

MAINSTREAMING BIODIVERSITY CONSERVATION INTO TRADE IN ASEAN

How to turn the tide?

Case study on the countries of Indonesia,
the Philippines, and Vietnam

Author: **Christine Woda, Ph. D.**
Email: cwoda@web.de

February 2023

“The report greatly benefitted from the inputs and peer reviews received and benefitted from inputs provided by UNCTAD, ACB and Helvetas staff. This report was made possible through the support of State Secretariat for Economic Affairs - SECO in the development of this report, produced under UNCTAD’s Global BioTrade Programme: Linking trade, biodiversity and sustainable development. Nevertheless, the views expressed are those of the author and do not necessarily reflect the institutional position of the participating organizations.”

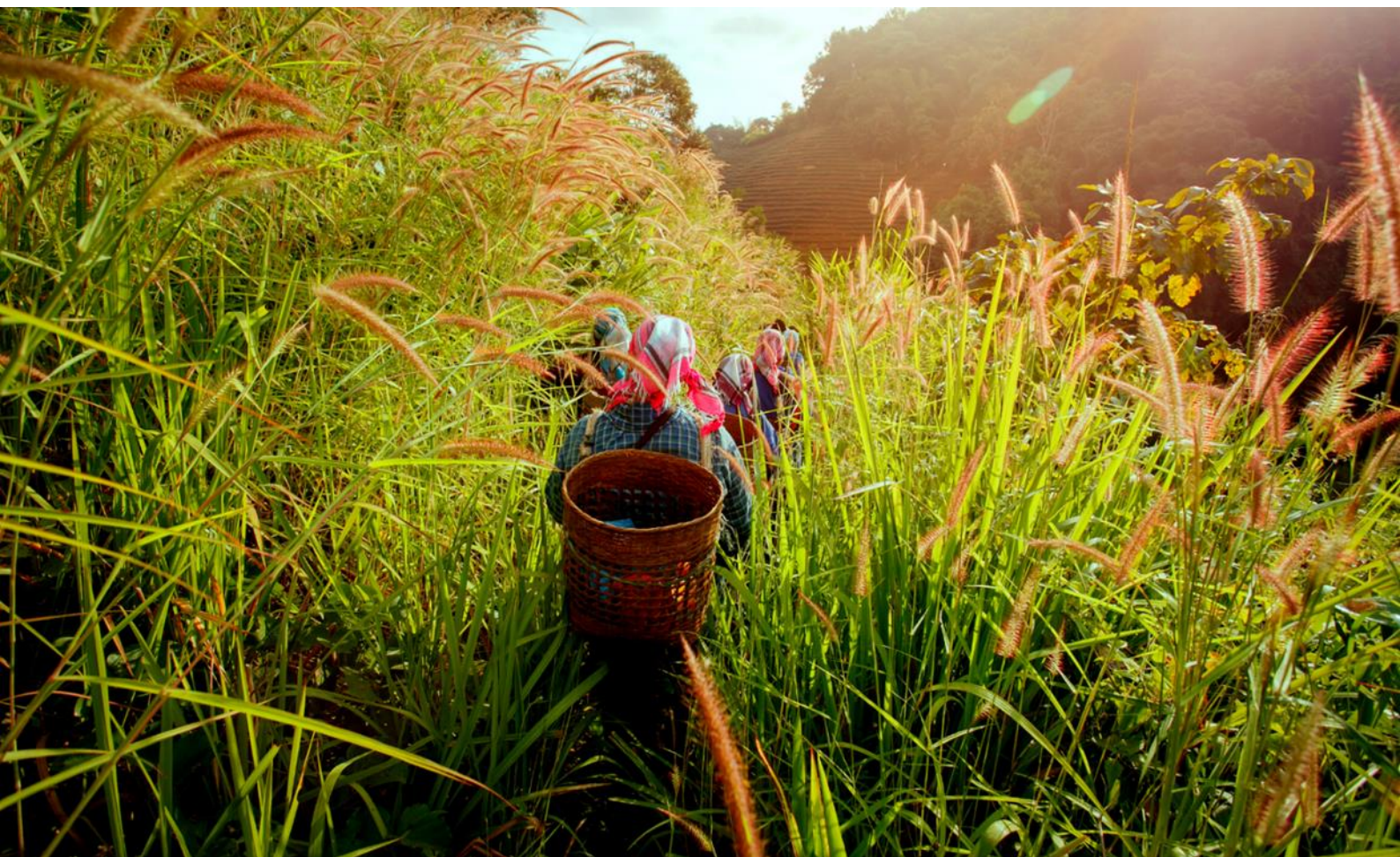
Content

1. Executive summary	5
2. Context and objective of the study	9
3. Methodological remarks	11
3.1 Methodology	11
3.2 Definition of key terms: biodiversity-based products, biotrade and BioTrade	11
4. Results	14
4.1 The role of biodiversity and biotrade in the ASEAN	14
<i>a) Biodiversity hotspots</i>	14
<i>b) Threats for biodiversity in the ASEAN</i>	15
<i>c) Economic relevance of biotrade in the ASEAN</i>	17
<i>d) Agri-Food imports by ASEAN to the EU</i>	20
4.2 ASEAN commitment to biodiversity conservation	21
<i>a) The ASEAN Vision 2040</i>	21
<i>b) International conventions and agreements</i>	21
4.3 National policies and incentives for biodiversity conservation	27
<i>a) Indonesia</i>	27
<i>b) The Philippines</i>	31
<i>c) Viet Nam</i>	35
4.4 Voluntary sustainability standards (VSS) and biodiversity conservation	40
<i>a) Key data of the selected VSS</i>	40
<i>b) Certified products and their potential to contribute to biodiversity conservation</i>	42
<i>c) The focus of selected VSS and its relevance for biodiversity conservation</i>	44
5. Discussion of results	54
6. Conclusions: 7 actions for turning the tide	65
7. Annexes	71

Acronyms

ABS	Access and Benefit Sharing
ACB	ASEAN Center for Biodiversity
AMS	ASEAN member state
ASEAN	Association of Southeast Asian Nations
BAP	Biodiversity Action Plan
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSO	Civil Society Organization
DENR	Department of Environment and Natural Resources
EFT	Ecological fiscal transfer
EOS	European Organic Standard
ESG	Environmental, Social and Governance
FSC	Forest Stewardship Council
FLEGT	Forest Law Enforcement, Government and Trade
GBF	Global Biodiversity Framework
GDP	Gross Domestic Product
GFW	Global Forest Watch
GHG	Greenhouse gases
GMO	Genetically modified organisms
ha	hectare
HCV	High Conservation Value
ITTA	International Tropical Timber Agreement
ITTO	International Tropical Timber Organization
IPCC	Intergovernmental Panel on Climate Change
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPSO	Indonesian Sustainable Palm Oil Certification System
IRCC	Internationally Recognized Certificates of Compliance
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated (fishing)
LEI	Indonesian Eco-labelling Institute
NBSAP	National Biodiversity Strategies and Action Plan
NT	National Target
NTFP	Non-Timber Forest Products
RA	Rainforest Alliance

REDD	Reducing Emissions from Deforestation and Forest Degradation
RSPO	Roundtable on Sustainable Palm Oil
SDG	Sustainable Development Goals
SEEA	System of Environmental-Economic Accounting
TLAS	Timber Legality Assurance System
TraBio	Trade and Biodiversity database of UNCTAD
UEBT	Union for Ethical BioTrade
UNCTAD	United Nations Conference on Trade and Development
VPA	Voluntary Partnership Agreement
VSS	Voluntary Sustainability Standards
WTO	World Trade Organization



1. Executive summary

The primary driver of biodiversity loss is the human food system, especially agriculture and fisheries (IPBES¹). Under its target 18, the post 2020 Kunming-Montreal Global Biodiversity Framework (GBF) seeks to progressively phase out or reform subsidies that harm biodiversity by at least \$500 billion per year up to 2030. At the same time, it aims to scale up positive incentives for the conservation and sustainable use of biodiversity². The objective of this desk-top study is to assess to what extent and in what way biodiversity conservation is currently mainstreamed into trade in the Association of Southeast Asian Nations (ASEAN) region, focusing on Indonesia, Viet Nam, and the Philippines.

The first chapter of provides an overview of the role of the trade of products derived from biodiversity in general for the ASEAN region. This is referred to as biotrade. With its fast economic growth and four biodiversity hotspots, ASEAN is a key player for global biodiversity conservation. Deforestation and illegal, unreported and unregulated (IUU) fishing remain serious issues. About 40% of the ASEAN people depend on the agriculture and forest sector, and biotrade is reported to contribute to 20% of the annual gross domestic product (GDP) of ASEAN member states (AMS) (see World Bank data³). Cambodia and Viet Nam have the highest share of biotrade. Biotrade further plays an important role in generating foreign currency reserves, especially for Cambodia and Viet Nam but also the Lao People's Democratic Republic, Indonesia, Myanmar, and Thailand. According to data from UNCTAD Trade and Biodiversity database (TraBio)⁴, from 2010-2021, biotrade exports increased in

¹ IPBES cited in <https://www.unep.org/facts-about-nature-crisis>

² See CBD press release: <https://prod.drupal.www.infra.cbd.int/sites/default/files/2022-12/221219-CBD-PressRelease-COP15-Final.pdf>

³ <https://data.worldbank.org/>

⁴ <https://unctadstat.unctad.org/EN/biotrade.html>

Viet Nam and Indonesia (25% of the value of all internationally traded goods). The most important biotrade export products are natural ingredients (palm oil), food and beverage products (coffee, cocoa), natural fibers (bamboo, rattan) and wood. The European Union lists in its statistical factsheets on agricultural international trades the import of agriculture products from the ASEAN equivalent to 12.425 million EUR in 2021, mainly palm kernel oils (36%), fatty acids and waxes (18%), tropical fruits, nuts and spices (9%), coffee and tea (8%).

The new ASEAN vision 2040 refers to the dramatic decline of biodiversity and the need for sustainable development to strengthen natural resource management and biodiversity conservation (ASEAN, 2020). All AMS are parties of the Convention on Biological Diversity (CBD). As for other international treaties, not all AMS are parties (e.g. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits from their Utilization is not ratified by Brunei Darussalam, Singapore and Thailand).

The study analyzes the efforts of Indonesia, the Philippines and Viet Nam to mainstream biodiversity conservation through policies and incentives. Indonesia is very advanced in promoting sustainability standards and certification schemes, either as mandatory national systems, or voluntary market-based systems. The government has issued the Regulation on Indonesian Sustainable Palm Oil Certification System (ISPO) which is mandatory for all palm oil plantations. Meanwhile the private sector, through the Roundtable on Sustainable Palm Oil (RSPO) promotes a set of environmental and social criteria. At present, a jurisdictional approach is piloted by RSPO in partnership with the national ISPO. Both certifications include the concept of High Conservation Value (HCV). Indonesia is furthermore the first country worldwide issuing timber licenses based on Forest Law Enforcement, Government and Trade (FLEGT) for the international market. In addition, sustainable fisheries management is mandatory, and efforts are made to eradicate IUU fishing. Indonesia supports organic agriculture, at the same time as promoting an increase per unit productivity to stabilize the agriculture frontier. Indonesia implements specific incentives for environmental protection and disincentives for damages. Payments for Ecosystem Services (PES) are implemented with a focus on watershed and marine areas including the tourism sector. Indonesia implements further ecological fiscal transfers (EFT) to redistribute tax revenues to protected natural areas.

In the Philippines, incentives for biodiversity conservation into trade are also seen. In 2021, a sustainable finance roadmap was developed for green and sustainable growth. There is a database of more than 320 people's organizations with biodiversity-friendly enterprises across the country, but public support is limited. Nonetheless, the Philippine Green Jobs Act refers to employment that contributes to conserving or restoring the quality of the environment. In this context, the establishment of ecosystem areas for community development and natural conservation is fostered, including the promotion of ecotourism at key natural heritage sites. As an archipelagic country, the Philippines places strong efforts on marine biodiversity conservation through the National Fisheries Code and the National Plan of Action against IUU fishing. The government also supports the conservation of agricultural biodiversity, being part of the global initiative on the Conservation of Globally Important Agricultural Heritage that promotes traditional agricultural practices for supporting food security, local livelihoods and agrobiodiversity. Organic agriculture and biodiversity-friendly agricultural techniques are promoted for voluntary adoption. The Philippines Master Plan for

⁵https://agriculture.ec.europa.eu/international/agricultural-trade_en

Climate-Resilient Forestry Development focuses on the rehabilitation and maintenance of degraded mangrove forests and watersheds. PESs are implemented in different forms, but not systematically fostered. The establishment of an Environmental, Social and Governance (ESG) Investments Task Force is foreseen to establish credible Standards and Certification schemes.

Viet Nam is a partner country of the UNCTAD BioTrade Initiative since 2003. It has a progressive policy and legal framework for biodiversity conservation and is the most advanced AMS in access and benefit sharing (ABS) according to data from the CBD⁶. Viet Nam's incentives for biodiversity conservation concentrate on ascribing a value to the natural resources and ecosystem services; several fees for the use of natural resources are in place. The National Strategy for Green Growth aims to develop modern, sustainable, and organic agriculture in compliance with safety standards. It further promotes reforestation, Viet Nam being amongst the global top 10 countries in reforestation. Viet Nam is a REDD+ pioneer country. Forest cover has increased but forest quality and biodiversity remain a challenge, and most reforestations are conducted using exotic tree monocultures with little benefits for biodiversity. The Viet Nam Law on Fisheries promotes sustainable fishery and aquatic biodiversity conservation, and there is a national action plan on preventing, reducing, and eliminating IUU fishing. In addition, aquaculture is promoted and accounts for more than half of the national fishery production, thus reducing the pressure of natural fishing. Viet Nam implements PES schemes for biodiversity conservation with a focus on forest environmental services and water supply. There is an environmental protection tax in place that applies to products that have a negative impact on the environment. The establishment of fees for the protection of fishery resources is on the way. Parts of the funds are channeled for biodiversity conservation. There are further incentives for high-tech agriculture, but these do not necessarily contribute to biodiversity conservation. Viet Nam implements national labelling programs for environment-friendly products. As an incentive, certified entities benefit from reduced corporate income tax and land rent.

