and Trade, MPI and the Ministry of Finance is crucial to the successful implementation of the Roadmap and institutional strengthening and support is required to ensure effective collaboration and data sharing.
- **Data collection, rationalisation and generation.** A detailed review of data to inform the various accounts is required in order to properly assess the feasibility of generating accounts within the proposed timescales. Rationalisation of data is required to ensure consistency across data sources. Where key data is lacking, new surveys will need to be initiated. New databases will need to be established to support the accounts.

**Monitoring and assessment** frameworks need to be developed to track progress and ensure the NCA agenda is met in a timely manner.

## Annex B: List of consulted stakeholders

Name	Position	Organisation
Benchamaporn Wattanatongchai	Environmental Officer, Biodiversity Management Division	Office of Natural Resources and Environmental Policy and Planning (ONEP)
Constant Van Aerschot	Director	WBCSD (World Business Council for Sustainable Development)
Fifin Nopiansyah	Head of section wild animal Directorate Conservation Biodiversity	Ministry of Environment and Forestry, Indonesia
Hanna Helsingen	Sustainable Infrastructure Advisor	WWF-Myanmar (former Green Economy Programme Manager, WWF-Myanmar)
Ikram Bin Abdul Halim	Principal Assistant Secretary	Ministry of Energy and Natural Resource, Ministry
Indah Budiani	Executive Director	Indonesia Business Council for Sustainable Development
Inga Makusheva	Deputy Director (Programme and Governance)	Myanmar Centre for Responsible Business (MCRB)
Jacqueline T. Miel	Agriculture, Natural Resources and Environment Staff	Philippines
Diane Llanto	Agriculture, Natural Resources and Environment Staff	Philippines
Jian Jun Lee and Nissa	Consultants	WAVES Project in Indonesia and Philippines
Justine Saunders	Project Coordinator	Natural Capital Singapore
Khairul Naim Adham PhD	Deputy Under Secretary (forestry)	Ministry of Energy and Natural Resource, Malaysia
Kim Thi Thuy Ngoc	Head, Division of Science and International Cooperation	Institute of Strategy, Natural Resource and Environment (ISPONRE), Viet Nam
Kim Thi Thuy Ngoc (Ms.)	Head, Division of Science and International Cooperation	Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE)
Kuswandono	Director of National Park Ciremai	Ministry of Environment and Forestry, Indonesia
Laksmi Lrama	Head of Policy and Climate Change	WWF Malaysia
Liaw Lin Ji	President	Bruwild, Brunei Darussalam
Mariane Delos Angeles	Expert	ASEAN Centre for Biodiversity (ACB)

Name	Position	Organisation
Michael Bordt	Consultant	UNEP Statistics Division, Bangkok
Makiko Yashiro	Programme Officer/Regional Coordinator for Ecosystem Management Sub-programme	UNEP in Thailand
Meriden Maranan	Biodiversity Management Bureau	Department of Environment and Natural Resources, Philippines
Mohd Nazrul Bin Menhat	Principal Assistant Secretary, Biodiversity and Forestry Management Division	Ministry of Energy and Natural Resources, Malaysia
Muhd Daud Abdullah	Operator	Bird watching ecotourism, Brunei Darussalam
Nyi Kyaw, PhD	Director General, Forest Department	Ministry of Natural Resources and Environmental Conversation, Myanmar
Rachmad Firdaus	Deputy Director for Environmental Damage Control	Coordinating Ministry of Economic Affairs, Indonesia
Rina Maria Rosales	Vice Director	Resources, Environment, and Economics Centre
Ronggo Bayu Widodo	Head of Section of Control on Conservation Area Management – Directorate of Conservation Area	Ministry of Environment and Forestry, Indonesia
Sai Than Lwin	Sustainable Infrastructure Officer	WWF Myanmar
Samlan Paseutkhamla	Director, Division of Economic Integration	Ministry of Agriculture and Forestry, Department of Planning and Finance, Lao DPR
Shirley Hee	National coordinator for AWC (Asia Wetland Centre)	Ministry of Environment, Brunei Darussalam
Somawan Sukprasert	ONEP (Department of Policy and Planning)	Ministry of Environment and Natural Resources (MONRE), Viet Nam
Srey Sun Leang	Director of Department of Freshwater Wetlands Conservation	Ministry of Environment, Cambodia
Taswin Munir	Consultant	GIZ Indonesia
Van Truong Tran	Faculty of Geography	VNU, University of Science, Hanoi, Viet Nam
Vanda	Executive Director	Greenomics, Indonesia