This study further analyzes the relevance of selected voluntary sustainability standards (VSS) for biodiversity conservation in ASEAN. Of those selected, the organic standards Ecocert European Organic Standard (EOS) and Naturland production are of highest relevance in ASEAN, followed by VSS for fair trade (Naturland Fair, Fair for Life and For Life). By contrast, only a few VSS focus on the sustainable management of the production system and related biodiversity, such as the Forest Stewardship Council (FSC) for non-timber forest products (NTFP), the joint standard of Union for Ethical BioTrade (UEBT) and Rainforest Alliance (RA) for herbs and spices, and UEBT natural ingredient certificates. The Fair for Wild standard that specifically aims for the sustainable management of wild-harvest species is not applied in any of the three AMS. All of the selected VSS aim to improve environmental and biodiversity protection, but differ fundamentally in whether or not they include safeguards for deforestation, the concept of high conservation value (HCV) areas, measures to pro-actively improve biodiversity conservation (e.g., through a biodiversity action plan), and requirements on the management of wild harvest species. Thus, different impacts can be expected regarding biodiversity conservation.

According to the author's research on the webpages of the certification organizations, The Philippines has the highest number of extended certificates of the selected VSSs for this study, followed by Indonesia. At present, there are 42 biotrade species or species groups

⁶ www.cbd.int/countries/profile

certified in the three AMS under one of the selected VSSs. Of these, 38 species or species groups belong to mainstream commodities, such as coffee, cocoa, tea, rice. By contrast, only four wild-harvested species - so called “botanicals” are covered by certification: siam or benzoin gum (*Styrax tonkinensis*), bamboo, the seeds of the illipe tree (*Shorea stenoptera*) and the nuts of the kukui tree (*Aleurites moluccanus*). The most abundant certified species or species groups are coconut, fruits and seeds of other cultivated trees and shrubs, sugar cane (and to a lesser extent, lemon grass), and vegetables.

Based on the findings, the achievements of the AMS in promoting the mainstreaming of biodiversity conservation in trade are discussed and areas for improvement identified. The conclusions are summarized in seven key actions that should turn the tide in favor of biodiversity conservation in trade:

1. Systematization of experiences and dissemination of best practices and lessons learned in policy dialogues
2. Fostering the economic valorization of biodiversity
3. Adaptation and monitoring of taxes
4. Biodiversity-inclusive environmental impact assessments
5. Sharpening biodiversity in ESG frameworks and national standards
6. VSS with biodiversity minimum criteria and meaningful actions supported by national policy frameworks
7. Increasing consumer awareness and visibility of biodiversity in trade.

2. Context and objective of the study

Biodiversity loss and climate change have become to one of the most serious issues for the future of human mankind. According to UNEP and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)⁷, 66% of the ocean area and 75% of the Earth's land surface are significantly altered by human actions. One million of the world's more than eight million species of plants and animals are threatened with extinction, and 90% of the world's marine fish stocks are fully exploited or overexploited. **The primary driver of biodiversity loss is the human food system, especially agriculture and fisheries**⁸. Agriculture further accounts for 25% of the global greenhouse gas (GHG) emissions. The degraded ecosystems and loss of biodiversity **put people and communities at risk** (Dasgupta, 2021). An increase in the frequency of extreme weather events, pests and diseases, soil degradation, and the loss of pollinators undermine human food security, and the shrinking space for wildlife increases zoonotic diseases⁹. The achievement of the United Nations Sustainable Development Goals (SDGs) to overcome poverty and hunger, to improve health, and to conserve the climate, the aquatically and terrestrial resources is being undermined.

The conservation of biodiversity, addressing climate change and the promotion of an equitable quality of life for all is the mandate of several global initiatives. In December 2022, the member states of the Convention on Biological Diversity (CBD) met at the Conference of the Parties (COP)-15 in Montreal and agreed on the **Montreal-Kunming Global Biodiversity Framework (GBF)** to halt and reverse biodiversity loss¹⁰. The GBF has four long-term goals with 23 targets referring among others to the sustainable management of biodiversity for agriculture or forestry purpose.

However, the CBD has a long history, starting 30 years ago at the 1992 Rio Earth Summit. The question is raised as to what has been achieved so far and **what is needed to strengthen biodiversity conservation**. The CBD refers to “integrative governance approaches” and “political will at the highest levels” as enabling condition for biodiversity conservation. Kok et al. (2018) highlight the need to include biodiversity conservation as an integral part of development strategies in agriculture, forestry, fisheries and energy. This is reflected in GBF target 14, which aims to integrate biodiversity and its multiple values into policies, regulations, strategies, and environmental impacts assessments, among others¹¹. This process of “embedding biodiversity considerations into policies, strategies and practices of key public and private actors ..., so that ... [biodiversity] is conserved and sustainably used, both locally and globally’ is understood as “**mainstreaming of biodiversity**” (Huntley and Redford, 2014; Pattberg et al., 2019). The GBF further highlights under target 18 the need to phase out or reform incentives, including subsidies harmful to biodiversity, in a proportionate, just, fair, effective, and equitable way, and to scale up positive incentives for the conservation and sustainable use of biodiversity. Meanwhile, target 19 focuses on mobilizing financial resources for implementing national biodiversity strategies and action plans.

The **objective of this study** is to assess to what extent and in what way biodiversity conservation is currently mainstreamed into trade by the **Association of Southeast Asian**

⁷ <https://www.unep.org/facts-about-nature-crisis>

⁸ <https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss>

⁹ See also: <https://reports.swissre.com/sustainability-report/2020/dialogue/biodiversity-and-ecosystem-services.html>

¹⁰ <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

¹¹ For GBF targets see: <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

Nations (ASEAN). The ten ASEAN member states (AMS)¹² include some of the fastest growing economies in the world. The Asian Development Bank predicted an economic growth for ASEAN of 5.5% for 2022¹³, and it is expected that ASEAN will be together with China and India among the four strongest economies at the global level. The fast economic growth makes ASEAN a **key player for global biodiversity conservation**. The AMS are home to four of the 25 global **hot spots of biodiversity**¹⁴. Furthermore, biodiversity-based products play an important role in most of the ASEAN countries' economies, either for subsistence farming or commercial trade. However, the AMS are criticized for neglecting biodiversity conservation in their economic development efforts. Indonesia has been known in the past for its **high deforestation** rate due to agriculture expansion, especially palm oil, as became globally famous through a campaign by Greenpeace in 2010¹⁵. According to the World Bank, Indonesia is the country with most **threatened mammal and fish** species in the region, and Malaysia the country with most threatened **higher plant** species¹⁶. Five AMS (Indonesia, the Philippines, Viet Nam, Thailand, Malaysia) were among the top 10 out of 192 countries in **plastic** waste dumping in 2010 (Jambeck et al., 2015). The ASEAN region is further one of the largest sources of **GHG emissions**, although it is the world's most vulnerable region for climate impact (Overland et. 2021).

In 2003, ASEAN established the ASEAN Economic Community (AEC) as a single market for its member states including free movement of labor, to create a highly competitive economic region under fair development. In 2005, the **ASEAN Center for Biodiversity** (ACB) was created to coordinate among the AMS and with regional and international institutions the conservation and sustainable use of biodiversity and to mainstream biodiversity conservation and management into the various development processes in ASEAN and the AMS¹⁷.

Hereafter, the following **guiding questions** will be discussed for a better understanding as to what is needed for mainstreaming biodiversity conservation into trade in the ASEAN region, with focus on three selected AMS: **Indonesia, Viet Nam, and the Philippines**.

- What is the current **role of biodiversity-based products** for the national economies?
- To what extent and how do public **policies and incentives** support biodiversity conservation within trade?
- What are the impacts of **voluntary sustainability standards** (VSS) for biodiversity conservation in trade?
- What are the **opportunities and challenges** for mainstreaming biodiversity conservation into trade?
- What **policy tools and approaches are needed** to effectively mainstream biodiversity conservation into trade in the ASEAN region?

¹² ASEAN member states and commencement year: 1967: Indonesia, Malaysia, the Philippines, Singapore and Thailand, 1984: Brunei Darussalam, 1995: Viet Nam, 1997: Lao People's Democratic Republic, Myanmar, 1999: Cambodia

¹³ <https://www.aseanbriefing.com/news/asean-economic-outlook-2023/>

¹⁴ Biodiversity hotspots are regions with at least 1,500 endemics vascular plants, and where only 30% or less of its original natural vegetation remains.

¹⁵ <https://www.greenpeace.de/biodiversitaet/waelder/waelder-erde/kampagne-kitkat-suesses-bitterem-beigeschmack>

¹⁶ "Country Rankings". Global Forest Loss. Archived from the original on 7 April 2015. Retrieved 2 March 2015.

¹⁷ https://asean.org/wp-content/uploads/2019/06/1.-ASEAN-Leaders-Vision-Statement_FINAL.pdf

3. Methodological remarks

3.1. Methodology

The study was done as a desk-top literature review combined with open interviews and written exchanges with various key stakeholders (see annex). The study structure was defined with Helvetas' team of the Regional BioTrade Project South East Asia/Swiss State Secretariat for Economic Affairs (SECO) and the ACB. Interviews with representatives from ASEAN working groups were foreseen, but not feasible. Thus, the study is mainly based on secondary information available online and in the English language, and does not claim to be complete. The study includes parts of the information provided by a previous study of Helvetas/UNCTAD "Mainstreaming biodiversity into trade in ASEAN - case study: Philippines, Indonesia and Viet Nam" written by Thi Hai Van Nguyen (08/2022).

3.2 Definition of key terms: biodiversity-based products, biotrade and BioTrade

The "biotrade-sector" is not well defined, and even less its relation to biodiversity conservation. For a better understanding of the study the definition of some key terms is given as they have been applied in the study.

Biodiversity-based products

For biodiversity-based goods and services, many stakeholders adopt the definition provided by UNCTAD (2017a) (Fig. 1). UNCTAD manages a trade statistics portal (Trade and Biodiversity database, TraBio) for biodiversity-based products comprising a database of more than 1,800 different biodiversity-based products worldwide¹⁸. This definition considers products with biological origin, including common agricultural commodities such as rice, coffee, palm oil and livestock but also products obtained from the local biodiversity through cultivation or wild harvest, such as tree gums and resins, plant waxes, flowers, seeds, barks, roots, leaves, herbs, fibers and animal-based products. These highly various products based on the local biodiversity are often termed "non-timber forestry products" (NTFP). Further, the UNCTAD definition covers sustainable tourism or forest-based carbon credit activities among others (see UNCTAD, 2017b).

Fig. 1: UNCTAD (2017) definition for biodiversity-based services and goods

1. Products derived from wild collection ("harvest") from fauna and flora and its derivatives;
2. Products coming from cultivation practices which include native species that are domesticated and/or from wild varieties through activities such as agriculture, aquaculture or breeding;
3. Services that are derived from biodiversity (e.g. sustainable tourism) (adapted from Sasaki, 2020).

biotrade and BioTrade

In this document, the term "biotrade" is used to describe the trade of biodiversity-based products. It does not include an assessment of any conservation and sustainability issues (see also definition in UNCTAD (2017a) and the definition at UNCTAD TraBio¹⁹). By contrast,

¹⁸ <https://unctadstat.unctad.org/EN/biotrade.html>

¹⁹ TraBio: <https://unctadstat.unctad.org/EN/biotrade.html>

“BioTrade” refers to products that are produced respecting certain environmental, economic and social criteria known as the BioTrade Principles and Criteria (P&C) by UNCTAD (2020)²⁰.

The BioTrade principles are namely:

- P1: Conservation of biodiversity,
- P2: Sustainable use of biodiversity,
- P3: Fair and equitable sharing of benefits,
- P4: Socioeconomic sustainability,
- P5: Legal compliance,
- P6: Respect for actors’ right, and
- P7: Right to use and access natural resources.

The BioTrade P&C were developed by the BioTrade Initiative (BTI) and partners, and launched by the United Nations Conference on Trade and Development (UNCTAD) in 1996. The objective of the BioTrade P&C is to promote the mainstreaming of biodiversity conservation into trade in line with the CBD and the Nagoya Protocol for Access and Benefit Sharing (ABS). It is a guide for interested parties to create business models for sustainably sourced, traceable, and value-added natural ingredients and products that conserve biodiversity and improve peoples’ livelihoods. Therefore, BioTrade products must be related to activities that conserve the ecosystems of the species concerned, and that seek adequate income generation for all actors of the value chain. One of the most prominent actors in promoting BioTrade particularly within the business community is the Union for Ethical BioTrade (UEBT)²¹.

biotrade and conservation of biodiversity

The great variety of “biotrade” products that are based on the use of different animal and plant species and their derivatives brings some methodological challenges when assessing the contribution of biotrade to biodiversity conservation. In fact, each species and product of biotrade has its specific potential to contribute to biodiversity conservation. This intrinsic or inherent, product-specific potential can be identified by ten key questions (Woda in Wilson, 2019, see Fig. 2a).

Fig. 2a: Key questions for determining the potential of commercially used species to contribute to biodiversity conservation (Woda, in Wilson 2019)

1. It is a native species?
2. Is it a rare or endangered species?
3. It is perennial species?
4. It is a key or dominant species of an ecosystem (e.g. forest stands)?
5. Is the species shade-tolerant and part of and old growing ecosystem, or a pioneer species?
6. It is an important food source for wildlife?
7. It is an important host plant for nesting for animals?
8. It is a host plant for epiphytic plants?
9. Is the species wild harvest or cultivated?
10. Is the whole species extracted or only parts of it?

²⁰ <https://unctad.org/topic/trade-and-environment/biotrade/principles-and-criteria>

²¹ <https://uebt.org/>

In addition, the production system matters and has to be taken into account when assessing the contribution to biodiversity conservation. To this aim, ten further key questions have been developed that should be applied in combination to the assessment of the inherent species potential (Woda in Wilson, 2019, see Fig. 2b).

However, for this kind of assessment, detailed information is required about the production system, and even a field assessment may be needed, a step that was not covered by this study. Thus, in the analysis of the role of Voluntary Sustainability Standards (VSS) in biodiversity conservation (chapter 4.4.c), this study only applies the questions related to the inherent potential of the certified species while clustering them according to their potential for biodiversity conservation based on these questions (Fig. 2a).

The definition of conservation and sustainable use of biodiversity applied in this study refers to primary sector production activities related to the use of natural resources and follows principles 1 and 2 of the UNCTAD BioTrade P&C.

Fig. 2b: Key questions for determining the potential of the production system to contribute to biodiversity conservation (adapted from Woda, in Wilson 2019)

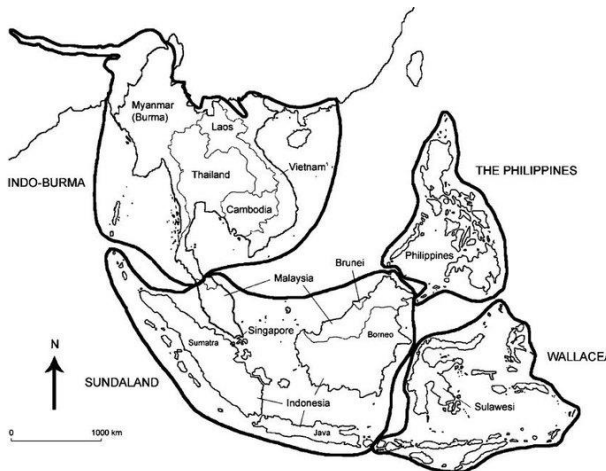
1. Is the species wild harvest or cultivated?
2. Is it grown in monoculture?
3. Does the production system allow natural vegetation succession / is it a regenerative production system?
4. Is the production system part of a green, biological corridor?
5. Is the whole species extracted, or just part of the plant?
6. Is the production system organic or are chemical inputs used?
7. What are the impacts on soil compacting, erosion, fertility?
8. What are the impacts on the water cycle?
9. To what extent are other species affected during production/harvest (e. g. development of paths/roads, hunting, other plant extraction)?
10. Does the production system contribute to conserve the natural forest/other ecosystem?

4. Results

4.1 The role of biodiversity and biotrade in the ASEAN

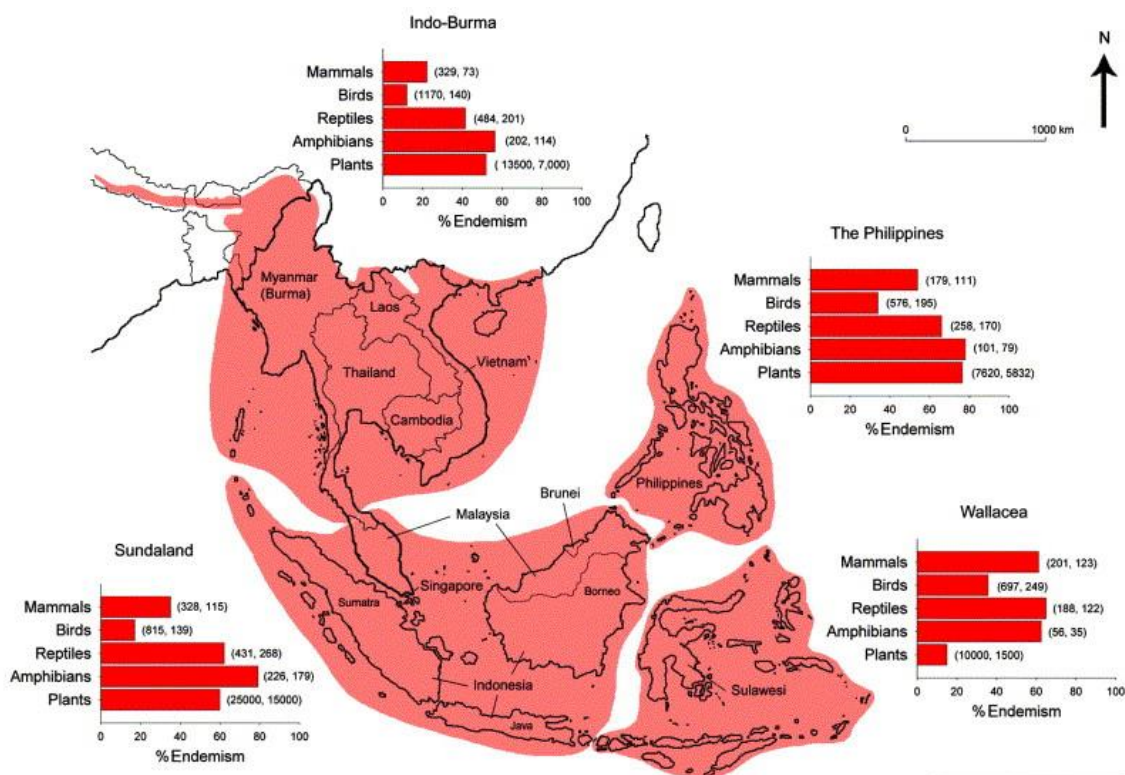
a) Biodiversity hotspots

The ASEAN region is of **high relevance for global biodiversity conservation**. The AMS occupy only 3% of the earth's surface, but contain more than 20% of all known plant, animal and marine species. The AMS are also home to several wild relatives of the world's most important crops, such as rice, mango, coconut and banana. The area of all AMS overlaps



with four biodiversity hotspots: Indo-burma, Sundaland, Philippines and Wallacea (Mittermeier et al. 2004, Fig. 3). The hot spots of the Philippines and Wallacea are both limited to one country each - the Philippines and Indonesia – which therefore assume an even higher responsibility for maintaining and protecting local biodiversity.

Fig. 3: Map of Southeast Asia overlapping four biodiversity hotspot areas (from: Mittermeier et al. 2004).



TRENDS in Ecology & Evolution

Fig. 4: Endemism rates in the four biodiversity hotspots of the ASEAN (from: Sodi et al. 2004)

The high relevance of the biodiversity hotspots in the ASEAN becomes clear when looking at the endemism rates. All four hotspots have an **extremely high rate of endemism** for wildlife (mammals, birds, reptiles and amphibians) and plants (Sodi et al. 2004, fig. 4). The more than 7,000 islands that constitute the Philippines, for example, hold the world's fifth-highest number of endemic mammals and birds, and Malaysia and Indonesia belong to the global top ten countries with the largest number of endemic tree species (Beech et al, 2017).

b) Threats for biodiversity in the ASEAN

According to IPBES' Global Assessment Report on Biodiversity and Ecosystem Services (2019), forests are home to more than 80% of all terrestrial animal and plant species. Deforestation affects not only the forest biodiversity, but also the biodiversity of associated ecosystems. For example, increased soil erosion after deforestation leads to higher sedimentation into water bodies and marine ecosystems and can affect the species composition there. Forests further play an important role in balancing local climate and the hydrological cycle. Thus, the conservation of **forests** is a **key element** in biodiversity conservation.

In the ASEAN, **deforestation is a serious issue**. According to Global Forest Watch (GFW), seven of the ten AMS were under the top 30 of 212 countries worldwide in **tree cover loss**²² over the period 2001 and 2020, with Indonesia and Malaysia even within the top 10. Overall, the loss of tree cover from 2001 to 2022 in the whole ASEAN region is estimated at 55 million hectares (Fig. 5).

Fig. 5: Ranking of ASEAN member states in a global list of tree cover loss from 2001 to 2020. Prepared by the author based on data from Global Forest Watch (GFW)²³

ASEAN member state	Global rank in deforestation out of 212 countries (2001 – 2020)	Tree cover loss (ha) from 2001 to 2020
Indonesia	5	28.600.000
Malaysia	9	8.670.000
Myanmar	17	4.300.000
Lao People's Democratic Republic	19	4.050.000
Viet Nam	24	3.260.000
Cambodia	26	2.600.000
Thailand	27	2.300.000
Philippines	43	1.340.000
Brunei Darussalam	121	29.600
Singapore	149	25.990
Total		55.175.590

²² Tree cover loss is different to the FAO definition of deforestation (FAO, 2022)

²³ <https://www.globalforestwatch.org/dashboards/country>

According to the GFW, Indonesia was the AMS with the largest tree cover loss in absolute numbers in 2001-2020 (Fig. 5). The tree cover loss in Indonesia represents an 18% decrease in the national tree cover, in Viet Nam 20% and in the Philippines 7%. For 2013 to 2021 there are more exact data regarding where the deforestation took place: in the three AMS, it occurred mainly in natural forest (72% of the deforestation in the Philippines, and 71% in Indonesia and Viet Nam).

The GFW Open Data Portal shows that currently, the speed of **deforestation is declining** both globally and in the ASEAN region after reaching a peak in 2016/2017. Nevertheless, it is still an ongoing challenge in the AMS. According to GFW, in all AMS the main **driver** for tree cover loss is **agriculture, including shifting cultivation**. In the author's opinion, this demonstrates the close link between biotrade on the one hand – the commercial trade of biodiversity-based products including agriculture commodities – and deforestation and biodiversity conservation on the other.

It should be mentioned here as well that Viet Nam is one of the top ten countries in **reforestation** (Cochard et al. 2017). However, most of the new established planted forests are of low biodiversity and often composed by exotic species, that represent today 25 % of forest cover (Braun et al. 2017).

Fisheries and marine ecosystems

Marine ecosystems are threatened by pollution, global warming, and overfishing, among others. All AMS have legal regulations to strengthen sustainable fisheries, but are affected by **illegal, unreported and unregulated (IUU) fishing**. With the exception of Viet Nam, all AMS with fisheries in 2021 were ranked among the 50 out of 152 countries worldwide with the worst IUU fishing record (Macfadyen & Hosch, 2021). Brunei Darussalam, Singapore and Thailand have weakened in their rankings, while Viet Nam, Myanmar and Cambodia have improved (Fig. 6)

Fig. 6: *The illegal, unreported and unregulated (IUU) fishing index for ASEAN member states in 2021. Prepared by the author based on data from Macfadyen & Hosch (2021).*

ASEAN member state	Overall IUU fishing rank out of 152 countries (from worst to best)	Change in country rank compared to 2019
Indonesia	20	-6
Philippines	21	-7
Cambodia	23	-20
Singapore	26	+14
Myanmar	34	-22
Brunei Darussalam	45	+49
Malaysia	47	-13
Thailand	49	+7
Viet Nam	56	-51
Lao People's Democratic Republic	not applicable	not applicable

c) Economic relevance of biotrade in the ASEAN

The Asian Development Bank (ADB) ASEAN briefing expects in its ASEAN Economic Outlook 2023 that the ASEAN region will remain one of the **fastest-growing regions of the world** in 2023, despite worsening global economic conditions²⁴. The AMS are characterized by heterogeneous economic key data. According to World Bank data, the region is led by Singapore, with a gross domestic product (GDP) per capita of over USD 100,000 and an impressive growth rate of 7.6%, followed by Brunei Darussalam, albeit with a declining GDP in 2021 (Fig. 7). The region includes Myanmar and Cambodia - two of the 50 countries with the lowest Human Development Index (HDI) in the world.

Fig. 7: Gross domestic product (GDP) per capita in current international \$ and GDP grow in 2021 in the ASEAN region. Prepared by the author, based on data from the World Bank²⁵.

ASEAN member state	GDP per capita (US \$)	GDP Grow (%)
Brunei Darussalam	66.055	-1,6
Cambodia	4.784	3
Indonesia	13.027	3,7
Lao People's Democratic Republic	8.621	2,5
Malayisa	28.930	3,1
Myanmar	4.430	-17,9
Philippines	8.893	5,7
Singapore	116.487	7,6
Thailand	18.761	1,5
Viet Nam	11.676	2,6

The ASEAN region is a growing market for foreign investment in Information Technology (IT), electronics, pharmaceuticals, professional services and even aerospace (ASEAN, 2021a). Nevertheless, the production and trade of biodiversity products remains an important economic pillar. It is estimated that **40% of the ASEAN people's population dependent on the agriculture and forest sector** (ASEAN, 2015).

On average, **biotrade contributes to 20% of the annual GDP of ASEAN countries** (Fig. 8 based on UNCTAD TraBio). **Cambodia and Viet Nam have the highest share of biotrade at 51% and 40% of GDP**, respectively, while Indonesia, the Philippines, and Brunei Darussalam have the lowest share of biotrade in their GDPs. **Biotrade further plays an important role in generating foreign currency reserves for AMS through international trade**. As expected, Cambodia and Viet Nam have a high share of biotrade in their exports. However, the Lao People's Democratic Republic, Indonesia, Myanmar, and Thailand also have a significant share of biotrade in their exports at 20% or more.

²⁴ <https://www.aseanbriefing.com/news/asean-economic-outlook-2023/>

²⁵ <https://data.worldbank.org/>

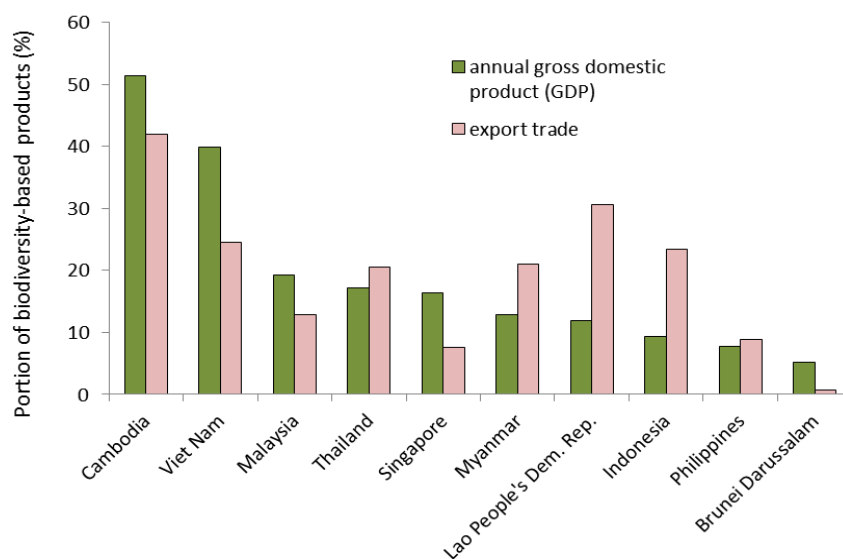


Fig. 8: Average share of biodiversity-based products in the annual GDP and export trade for ASEAN member states from 2010 to 2020. Prepared by the author, based on data from UNCTAD TraBio²⁶.

Between 2010 and 2020, the share of biotrade in the annual GDP of all AMS taken together has remained more or less stable. A closer look at the three AMS selected for this study shows that the share of biotrade in Viet Nam has decreased from 43% to 35%. In the Philippines, the share hovers around 8%. A slight downward trend is observed for Indonesia (Fig. 9).