# REFERENCES

- Abano, I. V. 2020. "Coronavirus outbreak may spur Southeast Asian action on wildlife trafficking." <https://earthjournalism.net/stories/coronavirus-outbreak-may-spur-southeast-asian-action-on-wildlife-trafficking-0>
- Association of Bankers of Cambodia. 2019a. "Cambodian Sustainable Finance Principles Implementation Guidelines." Phnom Penh, Cambodia. <https://www.ifc.org/wps/wcm/connect/8ce9ddc0-2422-4e69-aa8b-e4f3c8cc3eec/Cambodia+SF+Principles+-+Implementation+Guidelines.pdf?MOD=AJPERES&CVID=mGdMKuz>
- Association of Bankers of Cambodia. 2019b. "Cambodian Banks Adopt Sustainable Finance Principles." <https://www.ifc.org/wps/wcm/connect/409af30e-ce39-47a0-beb5-210d126cce0ePress+Release+Cambodia+banks+adopt+Sustainable+Finance+Principles++March+%E2%80%8B29+March+2019.pdf?MOD=AJPERES&CVID=mDJN9HB>
- ASEAN Centre for Biodiversity. 2017. ASEAN Biodiversity Outlook 2. Philippines. [http://chm.aseanbiodiversity.org/abo2/abo2\\_web.php](http://chm.aseanbiodiversity.org/abo2/abo2_web.php)
- ASEAN Food Industries. 2020. Food Value Chain Seminar. <http://afh-jp.com/en/project/>
- ASEAN. 2020a. "Economic Impact of COVID-19 Outbreak on ASEAN". Jakarta, Indonesia. [https://asean.org/storage/2020/04/ASEAN-Policy-Brief-April-2020\\_FINAL.pdf](https://asean.org/storage/2020/04/ASEAN-Policy-Brief-April-2020_FINAL.pdf)
- ASEAN Post. 2020b. "Tackling plastic waste pollution in ASEAN." <https://theaseanpost.com/article/tackling-plastic-waste-pollution-asean>
- ASEAN. 2019a. Joint Ministerial Statement of the 37 ASEAN Ministers on Energy Meeting. [https://asean.org/storage/2019/09/AMEM37\\_JMS-Final.pdf](https://asean.org/storage/2019/09/AMEM37_JMS-Final.pdf)
- ASEAN 2019b. "15th ASEAN Ministerial Meeting on the Environment and the 15th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution." <https://asean.org/15th-asean-ministerial-meeting-environment-15th-meeting-conference-parties-asean-agreement-transboundary-haze-pollution/>
- ASEAN. n.d.. ASEAN Standards for Organic Agriculture. Jakarta, Indonesia. [https://www.asean.org/wp-content/uploads/images/Community/AEC/AMAF/OtherDocuments/ASEAN%20STANDARD%20FOR%20ORGANIC%20AGRICULTURE%20\(ASOA\).pdf](https://www.asean.org/wp-content/uploads/images/Community/AEC/AMAF/OtherDocuments/ASEAN%20STANDARD%20FOR%20ORGANIC%20AGRICULTURE%20(ASOA).pdf)
- ASEAN. 2018a. ASEAN Investment Report 2018: Foreign Direct Investment and the Digital Economy in ASEAN. Jakarta, Indonesia. [https://unctad.org/system/files/official-document/unctad\\_asean\\_air2018d1.pdf](https://unctad.org/system/files/official-document/unctad_asean_air2018d1.pdf)
- ASEAN. 2018b. "Nature Based Tourism – ASEAN sustainable tourism awards." Jakarta, Indonesia.
- ASEAN. 2017. ASEAN Herbal and Medicinal Plants. Jakarta, Indonesia. <https://asean.org/storage/2018/01/55.-December-2017-ASEAN-Herbal-and-Medicinal-Plants.pdf>
- ASEAN. 2016. Pakse Declaration on ASEAN Roadmap for Strategic Development of Ecotourism Clusters and Tourism Corridors. Cambodia. <https://asean.org/wp-content/uploads/2016/08/Pakse-Declaration-on-Ecotourism.pdf>
- ASFI. 2020. "Partners: Knowledge Partners." <https://www.asfi.asia/copy-of-partners>