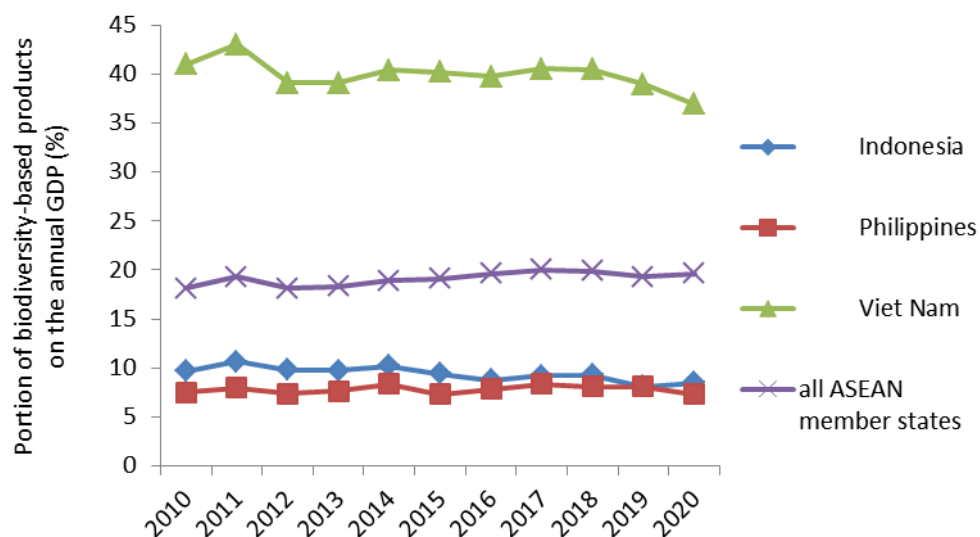


Fig. 9: Share of biotrade in annual GDP for selected AMS and average for all AMS from 2010 to 2020. Prepared by the author, based on data from UNCTAD TraBio.

In the same period, the share of **biotrade in exports increased in Viet Nam and Indonesia**. In both countries, biodiversity-based products account for 25% of the value of all internationally traded goods. In the Philippines, biotrade accounts for only 8% of exports (Fig. 10).

²⁶ <https://unctadstat.unctad.org/EN/biotrade.html>

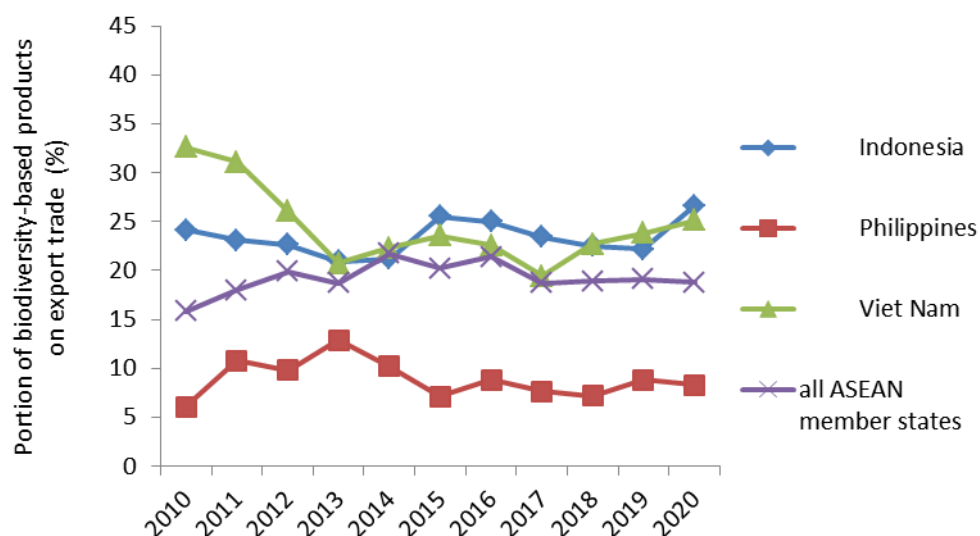


Fig. 10: Share of biotrade in export for selected AMS and average for all AMS during 2010 to 2020. Prepared by the author, based on data from UNCTAD TraBio.

The relevance of the different biotrade product groups varies from country to country (Fig. 11). In Viet Nam, **food and beverage products** are of highest relevance, in which coffee is the mayor commodity. Further important product groups are based on natural **fibers**, including bamboo and rattan and wood. The **wood** exported from Viet Nam comes from national plantations, but also from neighboring countries (e.g. Lao People’s Democratic Republic, Cambodia).

For Indonesia, **natural ingredients** are the most important economic biotrade group including palm oil based products. In addition, **food and beverages** are important (e.g. cocoa production), and the third major biotrade group consists of **wood** and its derivatives.

For the Philippines, the situation is similar, also in form of smaller trade volumes. The most relevant biotrade product groups include food and beverage, natural ingredients and wood.

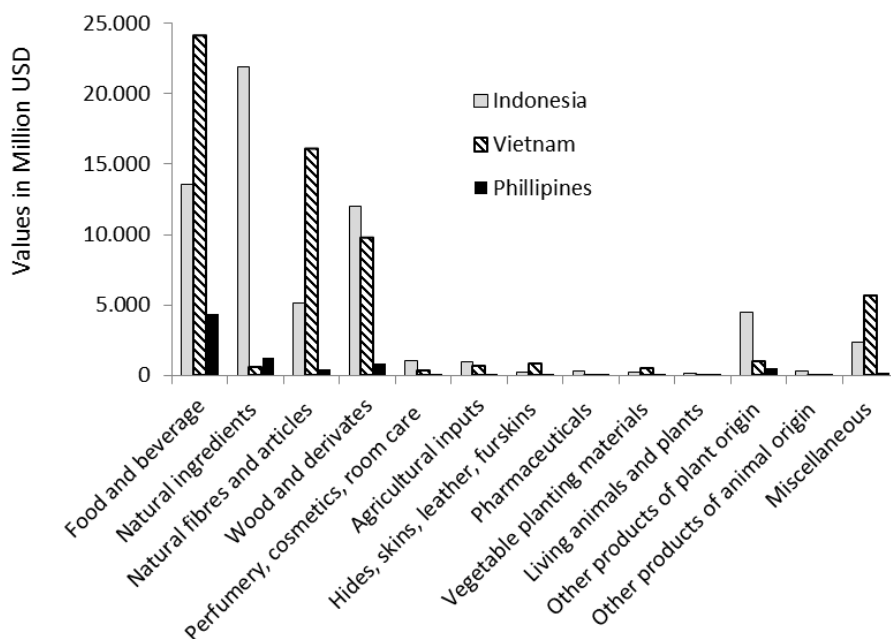


Fig. 11: Biotrade product groups of selected AMS and their trade values in 2019 in million USD. Prepared by the author, based on data from UNCTAD TraBio.

d) Agri-Food imports by ASEAN to the European Union

In 2021, the European Union imported products from the agriculture sector from the ASEAN with an overall value of 12.425 million EUR. The largest share is accounted for palm kernel oils (36%), fatty acids and waxes (18%), tropical fruits, fresh or dried, nuts and spices (9%) and unroasted coffee and bulk tea (8%) (Fig. 12)

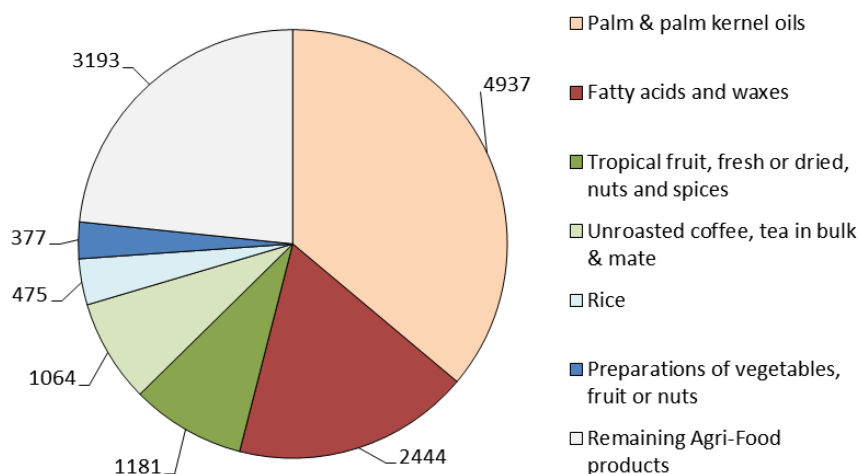


Fig. 12: Value of imported agriculture goods in 2021 from the ASEAN into the European Union in million EUR. Prepared by the author, based on EU statistical factsheets.

4.2 ASEAN commitment to biodiversity conservation

a) *The ASEAN Vision 2040*

ASEAN recalled in its community vision 2025 to build an integrated, peaceful and stable community through a people-centered approach as complementarity to the Agenda 2030. The new ASEAN vision 2040 “Towards a Bolder and Stronger ASEAN Community”²⁷ reflects the period of new global geo-economic and geo-political constellations in the era of digital transformation and fourth industrial revolution. It is expected that ASEAN, together with China and India will be **part of the four leading world economics**. Thus, the vision calls for united and pro-active initiatives focused on people empowerment and engagement.

ASEAN recognizes in its vision 2040 that “*the sustainability of ASEAN growth will ... be under increasing stress and ASEAN is highly vulnerable to the effects of climate change and natural disasters*”. It further refers to the dramatic decline of biodiversity in the region, the risk of a shortfall in fresh water, the increasing pressures on forests, issues with waste management and increasing per capita environmental pollution and degradation under rising incomes. In this context, the vision refers to the need of a **sustainable development to strengthen natural resource management; to encourage and empower communities to engage in biodiversity conservation and sustainable use; and to promote deeper connectivity of the ecosystems**. It emphasizes robust green and inclusive growth in line with the Agenda 2030 principle of leaving no-one behind (LNOB), satisfying social demands and engendering people’s empowerment under improved governance. It seeks to enhance the complementarity with Agenda 2030 under ASEAN’s three blueprints: political security, economic, and socio-cultural aspects.

b) *International conventions and agreements*

ASEAN has a special working group on Nature Conservation and Biodiversity. In 2005 the ASEAN Centre for Biodiversity (ACB) was founded. All AMS are members of the **CBD**, with Thailand and Brunei Darussalam being those most recently joining, in 2004 and 2008, respectively. The **ASEAN Clearing House Mechanism** was created by the ACB to bundle biodiversity-related information from the AMS. At COP-15, the AMS included in their roadmap for post-pandemic recovery the mainstreaming of biodiversity as a key strategy within the ASEAN Comprehensive Recovery Framework²⁸.

National Biodiversity Strategy and Action Plan (NBSAP)

All AMS are parties to the CBD and their commitment to implement the obligations of the convention are regularly updated through the decisions of the COPs. The NBSAPs lay out the national key priorities and objectives in the implementation of the CBD suited to the particular economic and socio-cultural context of each country.

Indonesia elaborated its first **Biodiversity Action Plan for Indonesia** (BAPI) in 1993 which prioritized *in situ* and *ex situ* conservation measures. In 2003, the Indonesian Biodiversity Strategy and Action Plan (IBSAP 2003 - 2020) was developed in a participatory approach to increase concern about conservation and sustainable use of biodiversity, to apply

²⁷ https://www.eria.org/uploads/media/0.AV2040_VOL1.pdf

²⁸ <https://asean.org/asean-strides-to-achieve-post-2020-biodiversity-framework/>

technological inputs and local wisdom, to strengthen institutions and law enforcement, and to resolve conflicts over natural resources. No monitoring mechanisms were established.

The Philippines started in 1994 with the formulation of the National Strategy for the CBD as the base for the first NBSAP in 1997. In 2002, the NBSAP was reviewed and more than 200 conservation priority areas and species conservation priorities were identified, the so-called “**Philippine Biodiversity Conservation Priorities (PBCP)**”. Finally, the PBCP were reinforced in 2006 with 228 key biodiversity areas.

Viet Nam’s first NBSAP was approved in 1995, followed by the second in 2007, covering **ambitious specific objectives and measurable indicators**, such as to develop the special-use forest system; to regenerate 50% of degraded watershed forests and 200,000 hectares (ha) of mangrove forests, and to establish 1.2 million ha of marine protected areas and wetlands. To boost biotrade, exhibitions on the sustainable use of plants and animal resources are foreseen, as are actions to control and halt the exploitation and trade of endangered wildlife, and to examine 100% of imported species and gene resources. Furthermore, a strong education program was planned to raise public awareness on biodiversity conservation, development, and sustainable use. Viet Nam had already finalized its new NBSAP for up to 2030 with a vision to 2050 prior to finalization of the GBF. This document was not accessible to the consultant.

The three countries presented their sixth national report about the progress on the NBSAP to CBD in 2019 (see chapter 4.3). With the adoption of the Kuming Montreal GBF, AMS as CBD Parties are now expected to take steps to update their NBSAPs to outline their efforts to implement the various goals and targets of the GBF within their respective timeframes.

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization and other supplement protocols to CBD

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is ratified or accessed by most of the ASEAN states, with the exception of Brunei Darussalam, Singapore and Thailand. Singapore and Thailand – both countries are important global trade centers - have also not joined the **Cartagena Protocol for Biosafety**. Most ASEAN countries are not parties to the **Nagoya-Kuala Lumpur Protocol**, with the exception of Cambodia and Viet Nam (Fig. 13).

The implementation of ABS differs significantly among the AMS. Viet Nam’s Law on Biodiversity (2008) includes a specific section about ABS. According to the Access and Benefit sharing clearing house-mechanism (ABSCH) country profiles²⁹, Viet Nam belongs to the global top ten of countries with most Internationally Recognized Certificates of Compliance (IRCC) to ABS, having 37 IRCC (India is the number one with more than 3,000 IRCC). Of the 37 IRCC issued in Viet Nam since 2019, 6 are of commercial purpose. The main focus is on medicinal plants. Indonesia and the Philippines both have a national ABS focal point established and elaborated their first national interim report on the implementation of the Nagoya Protocol. So far, no IRCC was issued in these countries. Of the further AMS, Lao People’s Democratic Republic is the only one that also counts with IRCCs (a total of 17) which are all non-commercial.

²⁹ <https://absch.cbd.int/en/>

Fig. 13: Commitment of ASEAN member states to the CBD and its protocols
r: ratification, a: accession. Prepared by the author, based on CBD country profiles³⁰.