- Asian Development Bank. 2015. "Investing in Natural Capital for a Sustainable Future in the Greater Mekong Subregion." Manila, Philippines.  
<https://www.adb.org/publications/investing-natural-capital-sustainable-future-gms>
- Bajpai, P. 2019. "Emerging Markets: Analyzing The Philippines' GDP."  
<https://www.investopedia.com/articles/investing/091815/emerging-markets-analyzing-philippines-gdp.asp>
- Bangkok Post. 2019. Ministry to propose B26bn in subsidies for rubber farmers.  
<https://www.bangkokpost.com/business/1741129/govt-to-propose-26bn-in-subsidies-for-rubber-farmers>
- BAPPENAS. 2019. Low Carbon Development: A Paradigm Shift towards a Green Economy in Indonesia. Jakarta, Indonesia. <https://drive.bappenas.go.id/owncloud/index.php/s/ZgL7fHeVguMi8rG#pdfviewer>
- BBC. 2020. "Coronavirus: Viet Nam bans wildlife trade over pandemic risk."  
<https://www.bbc.com/news/world-asia-53525954>
- Bloomberg New Energy Finance 2020, New Energy Outlook.  
<https://about.bnef.com/new-energy-outlook/>
- Bopp, J. 2017. New strategies of sustainable food production in ASEAN. Heinrich Boll Stiftung.  
<https://www.boell.de/en/2017/08/02/new-strategies-sustainable-food-production-asean>
- BPS – Statistics Indonesia. 2015. "National Plan for Advancing Environmental-Economic Accounting (NP-AEEA)."  
[https://seea.un.org/sites/seea.un.org/files/anca\\_national-plan\\_indonesia.pdf](https://seea.un.org/sites/seea.un.org/files/anca_national-plan_indonesia.pdf)
- BRG. Penetapan indikator kinerja utama badan restorasi gambut tahun (Determination of the main performance indicators for peatland restoration agencies by year) 2018, Pub. L. No. SK no. 15/BRG/KPTS/2018 (2018). Indonesia.
- BSP. 2020. Overview of our Business. <https://www.bsp.com.bn/main/about-bsp/overview-of-our-business>
- Cabral, R. B. et al. 2018. "Rapid and lasting gains from solving illegal fishing." *Nature Ecology & Evolution* 2, 650-658. <https://www.nature.com/articles/s41559-018-0499-1>
- Cargill. 2020. "More and more Indonesian smallholders entering global certified sustainable palm oil market, Cargill continuing its commitment to help farmers thrive."  
<https://www.cargill.co.id/en/2019/more-and-more-indonesian-smallholders-entering-global-certified>
- Carp, B. 2019. "TITAS 2019 focuses on sustainability and innovation. Innovation in Textiles."  
<https://www.innovationintextiles.com/titas-2019-focuses-on-sustainability-and-innovation/>
- Chan, C. et al. 2017. "Fish to 2050 in the ASEAN region." WorldFish Center and International Food Policy Research Institute (IFPRI). [http://pubs.iclarm.net/resource\\_centre/2017-01.pdf](http://pubs.iclarm.net/resource_centre/2017-01.pdf)
- Chen, W. W. F. et al. 2019. WWF Sustainable finance report 2019: Update 2019 sustainable banking in ASEAN.  
<https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/WWF-Sustainable-Finance-Report-Update-2019.pdf>
- Cheng, Y., Yu, L., Xu, Y., Lu, H., Cracknell, A. P., Kanniah, K. & Gong, P. 2019. "Mapping oil palm plantation expansion in Malaysia over the past decade (2007-2016) using ALOS-1/2 PALSAR-1/2 data." *International Journal of Remote Sensing* 40(19), 7389-7408. <https://doi.org/10.1080/01431161.2019.1580824>
- Clavelle, T. 2020. "Global fisheries during COVID-19."  
<https://globalfishingwatch.org/data-blog/global-fisheries-during-covid-19/>
- DeRidder, K. J. & Nindang, S. 2018. "Southeast Asia's Fisheries Near Collapse from Overfishing." The Asia Foundation. <https://asiafoundation.org/2018/03/28/southeast-asias-fisheries-near-collapse-overfishing/>

- EBTKE. 2017. "PLTP Sarulla Unit I Beroperasi."  
<http://ebtke.esdm.go.id/post/2017/03/21/1598/pltp.sarulla.unit.i.beroperasi>
- Economist. 2019. "The palm-oil industry's effort to curb deforestation has lots of flaws."  
<https://www.economist.com/asia/2019/03/07/the-palm-oil-industrys-effort-to-curb-deforestation-has-lots-of-flaws>
- ETH. 2020. "Assessing Singapore's Natural Capital."  
<https://plus.ethz.ch/research/forschungsprojekte/Singapore.html>
- EU FLEGT (2017) The Indonesia-EU Voluntary Partnership Agreement.  
<https://www.euflegt.efi.int/background-indonesia>
- European Parliament. 2019. "Environmental impact of the textile and clothing industry: What consumers need to know."  
[http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS\\_BRI\(2019\)633143\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf)
- European Union. 2020. Biodiversity Strategy and Action Plan. [https://ec.europa.eu/environment/nature/biodiversity/strategy/index\\_en.htm](https://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm).
- FAO and ITPS (2015) Status of the World's Soil Resources (SWSR) – Main Report. Food and Agriculture Organization of the United Nations and Intergovernmental Technical Panel on Soils, Rome, Italy.  
<http://www.fao.org/3/bc599e/bc599e.pdf>
- Forest and Finance. 2020. "Is your money destroying rainforests?"  
[https://www.ran.org/wp-content/uploads/2020/09/FF\\_Briefing\\_2020-EN.pdf](https://www.ran.org/wp-content/uploads/2020/09/FF_Briefing_2020-EN.pdf)
- Frost, W., Laing, J. & Beeton, S. 2014. "The Future of Nature-Based Tourism in the Asia- Pacific Region." *Journal of Travel Research*, 53(6), 721-732.  
[https://www.researchgate.net/publication/270711018\\_The\\_Future\\_of\\_Nature-Based\\_Tourism\\_in\\_the\\_Asia-Pacific\\_Region](https://www.researchgate.net/publication/270711018_The_Future_of_Nature-Based_Tourism_in_the_Asia-Pacific_Region).
- Gaia Discovery 2017. "Asia Pacific Ecotourism Trends & Sustainable Tourism Development."  
<https://www.gaiadiscovery.com/travel-transportation/asia-pacific-ecotourism-trends-sustainable-tourism-developme.html>
- GEF. 2018. Indonesia National Dialogue. <https://www.thegef.org/events/indonesia-national-dialogue>
- Global Alliance on Health and Pollution. 2019. <https://gahp.net/pollution-and-health-metrics/>
- Government of Indonesia. 2019. Insentif untuk Daerah Penjaga Lingkungan (Incentives for Environmental Protection Areas).
- Government of the Republic of the Union of Myanmar. 2019. National Environmental Policy of Myanmar.  
[https://www.mm.undp.org/content/myanmar/en/home/library/environment\\_energy/national-environmental-policy-of-myanmar.html](https://www.mm.undp.org/content/myanmar/en/home/library/environment_energy/national-environmental-policy-of-myanmar.html)
- Hasnan, L. 2019. Organic farming in Southeast Asia, ASEAN Post.  
<https://theaseanpost.com/article/organic-farming-southeast-asia>
- The Heritage Foundation (2019). Brunei Darussalam. <https://www.heritage.org/index/country/brunei>
- Holzhaecker, R., and Agussalim, D. 2019. Sustainable Development Goals in Southeast Asia and ASEAN: National and Regional Approaches. London and Boston: Brill.
- IDN Financials. 2019. "OJK and IFC will continue to develop sustainable financial programs."  
<https://www.idnfinancials.com/news/29514/ojk-ifc-continue-develop-sustainable-financial-programs>