ASEAN member state	CBD	Nagoya Protocol on Access and benefit Sharing	Cartagena Protocol on Biosafety	Nagoya-Kuala Lumpur Protocol on Liability and Redress on Biosafety
Brunei Darussalam	07/2008 a	non party	non party	non party
Cambodia	10/1995 a	04/2015 r	12/2003 a	03/2018 a
Indonesia	11/1994 r	10/2014 r	03/2005 r	non party
Lao People's Democratic Republic	12/1996 a	10/2014 a	11/2014 a	non party
Malaysia	09/1994 r	02/2019 a	12/2003 r	non party
Myanmar	02/1995 r	10/2014 a	05/2008 r	non party
Philippines	01/1994 r	12/2015 a	01/2007 r	non-party
Singapore	03/1996 r	non party	non party	non party
Thailand	01/2004 r	non party	02/2006 a	non party
Viet Nam	02/1995 r	10/2014 a	4/2004 a	03/2008

Further agreements for biodiversity conservation in trade

The AMS are also party of further international agreements that aim to contribute to biodiversity conservation in trade, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Tropical Timber Agreement (ITTA) and the initiative of Forest Law Enforcement, Governance and Trade (FLEGT) by the European Union (Fig. 14).

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES is recognized as one of the key international conservation agreements since entering into force in 1975³¹. Governments joining CITES are bound to create national laws that ensure the trade of endangered species is legal, sustainable and traceable. It further establishes a framework for countries to cooperate with each other to ensure that plant and animal species are not depleted by international demand. **All AMS are parties to CITES.** The first countries joining were Malaysia and Indonesia, the last ones the Lao People's Democratic Republic (2004), Cambodia and Myanmar (1997). Especially the Lao People's Democratic Republic and Viet Nam are still struggling with a negative reputation of being an international market place for illegal wildlife trade, e.g. for pangolin, rhino, and wild cats for medicine and ornaments³². CITES is very relevant for strengthening sustainable use and traceable international trade of selected endangered species and their derivative products. It **contributes directly to conserve the target species population.** Nonetheless, focus is given on the **conservation of selected species**, whereas the protection of the habitat and related biodiversity of the species concerned are not directly addressed.

³⁰ www.cbd.int/countries/profile

³¹ <https://www.ifaw.org/journal/what-cites>

³² This week in Asia 12/11/2022: China, Vietnam, Lao People's Democratic Republic are hotspots for the criminal wildlife trade: does Asia really care about biodiversity? <https://www.scmp.com/week-asia/health-environment/article/3199278/china-vietnam-laos-are-hotspots-criminal-wildlife-trade-does-asia-really-care-about-biodiversity>

Fig. 14: Commitment of AMS to international agreements linked to the sustainable use and conservation of biodiversity.

r: ratification, a: accession. Prepared by the author based on CBD country profiles 33

ASEAN member state	CITES ³⁴	International Tropical Timber Agreement ITTA ³⁵	Forest Law Enforcement, Governance and Trade (FLEGT) ³⁶
Brunei Darussalam	08/1990 a	non-party	non-party
Cambodia	10/1997 r	07/2009 A	non-party
Indonesia	03/1979 a	03/2009	VPA signed, Timber legality assurance system (TLAS) and licensing under implementation as the first country worldwide
Lao People's Democratic Republic	05/2004 a	non-party	The VPA process (in negotiations since 2017) is moving forward, TLAS and TLD is defined
Malaysia	01/1978 a	09/2007	Negotiations toward a VPA started in 2006 but have not progressed.
Myanmar	09/1997 a	09/2011	In 2015, the FLEGT inception workshop took place. Future process is uncertain
Philippines	11/1981 r	07/2009	FLEGT roadmap in 2017 supported by FAO
Singapore	02/1987 a	non-party	non-party
Thailand	04/1983 r	09/2015 a	non-party
Viet Nam	04/1994 a	4/2014 a	VPA signed in 2018, TLAS not implemented

International Tropical Timber Agreement (ITTA)

The International Tropical Timber Agreement ITTA was developed by the International Tropical Timber Organization (ITTO). The ITTA aims to strengthen producer and consumption countries in the **collection, processing and dissemination of statistics on timber trade** and the **sustainable management of their forests**; and in developing national policies for a sustainable use of tropical forests combined with **forest law enforcement and governance**. Thus, ITTA is of high relevance for forest biodiversity and habitat conservation. Of the AMS, all countries with a significant portion of forests and participating in international timber trade have ratified the ITTA. An exception is the Lao People's Democratic Republic, which has participated strongly in the tropical timber market in the past but is not a party to the agreement. Singapore and Brunei Darussalam are also not parties, but they do not provide a major volume of tropical timber to the international market.

In 2010, ITTO and the Secretariat of the CBD signed the "**ITTO/CBD Collaborative Initiative for Tropical Forest Biodiversity**" to strengthen collaboration in the pursuit of their common objectives of conserving and sustainably managing tropical forest resources, by

³³ www.cbd.int/countries/profile

³⁴ <https://cites.org/eng/disc/parties/index.php>

³⁵ <https://treaties.un.org/pages>

³⁶ <https://loggingoff.info/flegt-vpas/flegt-vpa-countries>

implementing joint activities on forests and biodiversity³⁷. **Several AMS benefitted from this initiative** by receiving support for improved management of forest ecosystems and biodiversity, especially in transboundary areas. Examples are the promotion of cooperation on transboundary biodiversity conservation among Thailand, Cambodia and Lao People's Democratic Republic for the Emerald Triangle Protected Forests Complex, the promotion of biodiversity conservation among Indonesia and Malaysia in a transboundary forest ecosystem (Sarawak/Borneo), support for improved buffer zone management of a national park in Malaysia, work on the conservation of selected high-value indigenous species in Indonesia, and the strengthening of transboundary biodiversity conservation in Myanmar.

The effects of the ITTA on biodiversity conservation and sustainable forest management are not clearly documented in the literature. Houghton & Naughton (2017) show – based on a study on 165 countries between 1970 and 2011 that implement timber trade under ITTA - that sustainability clauses in the ITTA have not decreased total timber exports from member countries but have shifted exports across timber categories. **Log exports fell for tropical country members but were offset by increased plywood exports.** This can be seen as an indicator that hardwood sources from the native forest have diminished over time, meanwhile forest sector development focused on the establishment of planted forest with soft wood species. However, impacts on biodiversity conservation were not assessed.

Forest Law Enforcement, Government and Trade (FLEGT)

The FLEGT action plan was developed in 2003 and follows the idea of ITTA, but is limited to trade with the European Union. According to Pirlot (2019), one could argue that ITTA and FLEGT objectives go in the same direction, and therefore question the necessity to create bilateral agreements, especially since FLEGT countries (excepting the Lao People's Democratic Republic, PDR) are also ITTA countries. Pirlot further examines the factors for the creation of FLEGT which rest on the high ambitions of the European Union, its bargaining power and internal unity. FLEGT aims at tackling deforestation in timber producing countries by ameliorating local forest governance and law enforcement and is directly linked to enhancing forest biodiversity conservation.

At global level, so far only eight countries have a FLEGT **voluntary partnership agreement** (VPA) signed with the European Union. Two of these countries are AMS, namely **Indonesia and Viet Nam**. As a third AMS, the **Lao PDR** is progressing in VPA negotiations and has a timber legality definition and a timber legality assurance system (TLAS).

Indonesia is one of the world's largest exporters of tropical timber (plywood, pulp and paper, furniture and handicrafts), with China, the EU, Japan and Korea as its main export destinations³⁸. Indonesia is **the first country to issue FLEGT licenses since 2016** and manages specific institutional structures and procedures to monitor and evaluate the TLAS. However, even under the FLEGT-VPA illegal logging can still occur. In 2018, illegal logging activities were detected in protected areas along with other environmental and community rights violations. However, according to “FLEGT – independent market monitor”³⁹, an evaluation in 2019 indicated that the control system functions as expected. It is recommended to increase the frequency of timber control spot checks and to improve the follow-up in case of noncompliance to TLAS. Further needs are to improve the online information systems, and access to information and transparency for independent monitors.

³⁷ <https://www.itto.int/cbd/>

³⁸ <https://www.timbertradeportal.com/en/indonesia/73/timber-sector>

³⁹ FLEGT – independent market monitor: <https://flegtimm.eu/country-profiles/indonesia/>

Another issue is to **enhance due diligence for timber imports**. Some NGO are asking for multi-stakeholder process to adapt the TLAS and its regulation.

Viet Nam is the world's **fourth-largest exporter of wood products** and the largest timber **processing hub in South East Asia**. There are many small-scale timber processing operations producing household items, construction timber and other wood products for the domestic and international market. The **wood industry relies strongly on imports for about 80% of its timber** from Cambodia, China, Lao PDR, Malaysia, and Thailand. Viet Nam started negotiations with the European Union in 2010 and finally signed the VPA in 2018. However, civil society has been concerned about the agreement whilst Viet Nam remains a regional hub for illegal timber. The VPA stipulates that the implementation and monitoring will be done transparently with multi-stakeholder participation, but a truly transparent decision-making process seems to be missing⁴⁰. Thus, the VPA is signed but not implemented, and no FLEGT-licenses are issued by Viet Nam so far.

Agreement on illegal, unreported or unregulated (IUU) fishing

In 2022, the World Trade Organization (WTO) adopted the Agreement on Fisheries Subsidies. This agreement **directly contributes to target 18 of the GBF** to phase out or reform incentives, including subsidies harmful to biodiversity. It is of high relevance for biodiversity conservation of aquatic ecosystems. The aim of the agreement is to eliminate fisheries subsidies that promote overfishing or other activities related to illegal, unreported or unregulated (IUU) fishing. WTO members, including Viet Nam, the Philippines and Indonesia indicated their interest in joining the agreement through the ministerial conference in June 2020⁴¹. Indonesia is already piloting actions to reduce harmful subsidies in the fishery sector (see chapter 4.3 a und b).

Reducing Emissions from Deforestation and forest Degradation, as well as the sustainable management of forests and the conservation and enhancement of forest carbon stocks in developing countries (REDD+)

The initiative “Reducing Emissions from Deforestation and forest Degradation” (REDD) - which was widened to include the “conservation, sustainable management of forests and enhancement of forest carbon stocks” (REDD+) is designed as an international scheme of payment for environmental services (PES) of carbon sequestration by forests⁴². It can motivate the conservation of native forests and thus directly contribute to biodiversity conservation. REDD+ projects are often combined with promoting sustainable production systems and land use. At present, seven of the ten AMS participate in REDD+. Indonesia is the country with greatest variety of funds (Fig. 15).

Although REDD+ projects are supposed to contribute to biodiversity conservation, its impacts depends on the specific performance of each project. Schmidt & Gerber (2016) provide an analysis of REDD+ project standards against expectations and principles set by Germanwatch and the German Ministry of Environment. They conclude that **REDD+ project standards with highest score for the criterion ‘climate integrity’ do not necessarily have the highest score in biodiversity conservation**. This demonstrates the need for

⁴⁰ FLEGT – independent market monitor: <https://flegtimm.eu/country-profiles/vietnam/>

⁴¹ Business world 11/2022: BFAR backs WTO ban on fisheries subsidies. <https://www.bworldonline.com/economy/2022/11/01/484289/bfar-backs-wto-ban-on-fisheries-subsidies/>

⁴² <https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd>

specific efforts for promoting increased synergies in climate action measures (mitigation and adaptation) and biodiversity conservation. In this sense, Biodiversity is seen as “our strongest natural defense against climate change”. This is reflected by the GBF that includes steps to tackle the causes of biodiversity loss, including climate change and pollution, in an integral way⁴³.

Fig. 15: AMS taking part in REDD+ and implemented REDD+ funds. Prepared by the author based on REDD project database⁴⁴.

ASEAN member state	Forest Carbon Partnership Facility FCPF	UN REDD	Forest Investment Program (FIP)	BioCarbon Fund	Initiative for Sustainable Forest Landscapes (ISFL)
Cambodia	x	x			
Indonesia	x	x	x	x	x
Lao People's Democratic Republic	x	x	x		
Malaysia		x			
Myanmar		x			
Philippines		x			
Viet Nam	x	x			

4.3 National policies and incentives for biodiversity conservation⁴⁵

a) Indonesia

Indonesia's policies for biodiversity conservation

Indonesia's aims to mainstream biodiversity conservation into sectoral policies and programs. Its **medium-term National Development Plan (2020-2024)** has a specific chapter VII on **strengthening the environment** and improving resilience against natural disasters and climate change⁴⁶. Specific targets are among others, an increased number of businesses and/or activities that meet environmental **quality standards**⁴⁷, to maintain **high conservation value areas**, to establish marine and terrestrial conservation areas and to **reduce forest fires**. Indonesia has defined in its NBSAP specific national targets (NT) on policies for biodiversity conservation, the NT 4: “Establishment of **increased availability and implementation of policies supporting sustainable consumption and production in the utilization of biodiversity resources**”, the NT 6: Implementation of **policies for sustainable management and harvesting** and the NT 7: Improved **sustainably managed land** for agricultural, plantation and animal husbandry.

⁴³ <https://www.un.org/en/climatechange/science/climate-issues/biodiversity>

⁴⁴ <https://www.reddprojectsdatabase.org/view/countries.php>

⁴⁵ The information of this chapter is mainly based on the 6th national reports on CBD presented by Indonesia, the Philippines and Viet Nam.

⁴⁶ https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/migrasi-data-publikasi/file/RP_RKP/Narasi-RPJMN-2020-2024-versi-Bahasa-Inggris.pdf

⁴⁷ In order to promote quality development, technology and standardization for clean production, there were several standards for self-declarable ecolabels developed for paper, plastic, and textile products.

Biodiversity conservation is addressed at cross-sector level through the **mandatory environmental impact assessment (EIA)**, and the strategic environmental assessment (SEA, 2016).

In addition, Indonesia promotes **quality and sustainability standards and certifications** including **chain of custody systems**, either as mandatory national systems, or voluntary market-based system, or self assessment schemes.

Palm oil

In 2015, the Ministry of Agriculture issued the **Regulation on Indonesian Sustainable Palm Oil Certification System (ISPO)** which was updated in 2020 for more effective and credible certification schemes (Perpres 44/2020 and Permentan 38/2020)⁴⁸. ISPO regulates that all palm oil plantations are required to attain certification, with the threat of sanctions as a disincentive in the form of degradation of the plantation level up to the revocation of business permits.

Even earlier, in 2004, the **Roundtable on Sustainable Palm Oil (RSPO)** was formed by the Malaysian Palm Oil Association (MPOA), international companies and the World Wide Fund for Nature (WWF). RSPO has its own set of environmental and social criteria for companies to produce RSPO Certified Sustainable Palm Oil (CSPO)⁴⁹. In order to upscale the current focus on single palm oil mills and their supply base, RSPO started to develop the **jurisdictional approach to certification** in close coordination with the Indonesian Government. To date, a piloting framework has been developed.