International Energy Agency (IEA). 2020. "CO2 emissions: Short-term shock does not guarantee sustained decline." <https://www.iea.org/articles/the-impact-of-the-covid-19-crisis-on-clean-energy-progress>

International Energy Agency (IEA). 2019. "World Energy Outlook 2019. Energy Information Agency." <https://www.iea.org/reports/world-energy-outlook-2019>

Institute for Global Environmental Strategies (IGES). 2014. "Governance and National Sustainable Development Strategies: Implications for the Sustainable Development Goals." <https://www.iges.or.jp/en/pub/governance-and-national-sustainable/en>

International Renewable Energy Agency. 2018. "Renewable Energy Market Analysis: Southeast Asia." <https://www.irena.org/publications/2018/Jan/Renewable-Energy-Market-Analysis-Southeast-Asia>

Invest ASEAN. 2020. "Textile and Apparels: Clothing the world." <http://investasean.asean.org/index.php/page/view/textiles-and-apparels>

Ismail, M. 2018. "Protecting Indonesia's marine resources." ASEAN Post, 11 November 2018. <https://theaseanpost.com/article/protecting-indonesias-marine-resources>

IUCN. 2018. "Thailand biodiversity multi-sectoral platform soft-launched at Convention on Biological Diversity COP 14." <https://www.iucn.org/news/asia/201811/thailand-biodiversity-multi-sectoral-platform-soft-launched-convention-biological-diversity-cop-14>

Jaya, P., & Chin, M. 2017. "The "siren call" of marine ecotourism in ASEAN. ASEAN Post, 9 Sep 2017." <https://theaseanpost.com/article/siren-call-marine-ecotourism-asean>

Jusoh, S., Hamanaka, S., Ramli, I. M. & Narjoko, D. 2019. "Towards an Open Services and Open Investment Environment in ASEAN." In P. Intal & M. Pangestu (Eds), *Integrated and Connected Seamless ASEAN Economic Community*. Jakarta, 96-126. [https://www.eria.org/uploads/media/10.AV2040\\_VOL4\\_Towards\\_an\\_Open\\_Services.pdf](https://www.eria.org/uploads/media/10.AV2040_VOL4_Towards_an_Open_Services.pdf)

Kingdom of Cambodia. 2010. "The National Green Growth Roadmap." <https://policy.asiapacificenergy.org/sites/default/files/The%20National%20Green%20Growth%20Roadmap.pdf>

Kusano, E. 2018. Food Value Chain in ASEAN: Case Studies Focusing on Local Producers. [http://www.eria.org/uploads/media/RPR\\_FY2018\\_05.pdf](http://www.eria.org/uploads/media/RPR_FY2018_05.pdf)

Latib, A.T, Rappek, N.H.M., Omar, S.R.S., and Naqiah, N. 2013. "Strengthening Statistical Compilation and Usage of Relevant Statistics in Malaysia." Second National Statistical Conference. MyStats 2013.

Lectura, L. 2019. Philippines's ranking in geothermal energy generation slides to third after Indonesia. <https://businessmirror.com.ph/2019/10/03/philippines-ranking-in-geothermal-energy-generation-slides-to-third-after-indonesia/>

LokhinGroup. 2020. ASEAN textile and clothing industry has more business opportunities. [http://www.lokhin168.com/en/news\\_view.php?nid=56](http://www.lokhin168.com/en/news_view.php?nid=56)

Ly, T. P. & Bauer, T. 2014. Ecotourism in mainland Southeast Asia: Theory and Practice. *Tourism, Leisure and Global Change*, 1 (2014). <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.903.8403&rep=rep1&type=pdf>

Mandle, L., Sa, Wolny, S., Hamel, P., Helsingen, H., Bhagabati, N. & Dixon, A. 2016. Natural Connections: How Natural Capital Supports Myanmar's People and Economy, 72. [https://d2ouvy59p0dg6k.cloudfront.net/downloads/natural\\_connections\\_web.pdf](https://d2ouvy59p0dg6k.cloudfront.net/downloads/natural_connections_web.pdf)

marketwatch.com. 2019. The Asia & ASEAN Herbal Medicines Market is estimated to hit \$48.18 billion by 2023. <https://www.industryarc.com/PressRelease/1062/Asia-and-ASEAN-Herbal-Medicines-Market-Research.html>

MEA (2005) Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. <https://www.millenniumassessment.org/documents/document.356.aspx.pdf>

Ministry of Environment and Forestry, Republic of Indonesia. 2018. The State of Indonesia's Forest 2018. [http://perpustakaan.bappenas.go.id/lontar/file?file=digital/191959-%5B\\_Konten\\_%5D-Konten%20E2337.pdf](http://perpustakaan.bappenas.go.id/lontar/file?file=digital/191959-%5B_Konten_%5D-Konten%20E2337.pdf)

Ministry of Natural Resources and Environment, Malaysia. 2016. National Policy on Biological Diversity 2016-2025. Kuala Lumpur, Malaysia. <https://www.mybis.gov.my/pb/590>.

Ministry of Natural Resources and Environment, Thailand. 2008. Thailand National Environmental Performance Assessment (EPA) Report. <http://www.gms-eoc.org/resources/thailand-epa>

MONRE. 2012. "Lao Environment Outlook 2012." [https://wedocs.unep.org/bitstream/handle/20.500.11822/8485/-LAO%20Environment%20Outlook%202012-2012Lao\\_EO\\_2012.PDF?sequence=3&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/8485/-LAO%20Environment%20Outlook%202012-2012Lao_EO_2012.PDF?sequence=3&isAllowed=y)

Munthe, B. C., Nangoy, F. & Schmollinger, C. 2019. "Area burned in 2019 forest fires in Indonesia exceeds 2018 – official." Reuters <https://www.reuters.com/article/us-southeast-asia-haze/area-burned-in-2019-forest-fires-in-indonesia-exceeds-2018-official-idUSKBN1X00VU>

Naimoli, S. and Nakano, J. 2018. "Renewable Energy in Southeast Asia." [https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/181012\\_Compendum.pdf?AzQyhvGpePdclpx\\_3VfS54dsSqxts0NJ](https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/181012_Compendum.pdf?AzQyhvGpePdclpx_3VfS54dsSqxts0NJ)

Natural Capital Coalition. 2019. "Seeking Natural Capital Projects: Forest Fires, Haze, & Early-life Exposure in Indonesia." <https://naturalcapitalcoalition.org/seeking-natural-capital-projects-forest-fires-haze-early-life-exposure-in-indonesia/>

Oxfam. 2020. "Dignity Not Destitution: An 'Economic Rescue Plan For All' to tackle the Coronavirus crisis and rebuild a more equal world." (April). <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620976/mb-dignity-not-destitution-an-economic-rescue-plan-for-all-090420-en.pdf>

Philippine Rice Research Institute. 2019. "ASEAN farmers learn to adopt organic farming. Japan ASEAN Integration Fund." <https://jaif.asean.org/beneficiaries-voice/asean-farmers-learn-to-adopt-organic-farming/>

Philippines Statistics Authority. 2019. "GDP posts 6.4 percent growth in the fourth quarter of 2019; 5.9 percent for full-year 2019." <https://psa.gov.ph/nap-press-release/node/145079>

Pitsuwan, S. 2010. "Opening Speech by Dr Surin Pitsuwan, Secretary-General of ASEAN, at the 2nd Conference on Traditional Medicine in AMS." [https://asean.org/?static\\_post=opening-speech-by-dr-surin-pitsuwan-secretary-general-of-asean-at-the-2nd-conference-on-traditional-medicine-in-asean-countries](https://asean.org/?static_post=opening-speech-by-dr-surin-pitsuwan-secretary-general-of-asean-at-the-2nd-conference-on-traditional-medicine-in-asean-countries)

Purnomo, E. P., Ramdani, R., Agustiyara, Tomaro, Q. P. V & Samidjo, G. S. 2019. "Land ownership transformation before and after forest fires in Indonesian palm oil plantation areas." *Journal of Land Use Science* 14(1), 37-51. <https://doi.org/10.1080/1747423X.2019.1614686>

Rakatama, A., & Pandit, R. 2020. "Reviewing social forestry schemes in Indonesia: Opportunities and challenges." *Forest Policy and Economics*, 111, 102052. <https://www.sciencedirect.com/science/article/abs/pii/S1389934119304198>