Both certifications, ISPO and RSPO, apply the concept of **High Conservation Value (HCV)**. The concept was originally developed by the Forest Stewardship Council (FSC), but was legally adopted by the Indonesian government, which recognizes six types of HCV⁵⁰. However, ISPO and RSPO certification schemes so far merely cover a limited area within the concession area, thus the HCVs management has not yet provided optimal results. Within the RSPO **jurisdictional approach**, the identification of **HCV has to be done at district level** and may contribute to a more effective identification and management of HCV areas and biodiversity conservation (Purwanto, 2019).

Forests

In the field of forest management and timber trade, Indonesia is the **first country** at the global level issuing **FLEGT timber licenses** for the international market (European Union and Australia). To this aim, Indonesia has established a nationwide chain of custody mechanism, through the Timber Legality Verification System (SVLK), and the Forest Product Administration Information System (SIPUHH). The implementation of these control systems requires the involvement of various public institutions and the allocation of a budget to register, document, and control activities, and thus can be seen as a sign of real commitment by the government towards a sustainable forest sector. Closely linked to FLEGT, the government promotes the **sustainable Production Forest Management (PHPL) program**.

⁴⁸ <https://leap.unep.org/countries/id/national-legislation/regulation-president-ri-no-44-2020-certification-system>

⁴⁹ <https://rspo.org/who-we-are/>

⁵⁰ (1) Areas with important biodiversity levels, 2) Natural landscape areas which are important for natural ecological dynamics, 3) Areas with rare or endangered ecosystems, 4) Areas which provide natural environmental services, 5) Areas with important functions for local communities, and 6) regions with important functions for the traditional cultural identity of local communities.

PHPL is a national forest sustainability certification scheme developed by the Indonesian Ecolabelling Institute (LEI)⁵¹ as a voluntary certification. Based on PHPL, several forest stands were restored with support by the government through seed production. Recently, Indonesia introduced the **Reduced Impact Logging (RIL) policy**. A further new policy is about **Social Forestry and Environmental Partnership** to enhance cooperation between communities and holders of forest business permits for overcoming economic inequality.

The use and trade of non timber forestry products is officially regulated since 1999 by the setting of annual harvest quotas. However, these are not always respected, especially in the case of rattan. To reduce damage to the ecosystems by overharvest of rattan, the government established stricter harvest and export quotas and issued even an export ban for raw rattan (Myers, 2015). Since 2012, the Non Timber Forest Product-Exchange Program (NTFP-EP) worked with the Ministry of Environment and Forestry on a **participatory guaranteed system for sustainable rattan** that was launched in 2022. The certification system is based on self-assessment, social networks, transparency and peer review, and covers legality, production sustainability, ecological sustainability, social and cultural wellbeing, and traceability.⁵² Furthermore, LEI implements a Sustainable **Non-Timber Forest Product Management Certification System** (PHHBKL).

Fisheries

In the field of fisheries, a **sustainable fisheries management** is mandatory in Indonesia since 2009. A Fishery Management Plan based on the ecosystem approach to fisheries management has to be developed, economic benefits must contribute to employment opportunities, and activities must be compliant in order to eradicate illegal, unreported, and unregulated (IUU) fishing activities. Several further regulations have been issued for adapting and improving the catch for **sustainable fishery**. The industries and fishery associations are supported to join market-based certifications such as Dolphin-safe, the Marine Stewardship Council certification or the Aquaculture Stewardship Council certification. The government implements a record of fishing log-books. Since 2014, Indonesia issued eight regulatory documents to eradicate IUU fishing e.g., larger fishing vessels must install VMS transmitters on the high sea for a better control.

Agriculture

Indonesia supports **sustainable food agriculture and the establishment of organic fertilizer processing units** at farm level, mainly in rice production. The **diversification of local food consumption** is promoted, foreseen to be enriched by tubers (cassava, sweet potatoes, sago, potatoes, other tubers) and corn. Efforts are also given to increase **per unit agriculture productivity** in rice, corn and soybeans as part of an Indonesian program for food self-sufficiency by utilizing new technologies. Indirectly, this could contribute to biodiversity conservation, as long as the agriculture frontier remains stable. Nonetheless, an increased use of chemical fertilizers and pesticides in order to increase productivity may have negative affects on biodiversity. Thus, these efforts need a careful analysis.

⁵¹ <https://lei.or.id/en-gb/>

⁵² <https://www.iucn.nl/en/news/label-for-sustainable-rattan-launched/>

Indonesia's incentives for biodiversity conservation

Indonesia NT 3 of the NBSAP is in line with GBF target 18 which focuses on incentives for biodiversity: “**Realization of incentives and disincentives system in business and the sustainable management of biological resources**”. In its sixth report on NBSAP (2019), Indonesia highlights two main activities, namely the development of environmental economic instruments, and the financial management of the distribution and return of revolving funds for financing forestry development.

In 2017, Indonesia issued the **Government Regulation No. 46 on Environmental Economic Instruments** that cover i) economic activities and development planning; ii) environmental funding; and iii) incentives and/or disincentives. The regulation provides a reward for any party that preserves and protects the environment (including water systems, biodiversity, carbon absorption/storage, preservation of natural beauty, and other); and punishment for any party that damages the environment (Kumara, 2017)⁵³. To this aim, any party causing damage has to provide **environmental guarantee funds**, such as reclamation guarantee fund, post-mining guarantee fund and hazardous waste management insurance, to be used by the government to restore the environmental damage. The government grants incentives for companies and other actors creating positive impacts to the environment cover liability relief; allowance of requirements for activities, facilities or assistance, encouragement and guidance, recognition and award; and public announcement to acknowledge positive performance.

Indonesia further implements the **Corporate Performance Rating Program (PROPER)**. It encourages companies to comply with legislation through reputation incentives and disincentives, and also encourages them to implement cleaner production. PROPER covers environmental management systems, energy efficiency, water conservation, emission reduction, biodiversity protection, waste reduction, reusing and recycling resources and products (3R), and reducing economic inequalities by implementing community empowerment programs (KLHK Press Release, December 2017).

In 2020 the United Nations and Indonesia's government signed the United Nations Sustainable Development Cooperation Framework 2021-25. A focus is given on mainstreaming **environmental, social and governance (ESG) principles** as a comprehensive approach to sustainability factors in the analysis and decisions of investors and companies in industries. So far, no significant negative or positive impact of ESG has been identified for Indonesia (Handayani, 2019; Trisnowati et al. 2022).

Provincial and district **taxes** must be paid by any party with business activities utilizing natural resources.

Incentives for sustainable fishery

In the field of fisheries, the Ministry of Marine Affairs and Fisheries issued in 2016 the regulation No. 16 /2016 on (digital) **Fishermen Cards**. The aim is to prevent misuse of subsidized fuel distribution for IUU fisheries. Through the fishermen cards, the **use of the subsidized fuel becomes transparent** as part of an online system and facilitates control on IUU fishing, and directly contributes to GBF target no. 18.

⁵³ <https://budidjaja.law/2017/12/new-regulation-on-economic-instruments-in-environmental-matters/>

Further incentives for sustainable fisheries were created in 2014 and 2016, including assistance in accelerating permit issuance for fishing vessels willing to relocate to sustainable fishing grounds, support for environmentally friendly fishing gear, business transfer assistance for former lobster-hatchling catchers, subsidies for marine conservation community groups; and support in the delimitation of management zones including traditional access and utilization within conservation areas.

Payment for ecosystem services (PES)

In 2014, Indonesia started to implement a **Payments for Ecosystem Services (PES)** scheme with a focus on watershed and marine areas. The first PES was based on entry fees for diving tourists. Revenues were distributed for the conservation program (plantations and community patrols, education and village development, development of traditional customs, and promotion). PES has now progressed to further sectors but is still far from being mainstreamed.

Indonesia was an early adopter of **REDD+**. Since 2008, it has had a country-wide program to monitor changes in forest cover and distribute funding to support the conservation and sustainable management of forests and carbon-rich landscapes. This includes a policy that bans clearing of primary natural forests and peatlands⁵⁴.

Ecological fiscal transfers

Indonesia implements **Ecological fiscal transfers (EFTs)** to redistribute government tax revenues to protect sites of ecological importance and for compensating regional or local governments' efforts in environmental conservation⁵⁵. EFTs have been adapted into financial transfers from the provincial to district level (Provincial Ecological Fiscal Transfer, TAPE) and from district to village (District Ecological Fiscal Transfer, TAKE) (Putra et al, 2019). The allocation of TAPE is based on the share of forest cover in the district compared to the whole province. Incentives are only given if the amount of forest cover increases. If forest cover decreases, the district loses all TAPE funding. Thus, increased efforts of local governments in forest and peat fire prevention are expected and the promotion of alternatives to slash and burn farming.

b) The Philippines

The Philippines' policies for biodiversity conservation

The Philippines conducted a multi-stakeholder process at national and regional level on formulating the **Philippine Biodiversity Strategy and Action Plan (PBSAP) 2015-2028**. More than 800 individuals participated, representing nearly 200 organizations from national and local government agencies, the academic sector, CSO, and the private sector. Of the 20 targets of PBSAP, the most relevant related to BioTrade are: No. 8: **Maintain fish stocks of economically important species**, No. 9: **Increase biodiversity conservation related jobs**, No. 10: **Reduce, control and manage key threats to biodiversity**, No. 11: **Increase areas for biodiversity-friendly agriculture**, No. 12: **Strengthen capacity of public and private**

⁵⁴ <https://www.undp.org/blog/indonesias-social-forestry-programme-supports-livelihoods-and-climate-action>

⁵⁵ <https://www.un-redd.org/news/fiscal-transfer-incentives-indonesia>

sector, No. 15: Increase number of recognized agricultural systems, and No. 17: Biodiversity conservation policies in place.

Since 2016, the Biodiversity Management Bureau is authorized to coordinate the mainstreaming of PBSAP into public plans and programs, government institutions, and the academic sector. In 2016, the **National Action Plan for Ecosystem Restoration and Species Extinction Prevention (NPAERSEP)** was formulated as a supplement to the PBSAP.

Overall, the Philippines has made significant efforts in the creation of protected areas. There are several programs to address the drivers and threats to biodiversity loss, prioritizing the maintenance of ecosystem flows and restoring degraded forestlands based on an integrated landscape approach. In 2006, an **integrated coastal and watershed management** was issued (Executive Order 533) that is of special importance since the Philippines ranks fourth amongst the countries with the longest coastline in the world.

The main law for biodiversity conservation is the **Wildlife Resources Conservation and Protection Act (2001)** which aims to conserve the country's wildlife resources and their habitats. A **Wildlife Law Enforcement Action Plan (WildLEAP) 2018-2028** has been formulated through a multi-stakeholder process, addressing poaching, smuggling and illegal trade of threatened flora and fauna. What is challenging is the guarding of the many seaports and airports against illegal wildlife trade. In 2016, an intergovernmental Task Force on Illegal Taking and Trade of Migratory Birds along the East Asian-Australasian Flyway was established. In 2018, the Forest and Biodiversity Protection System LAWIN was adopted (Department of Environment and Natural Resources DENR Order No. 2018-21) as a monitoring and reporting tool for biodiversity conservation in forests⁵⁶.

In 2012, guidelines were issued to ensure **environmental protection and responsible mining**. In 2017, discussions started on **integrating biodiversity** conservation and restoration measures **in mining operations** and their inclusion in the Environmental Compliance Certificate (ECC). In 2022, the DENR Administrative Order 2022-04 was issued to enhance Biodiversity Conservation and Protection in Mining Operations. DENR further issued a degree on promoting biodiversity-friendly enterprises⁵⁷ (see above in chapter: The Philippines's incentives for biodiversity conservation).

The Philippine **Green Jobs Act** (Republic Act No. 10771, 2016) affirms labor as a primary social economic force in promoting sustainable development. It refers to employment that contributes to conserving or restoring the quality of environment, such as sustainable agriculture and fisheries, ecosystem restoration and ecotourism. In line with this act, DENR promotes under its program of "**Enhanced biodiversity conservation**" the **establishment of ecosystem-areas** as a priority activity⁵⁸ that fosters the conservation of natural and cultural as well as economic benefits for local communities.

⁵⁶

<https://www.informea.org/sites/default/files/legislation/DENR%20Administrative%20Order%2021%202018%20%28Adoption%20of%20the%20Lawin%20Forest%20and%20Biodiversity%20Protection%20System%20as%20a%20National%20Strategy%29%20i.pdf>

⁵⁷ <https://bmb.gov.ph/bmb/DAO/dao2021-13.pdf>

⁵⁸ <https://www.denr.gov.ph/index.php/priority-programs/enhanced-biodiversity-conservation>

Ecotourism

The approach of ecosystem-areas for community development and natural conservation was redefined by the **National Ecotourism Strategy and Action Plan 2013-2022**. This plan prioritizes development programs targeting ecotourism at key natural heritage sites. Ecotouristic destinations have been identified in about 60 Key Biodiversity Areas (KBAs) and are listed under the National Tourism Development Plan 2016-2022.

Fisheries

The Philippines places strong efforts on marine biodiversity conservation, justified by the fact of being an archipelagic country with more than 7,500 islands that are part of the world's center of marine biodiversity. In 1992, the Republic Act 7586 on **National Integrated Protected Areas System (NIPAS)** included marine protected areas and networks. The national **Fisheries Code** regulates fishing and prohibits the use of explosives, electric or poisonous substances, and indicates sanctuaries, threatened or endangered species. According to the 6th NBSAP, **baselines for fish species were established based on the CBD** that are continuously updated to evaluate the status of fish stocks. In 2013, the **National Plan of Action against IUU fishing** was adopted by Executive Order No. 154, creating the Inter-agency Philippine Committee on IUU fishing. In 2015, the Republic Act 10654 to Prevent and Eliminate IUU fishing was passed. The government uses satellite-based tools for combatting illegal fishing and protecting marine biodiversity.

Agriculture

The government supports the **conservation of agricultural biodiversity**, namely the national genetic pool of plant and animal resources for food and agriculture that is estimated to comprise more than 3,000 species and varieties (e. g. traditional varieties of rice, sweet potato, yam, and taro). Several programs are in place, including the establishment of community-based gene banks. The Philippines is a member of the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)** of the Food and Agriculture Organization of the United Nations (FAO). In 2019, the "Plant genetic resources sustainable use and protection act"⁵⁹ was issued.