RECOFTC (2017). Social forestry and climate change in the ASEAN region: Situational analysis 2016. RECOFTC, Bangkok, Thailand. <https://archive.recoftc.org/reports/social-forestry-and-climate-change-asean-region>

- Reuters. 2020. "Viet Nam bans wildlife trade to curb risk of pandemics."  
<https://www.reuters.com/article/uk-vietnam-wildlife-ban/vietnam-bans-wildlife-trade-to-curb-risk-of-pandemics-idUKKCN24P0DX?edition-redirect=uk>
- Roe, D. and Elliott, J. 2006. "Pro-poor conservation: the elusive win-win for pro-poor conservation: the elusive win-win for conservation and poverty reduction?" London: IIED.  
<https://pubs.iied.org/pdfs/G02269.pdf>
- Shortell, P. 2018. "Tip-Toeing Toward Transparency: Jade and Gemstone Sector Disclosures in Myanmar."  
<https://resourcegovernance.org/analysis-tools/publications/tip-toeing-toward-transparency-jade-and-gemstone-myanmar>
- SimeDarby. 2020. "Our sustainability journey."  
<http://www.simedarbyplantation.com/sustainability/our-sustainability-journey>
- Sustainable Herbs 2020. "Is the Herb Industry Sustainable? Retrieved 27 February 2020.  
<http://sustainableherbsproject.com/explore/how-sustainable-is-the-herb-industry/>
- Steele, P and Patel, S. 2020. "Tackling the triple crisis: Addressing debt, climate and biodiversity loss post COVID-19." London: IIED. <https://pubs.iied.org/16674IIED/>
- Tasriah, E. 2013. "Indonesia's Experiences in the Compilation of Environmental-Economic Accounts."  
[http://www.airts.org/sites/default/files/20180328%20-%20SEEA%20Implementation%20in%20Indonesia\\_0.pdf](http://www.airts.org/sites/default/files/20180328%20-%20SEEA%20Implementation%20in%20Indonesia_0.pdf)
- The ASEAN Post Team. 2019. "Fighting illegal fishing."  
<https://theaseanpost.com/article/fighting-illegal-fishing>
- UNEP. 2019. "UN Alliance For Sustainable Fashion addresses damage of "fast fashion."  
<https://www.unenvironment.org/news-and-stories/press-release/un-alliance-sustainable-fashion-addresses-damage-fast-fashion>
- United Nations. 2020a. "Policy Brief: The Impact of COVID-19 on South-East Asia."  
[https://www.un.org/sites/un2.un.org/files/sg\\_policy\\_brief\\_covid\\_south-east\\_asia\\_30\\_july\\_2020.pdf](https://www.un.org/sites/un2.un.org/files/sg_policy_brief_covid_south-east_asia_30_july_2020.pdf)
- United Nations. 2020b. "UN Policy Brief: The Impact of COVID-19 on Food Security and Nutrition."  
[https://www.un.org/sites/un2.un.org/files/sg\\_policy\\_brief\\_on\\_covid\\_impact\\_on\\_food\\_security.pdf](https://www.un.org/sites/un2.un.org/files/sg_policy_brief_on_covid_impact_on_food_security.pdf)
- United Nations. 2017. "Complementarities between the ASEAN Community Vision 2025 and the United Nations 2030 Agenda for Sustainable Development: A Framework for Action."  
[https://asean.org/storage/2017/11/FINAL\\_Complementarities-Report-no-graphic-on-cover.pdf](https://asean.org/storage/2017/11/FINAL_Complementarities-Report-no-graphic-on-cover.pdf)
- UNSD and UNEP. 2015. "National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) in Viet Nam." [https://seea.un.org/sites/seea.un.org/files/anca\\_national-plan\\_vietnam.pdf](https://seea.un.org/sites/seea.un.org/files/anca_national-plan_vietnam.pdf)
- VNA. 2019. "Viet Nam Rubber Group plans FSC certification for rubber forests." Retrieved 8 January 2020.  
<https://en.vietnamplus.vn/vietnam-rubber-group-plans-fsc-certification-for-rubber-forests/153443.vnp>
- WAVES. 2020. "Natural Capital Accounting."  
<https://www.wavespartnership.org/en/natural-capital-accounting>
- WAVES. 2015. "Indonesia Country Report 2015."  
<https://www.wavespartnership.org/en/knowledge-center/waves-indonesia-country-report-2015>
- Wen, C. L. & Viswanathan, K. K. 2016. "Harmful Fisheries Subsidies in Southeast Asia (ASEAN)," 3rd Annual ECoFi Symposium 2016, 18-19 December 2016, Universiti Utara Malaysia, Kedah.  
<http://repo.uum.edu.my/25019/>