In 2013, the Philippines initiated the **Nationally Important Agricultural System (NIAHS)** as part of a global initiative on the Conservation of **Globally Important Agricultural Heritage Systems (GIAHS)**. The aim is to promote traditional agricultural practices that support food security, local livelihoods, agrobiodiversity and that are related to key biodiversity areas. So far, indigenous agroforestry and lowland traditional production systems were identified, including beliefs and rituals.

Since 2010, the government promotes organic farming under the **Republic Organic Agriculture Act 10068**. Furthermore, **biodiversity-friendly agricultural practices (BDFAPs)** have been developed (e.g. zero burning, organic use; contour farming; agroforestry). These are promoted by the joint order 2021-01 of Department of Agriculture / Department of Environment and Natural Resources (DENR)⁶⁰ as the **Philippine National Standards for BDFAPs** to be voluntarily adopted by farmers.

⁵⁹ https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic_18/HB00268.pdf

⁶⁰ https://bmb.gov.ph/bmb/DAO/joint_da-denr_2021-01-1.pdf

Forestry

The Philippines implements the Master Plan for **Climate Resilient Forestry Development** (PMPCRFD) 2015-2028 for reducing carbon emissions. The **National Greening Program (2011)** is the government's main strategy for reforestation. The **Philippine Master Plan for Climate-Resilient Forestry Development** 2015-2028 also recognized rehabilitation and maintenance of degraded mangrove forests and watersheds to address ecosystem resilience.

In 2017, the Philippines developed the strategic **Vision on Bamboo and Rattan for ASEAN development** as key products for meeting global ASEAN climate and environmental commitments. The vision refers to the need to mobilize financial resources and develop appropriate policy frameworks for the sustainable management and trade of bamboo and rattan resources. However, the vision was not yet approved.

The Philippines' incentives for biodiversity conservation

The Philippines has developed a **sustainable finance roadmap** (Ernst & Young, 2021) for activities related to both the greening of the financial system and the financing of sustainable activities, with a focus on climate change as a critical contributor to the achievement of the SDGs. The roadmap recognizes that *...in the Philippines, there are no **current incentives given to issuers of sustainable financial products**. However, in the ASEAN level, several countries, specifically Malaysia and Singapore, provide grant schemes and tax incentives to alleviate the costs of external review. As such, it paves way to mainstreaming sustainable finance through the reduction of cost on issuing sustainable financial products, allowing it to be competitive*".

Furthermore, incentives for biodiversity conservation in public programs are limited. The United Nations Development Programme (UNDP) global program "The biodiversity finance initiative – Biofin" promotes the mainstreaming of biodiversity through the existing "**Seal of Good Local Governance**"- **criteria for local government units** as an assessment system for integrity and good performance, including the topics of biodiversity conservation⁶¹. The process is not yet completed. Further assistance is given to promote **public-private partnership** (PPP) collaboration in protected areas to increase private funding.

Incentives in agriculture and fisheries

In the agriculture and fisheries sector, there is still a high need to improve access to finance, and to increase transparency and traceability along supply chains. DENR and the Biodiversity Management Bureau have a **database of more than 320 people's organizations with biodiversity-friendly enterprises (BDFE)**⁶² across the country⁶³, but public support is limited. Biofin recommends the development of private financial products for scaling up these enterprises and the **promotion of the officially established biodiversity-**

⁶¹ <https://www.biofin.org/philippines>

⁶² BDFE are defined to implement „economic activities and practices of micro, small, and medium enterprises, local government units (LGUs), and people's organizations (POs) that promote the sustainable use of biological resources, create wealth and value, and open opportunities for the equitable sharing of benefits among stakeholders“. See: <https://r6.denr.gov.ph/index.php/news-events/regional-releases/1444-environmentally-responsible-bdfe-and-gears-for-guides>

⁶³ https://bmb.gov.ph/bmb/References/SGP5_Scaling_Up_BDFEs.pdf

friendly agricultural practices (BDFAPs). Furthermore, the creation and promotion of digital platforms for market access of biodiversity-friendly enterprises and protected areas are suggested to mobilize resources for biodiversity conservation.

So far, there are two environmental trust funds in the country, the Foundation for the Philippine Environment (FPE) and the Philippine Tropical Forest Conservation Foundation (PTFCF, also now known as the Forest Foundation Philippines). Both are aligned to PBSAP in order to mobilize funds for biodiversity conservation. In this context, DERN implements a **standardized procedure for the development of local biodiversity strategy and action plans** that have been piloted to be used for crowdfunding along different actors for biodiversity-related issues.

Payment for ecosystem services (PES)

PESs have been implemented in the Philippines in different forms since early 2000, but the mechanism is **still not systematically fostered by the government** (Noza, 2020). The Philippines has a **large potential to use PES in watershed areas** to improve actions for biodiversity conservation, since many **key biodiversity areas** are sources of irrigation water (there are 74 national irrigation systems that are sourced from 44 of these key areas). Further initiatives aim to establish PES in form of an **ecological tourism fee** to be paid to local government units for biodiversity conservation activities (supported by BIOFIN).

Another initiative is the **trust fund created** under **Energy Regulation (ER) 1-94** that requires that energy generation companies have to pay a fee per kilowatt hour of the total electricity sales to benefit host communities. The funds are implemented in coordination with the Reforestation, Watershed Management, Health and/or Environmental Enhancement Fund.

These initiatives contribute to biodiversity conservation, but are not directly related to trade.

ESG Investments Task Force in preparation

The establishment of an **ESG** Investments Task Force is foreseen, to be composed by various public, private, civil and academic stakeholders to establish credible Standards and Certification schemes for ESG.

c) Viet Nam

Viet Nam's policies for biodiversity conservation

Viet Nam is a **partner country of the UNCTAD BioTrade Initiative**⁶⁴ since 2003. In 2012, SECO started to support the development of BioTrade activities within the natural ingredient sector, and activities were scaled up in partnership with the European Union to the phyto-pharmaceutical sector. Today, the national NGOs BioTrade Implementation Group (BIG) and the Center for Rural Economy Development (CRED) provide support for BioTrade activities. In 2019, UEBT launched a regional representative for South East Asia and counts today with a regional office in Viet Nam⁶⁵.

⁶⁴ Pham Anh Cuong: ABS and BioTrade in Vietnam. <https://unctad.org/system/files/non-official-document/ditc-ted-07052019-scc2-Vietnam.pdf>

⁶⁵ https://www.helvetas.org/en/vietnam/who-we-are/follow-us/news/Launching-Ceremony-of-the-Union-of-Ethical-BioTrade-s-Representative-in-South-East-Asia_pressrelease_5580

Viet Nam aims to adapt to the **integrated Green GDP calculation framework** proposed by the United Nations (Schweinfest et al. 2022) to fully evaluate and record environmental products and services. In 2010, the Prime Minister signed Decision No. 43/201/QD-TTg which plans to apply the green GDP target in the system of socio-economic indicators from 2014. So far, experimental calculations were carried out by the Ministry of Planning and Investment.

Overall, Viet Nam has a very progressive **policy and legal framework** for biodiversity conservation. In 2008, the **Biodiversity Law** was issued that elevate the priorities of biodiversity conservation to the level of an independent law, and includes a special chapter on ABS. In 2014, the **Biodiversity Conservation National Master Plan** was issued that aims to ensure the conservation of important natural ecosystems, endangered species and genetic resources under adaptation of climate change, among other through the development of biodiversity corridors. Viet Nam has finalized its new NBSAP to 2030 with a vision to 2050 prior to finalization of the Kunming-Montreal Global Biodiversity Framework (GBF)⁶⁶ agreed by CBD Parties in December 2022. Viet Nam is further the **most progressed AMS in ABS**. The Ministry of Natural Resources and Environment (MONRE) and the Ministry of Agriculture and Rural Development (MARD) issued in 2017 the Decree No. 59/2017/ND-CP for ABS and a respective guidance document for its implementation. Further important laws for biodiversity conservation are the **Forest Protection and Development Law (2004)** and **The Environment Law (2015)** which covers environmental protection concerns for the assessment, planning of utilization of natural resources and biodiversity across all sectors.

Since 2015, Viet Nam counts with technical guidelines for integrating **Biodiversity Impact Assessment in EIA** which must be completed before the construction of any facility. In 2016, the '**National Action Plan on sustainable consumption and production to 2020, vision to 2030**' was approved, that aims to gradually change production and consumption patterns towards more efficient use of resources and energy. In 2022, the **National Strategy for Environmental Protection to 2030** with a vision until 2050 was approved which aims to solve urgent environmental problems, to restore the quality of the environment and of biodiversity using the instrument of environmental taxes (see below).

Beside the progressive legal and policy framework, constrains in its implementation persists. According to the 6th NBSAP, Viet Nam still has problems with the trade on illegal wild life, and in 2016, several urgent measures were issued to combat illegal trade.

Agriculture

Viet Nam's **National Strategy for Green Growth 2011-2030** aims to achieve economic prosperity, environmental sustainability and social equality. It aims to "*develop modern, sustainable, organic and clean agriculture, improve the quality, added value, and competitiveness of agricultural production through the adjustment and restructuring of livestock, crops, forestry, aquaculture, and application of processes and technologies for economical and efficient use of seeds, feed, agricultural materials, natural resource*". The strategy is in line with the previous **Plan of restructuring the agricultural sector towards a value added and sustainable development** of 2013 (Prime Minister Decision No. 899/QD-TTg) that promotes green and environmentally-friendly agriculture, compliance to safety standards, and sanctions for environmental violations. In this context, the government also supports the promotion of VSS certifications in agriculture by co-financing or assistance.

⁶⁶ <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>

Forestry

The green growth strategy further promotes reforestation and sustainable forestry development, Viet Nam being one of the top ten countries at the global level in reforestation. However, most planted forests are monocultures composed by exotic trees providing little benefits for biodiversity. The **Program for Sustainable Forestry Development 2016-2020** aimed to increase the national forest cover, to improve forest productivity and export volume of forest products and to maintain forest jobs. The program also included the allocation of forest areas to households and communities. It is expected that the implementation of the Forest program will improve forest protection, but specific activities related to biodiversity conservation are not mentioned. As further stated out in the 6th NBSAP, Viet Nam aims to increase the forest area under FSC-certification.

Viet Nam is further a country with the largest **bamboo reserves** in the world. Viet Nam aims to reduce rural poverty and inequality by the development of sustainable Bamboo Value Chain in sustainable production. Several bamboo industry associations were supported by the government for improving market access⁶⁷.

Fisheries

The Viet Nam **Law on Fisheries (2017) promotes a sustainable use of fishery resources and aquatic biodiversity conservation**, by detailing zones, seasons, and fishing gear to be used. Under the **Program for conservation of endangered precious and rare aquatic species to 2015 and vision to 2020** several rare fish species were reproduced. In 2018 the **National Plan of Action on preventing, reducing and eliminating IUU fishing** up to 2025 was approved. International regulations on IUU fishing have been integrated into the Fisheries Law. Coastal provinces have their own zoning master plans for fishery, and MARD organizes annual programs of aquatic resource releases for rivers, lakes, and coastal areas.

In addition, Viet Nam **promotes aquaculture** production as a contribution to biodiversity conservation. This accounts for more than half of the Viet Nam's fishery production and reduces the pressure of natural fishing. In 2008, the regulation on **inspection and certification of sustainable aquaculture** was issued. Several units attained certification by the Marine Stewardship Council (MSC) or Aquaculture Stewardship Council (ASC) with improved market access to the European Union, United States of America and Korea.

Viet Nam's incentives for biodiversity conservation

Viet Nam's incentives for biodiversity conservation focus on setting the natural resources and ecosystem services in value. Several agencies are **charging fees for the use of natural resources**, in the form of fees for pasture and grazing, fisheries and EIA permitting and review, as well as for environmental protection, inspection and wastewater discharge licenses.

Trust funds for biodiversity conservation

⁶⁷<https://vietnam.oxfam.org/what-we-do-secured-livelihoods-and-resilient-communities/inclusive-and-sustainable-clam-and-bamboo>

Since 2008, Viet Nam has established funds to support biodiversity conservation and environmental protection. The Trust Funds “Viet Nam Conservation Fund” and the “Forest Regeneration Fund” were established to support the Viet Nam Forestry Development Strategy, and since 2016 they have been integrated into the **Viet Nam Forest Protection and Development Fund** for protected areas. In 2007, the Viet Nam Fund for Aquatic Resources Reproduction was established to support biodiversity conservation projects in the fisheries sector, but there has been no progress in mobilizing resources. There is further the community Development Fund (CDF) related to poverty reduction and capacity building by international development organizations.

Payment for ecosystem services (PES)

Since 2008, Viet Nam implements PES schemes for biodiversity conservation. The focus is on **forest environmental services** used by **water** consumers, including hydropower plants, bottled water companies, and tourism businesses. From 2010 to 2012, several decrees were issued by MARD with principles and methods of determining the forest area to be incorporated into the payments, how to determine payments for forest PES, and procedures for checking and collecting payments. The PES fees are collected by the Central Fund. Of the total, 10% are foreseen for provincial funds, 5% for reserves, and 0.5% as a management fee at the central fund. The remaining amount is designated to be paid to forest owners and other stakeholders.

Environmental protection tax

In 2010, Viet Nam issued the **Law on Environmental Protection Tax** that applies to eight economic groups that impact heavily on the environment: gasoline, oil and lubricants; coal; gas; plastic bags; herbicides; termiticides; forest products preservatives; and sterilizers. The law requires the **payment of a direct tax upon the sale or import for every unit of the mentioned goods**. Furthermore, a tax on mineral exploitation and water resources is charged and fees for wastewater. Parts of the funds are channeled to **Viet Nam Environmental Fund**, increasing the public budget for biodiversity conservation. Since 2022, a **new law on Environmental Protection** is in place that aims to harmonize with international rules and practices. The law proposes a new environmental master license to replace a number of environmental permits. The **range of goods subject** to the environmental tax may become widened. On the other hand, the range of businesses subject to an environmental impact assessment report reduces. **Investors have to assess and propose compensatory plans for the loss of ecosystem diversity** caused by their activities, and are required to assess the impact on the **natural heritage**. It is also foreseen that **authorities will promote "eco-labeling"** and "green credit," as certifying environmental-friendly products, services or investment projects. (Burke et al. 2021)

Viet Nam further **mobilizes private funding** for biodiversity conservation in a **voluntary way** by businesses linked to the use of natural resource (e.g. mining sector, such as the Holcim International Cement Company that supports, according Viet Nam’s 6th NBSAP, by USD 1 million the conservation of limestone karst landscapes). In several national parks and biosphere reserves, tourism models associated with biodiversity conservation are promoted to increase income and fees.