- Wilmar. (2018). "Driving Transformation."  
[https://ir-media.wilmar-international.com/app/uploads/2019/08/wilmar\\_sustainability\\_report\\_2018.pdf](https://ir-media.wilmar-international.com/app/uploads/2019/08/wilmar_sustainability_report_2018.pdf)
- World Bank. 2020. "COVID-19 to Impact Lao PDR Growth, Debt in 2020." New World Bank Report. Washington D.C.  
<https://www.worldbank.org/en/country/lao/publication/covid-19-to-impact-lao-pdr-growth-debt-in-2020-new-world-bank-report>
- World Bank. 2018. "Statistical Capacity Building-Change and Reform for the Development of Statistics (STATCAP-CERDAS). Jakarta. <http://documents1.worldbank.org/curated/en/200001494613549590/text/ISR-Disclosable-P106384-05-12-2017-1494613534627.txt>.
- World Bank. 2019. Synthesis Report: Natural Capital Accounts and Policy in Indonesia (WAVES). Jakarta.  
<http://documents1.worldbank.org/curated/en/935331564034831263/pdf/Synthesis-Report-Natural-Capital-Accounts-and-Policy-in-Indonesia.pdf>.
- World Bank. 2005b. "Environment strategy for the World Bank in the East Asia and Pacific Region."  
<http://documents1.worldbank.org/curated/en/603841468751751164/pdf/322280PAPER0EAP1EStrat.pdf>
- WRI. 2019. "Diskusi Publik: Sistem Terintegrasi Neraca Lingkungan dan Neraca Ekonomi (Sisnerling)."  
<https://wri-indonesia.org/id/events/diskusi-publik-sistem-terintegrasi-neraca-lingkungan-dan-neraca-ekonomi-sisnerling>
- World Wide Fund For Nature . 2020a. "Making the Link: Financial Markets and the Environment."  
[https://www.wwf.sg/sustainable\\_finance/](https://www.wwf.sg/sustainable_finance/)
- World Wide Fund For Nature . 2020b. "WWF Sustainable Banking."  
[https://www.wwf.sg/sustainable\\_finance/sustainable\\_banking2/](https://www.wwf.sg/sustainable_finance/sustainable_banking2/)
- World Wide Fund For Nature. 2018. "WWF and VITAS aim to green Viet Nam's textile and apparel sector through improved water management and energy sustainability."  
<https://wwf.panda.org/?337273/WWF-and-VITAS-aim-to-green-Vietnams-textile-and-apparel-sector-through-improved-water-management-and-energy-sustainability>
- World Wide Fund For Nature . 2013. "Learning how to 'InVEST' in Nature's Services in Cambodia."  
[https://wwf.panda.org/wwf\\_news/?209808/Learning-how-to-InVEST-in-Natures-Services-in-Cambodia](https://wwf.panda.org/wwf_news/?209808/Learning-how-to-InVEST-in-Natures-Services-in-Cambodia)
- World Wide Fund For Nature. 2009. "Roadmap to Cambodia's Green Growth."  
[http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf\\_natural\\_capital\\_leaflet\\_en.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf_natural_capital_leaflet_en.pdf)
- Yuniarni, S. 2018. "IFC Invests \$150m in Bank OCBC NISP's Green Bond."  
<https://jakartaglobe.id/news/ifc-invests-150m-in-bank-ocbc-nisps-green-bond>
- Yusof, A. 2019. "Malaysia to cap 6.5 mi ha of palm oil by 2023, New Straits Time.



ASEAN: A Community of Opportunities for All

 ASEAN

 ASEAN

 @ASEAN

 [www.asean.org](http://www.asean.org)



**Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI)**