Reduce Emissions from Deforestation and Forest Degradation (REDD+)

Viet Nam is acknowledged to be a **REDD+ pioneer country**, having adopted REDD+ in 2009. Forest cover has increased since 2012, but enhancing, or even maintaining forest quality and biodiversity remains a challenge (CIFOR, 2019). At present, the integration of REDD+ into areas of high biodiversity is in progress. In this sense, REDD+ is an opportunity to mobilize funding for biodiversity conservation, even if it is not directly related to trade.

Incentives in agriculture and fisheries

At present, there are activities ongoing to design and implement a new financing mechanism for the fisheries resource protection through establishing a **fishery resource protection fees**⁶⁸.

In 2013, MARD set up the Steering Committee on Sustainable Development to prepare actions aligned to the Plan of restructuring the agricultural sector and integrating sustainable development strategies into the policy-making process. Viet Nam has introduced several incentive schemes to **promote the high-tech agriculture** (see above and Nguyen & Nguyen, 2021), but not necessarily for biodiversity conservation.

There are further a number of **national labelling programs** for environmentally-friendly products and services. The most popular labelling programs are **Viet Nam Green Label** issued by MONRE and the Energy Label. The Viet Nam green label is given for products or services made from environmentally friendly materials technologies. As an incentive, certified units receive a reduction in corporate income tax and land rent⁶⁹.

⁶⁸ <https://www.biofin.org/viet-nam>

⁶⁹ A snapshot of ESG in Vietnam. <https://www.allens.com.au/insights-news/insights/2022/08/a-snapshot-of-esg-in-vietnam/>

4.4 Voluntary sustainability standard (VSS) and biodiversity conservation

The assessment of voluntary sustainability standards (VSS) in biotrade on how they contribute to the conservation and sustainable use of biodiversity follows the definition of the UNCTAD BioTrade principles 1 and 2 (Fig. 16). The content of the principles was broken down into sub-criteria, following the theory of change of sustainability certification proposed by IUCN (2016). According to this theory, positive impacts for biodiversity conservation can be either achieved in a direct way, or in an indirect way by contributing to the conservation of natural resources, such as soil, water, and climate.

Fig. 16: Principles 1 and 2 of the UNCTAD BioTrade Principles and Criteria (UNCTAD, 2020).

Principle 1. Conservation of biodiversity

- 1.1 Activities contribute to maintaining, restoring or enhancing biodiversity, including ecosystems, ecological processes, natural habitats, and species (part. threatened or endangered ones).
- 1.2 Genetic variability of flora, fauna and micro organisms [...] is maintained, restored, or promoted.
- 1.3 Activities are aligned with national, regional, and/or local plans for sustainable management, conservation, and restoration of biodiversity [...]

Principle 2. Sustainable use of biodiversity

- 2.1 The use of biodiversity is sustainable, based on [...] trainings and on good collection, harvesting, cultivation, breeding or sustainable tourism practices.
- 2.2 Measures are taken to prevent or mitigate negative environmental impacts [...] in relation to flora and fauna; soil, air and water quality; the global climate; use of agro chemicals; pollution and waste disposal; and energy consumption.
- 2.3 Activities contribute to measures that strengthen resilience and the adaptive capacity of species and ecosystems to climate related hazards and natural disasters.

a) Key data of the selected VSS

The assessed VSS in this study were randomly selected and are all applied in the global biotrade sector. Some certifying organizations, namely UEFT, Fair for Life and Naturland, have several VSS, that result in a total number of 9 VSS assessed of 6 certification organizations (Fig. 17).

Two VSS are targeting **organic** certification, the **Ecocert** / European organic standard (EOS) and the **Naturland production** standard. Two further VSS are promoting **fair trade** (**Fair for Life standard** and **Naturland fair**). The “**For Life**” standard promotes **Corporate Social Responsibility** and solid partnerships between local producers and international companies. The **ForWild** standard was especially developed for **wild harvested products**. It is more a scheme of principles and criteria that aims to encourage users to adapt it according to the characteristics of their specific product. The **FSC** standard **for NTFP** is also specialized on NTFP and wild harvested products. Since 2018, there is an interim standard for FSC NTFP for Viet Nam, and a further FSC NTFP standard was recently approved for Indonesia (07/2022). The **Union for Ethical BioTrade’s (UEBT)** standard for ethical sourcing has the most holistic approach and is fully aligned to the UNCTAD BioTrade P&C. Furthermore,

UEBT applies VSS, the herbs and spice program, that is implemented in partnership with the Rainforest Alliance (RA), and the UEBT standard for specialty ingredients⁷⁰ (see 4.4 c).

Fig. 17: Key data of the assessed VSS and its range in Indonesia, the Philippines and Viet Nam. Prepared by the author based on data from the websites of Ecocert⁷¹, Fair for Life⁷², FairWild, NTFP-FSC⁷³, Naturland⁷⁴ and UEBT⁷⁵ in 09/2022.

ASEAN member state	Total	Organic Ecocert	Fair for Life		FairWild	FSC for NTFP	Naturland		UEBT	
		European Organic Standard	For Life	Fair for Life	sustainable NTFP/wild harvest	Natur-land fair	Naturland production standard	Ethical BIO-TRADE for specialty ingredients Sourcing with respect ⁷⁶	Herbs & Spices Programme RA/UTZ for teas and spices, incl. wild harvest	
Indonesia	31	14	2	3	-	Standard approved in 07/2022 ⁷⁷	-	9	1	2
Philippines	38	22	-	1	-	--	7	7	-	--
Viet Nam	23	10	2	2	-	1	1	5	1	2
Total	91	46	4	6	-	1	7	21	2	4

The **organic standards** (Ecocert EOS and Naturland production) are of highest relevance in the three AMS, representing **75% of current certificates in these countries out of the assessed VSS** in the biotrade sector. They are followed by VSS on fair trade and CSR that achieve 19% of all current certifications (Naturland Fair, Fair for Life and For Life). **Only 5%** of the current certifications have a specific focus on a **sustainably managed production system**, like the FSC for NTFP, the UEBT certificate for special ingredients and the UEBT/RA Herbs and Spice (Fig. 18).

The **Fair for Wild** standard, with its specific focus on the sustainable management of wild-collected products, **is not applied** in any of the three AMSs, nor is the **UEBT Ethical sourcing system certificates**, which is currently issued only to two companies worldwide.

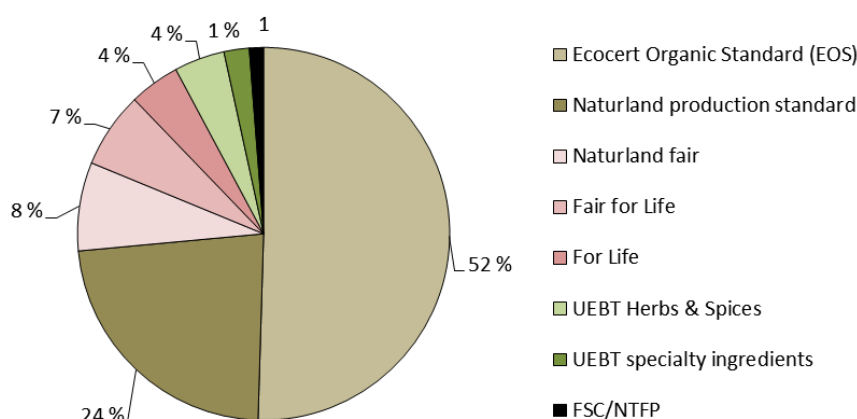


Fig. 18: Share of issued certificates for the assessed VSS. Prepared by the author based on data from the websites of Ecocert, Fair for Life, FSC, Naturland and UEBT, 09/2022, see fig. 17.

⁷⁰ <https://uebt.org/herbs-and-spices-program>

⁷¹ Ecocert clients directory: <https://certificat.ecocert.com/?source=ecocertcom&l=en>

⁷² Fair for Life certified operators

https://www.fairforlife.org/pmws/indexDOM.php?client_id=fairforlife&page_id=certified&lang_iso639=en

⁷³ <https://us.fsc.org/en-us/web-page/-/fsc-certificate-database>

⁷⁴ <https://www.naturland.de/en/naturland/service>

⁷⁵ UEBT certification holders: <https://uebt.org/certificate-holders>

⁷⁶ For Sourcing with respect see: <https://uebt.org/what-is-sourcing-with-respect>

⁷⁷ https://www.lesprom.com/en/news/FSC_approved_Regional_Forest_Stewardship_Standard_for_smallholders_in_Indonesia_103387/

At country level, the Philippines has most (38) currently active certificates of the assessed VSS in biotrade, followed by Indonesia with 31 certificates. The certificates in the Philippines correspond to organic and fair trade VSS (Naturland Fair and Fair for Life). In Indonesia, the same VSS are applied, plus certificates by UEBT/RA herbs and spices program and specialty ingredients. **Viet Nam has the lowest number of certificates out of the assessed VSS, but the highest diversity of VSS** with 7 different standards, including FSC/NTFP and UEBT (Fig. 19). The assessment of these results should be done with care, as they are influenced by the pre-selection of the VSS analyzed in this study - other VSS that are not considered in the study may be more frequent than those analyzed. Nevertheless, the **higher frequency of organic certifications in the Philippines** compared to Viet Nam is remarkable. It is also evident that in all three AMS, the **focus on BioTrade as promoted by UEBT is still quite modest** compared to other VSS.

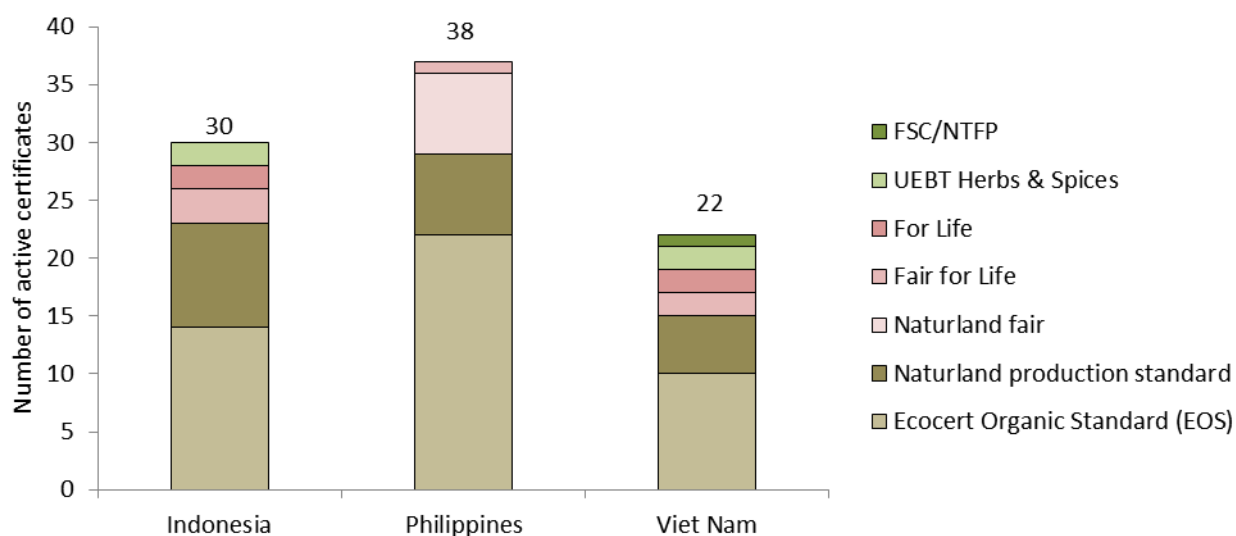


Fig. 19: Number of active certificates by the assessed VSS in the selected AMS. Prepared by the author based on data from the websites of Ecocert, Fair for Life, FSC, Naturland and UEBT.

b) Certified products and their potential to contribute to biodiversity conservation

Biotrade products are often **classified according to their use**, e.g. for the food, cosmetic or pharmaceutical sectors, and further subgroups, e.g. beverage plants, spices. This classification can be useful for economic analyses, but mixes different species and plant types that have **different potential for biodiversity conservation**. For example, the category "spices" includes various plant species and parts such as seeds of vines (pepper), tubers of herbal plants (ginger), tree bark (cinnamon), and tree seeds (star anise) of which each species has its specific potential to contribute to biodiversity conservation. Thus, to facilitate the assessment of contribution to biodiversity conservation, the certified products are hereafter classified in plant groups that reflect their inherent potential according to key questions proposed by Woda in Wilson 2019 (see chapter 3.2).

The VSS certifications cover not only the raw material but also semi-processed products. However, to simplify the analysis, only the used species are considered here to assess the impact of on-site biodiversity protection. Fig. 20 gives an overview of the certified plant types and the respective species certified under the assessed VSS in Indonesia, the Philippines and Viet Nam.

Fig. 20: Certified plant type covered by the assessed VSS in at least one of the selected AMS and its intrinsic potential to contribute to biodiversity conservation (Woda in Wilson, 2019 and Fig. 2a).

Plant type	Species	Used part of the plant	Potential to contribute to biodiversity conservation ⁷⁸	Main use
Short living crops	corn, rice	seeds (whole plant is harvested)	negative or low	food
Grasses and <i>Asphodelaceae</i>	sugar cane, lemon grass, aloe vera	leaves and trunks	negative or low	food, cosmetics
Annual plants (up to 2 years living)	onion, garlic, chili, potato, manioc, butterfly pea, ginger, turmeric	roots, fruits (whole plant is harvested)	negative or low	vegetables, food, beverages, spices
Perennial plants	cardamom	seeds	middle	spices and medicinal purpose
Vines	pepper, vine leaves, vanilla	leaves and fruits	middle	spices and food
Fruit trees and shrubs	avocado, banana, citric species, mango, jackfruit, dragon fruit, cashew, cocoa, coffee, nutmeg, cloves, star anise	seeds and fruits	middle – high	tropical fruits, beverage
non fruit trees and shrubs	patchouli, tea, hibiscus	leaves and flowers	middle – high	beverage
non fruit trees	cinnamon	bark	negative - middle - high	spice
non fruit trees	rubber, siam benzoin gum	gum	negative - middle - high	industrial
palm tree	coconut	fruit	negative -middle - high	food
wild harvested trees	illipe butter, Aleurites moluccanus	seeds	very high	cosmetics, food
other wild harvested plant	bamboo	trunk	middle - high	furniture

At present, there are 42 species certified in Indonesia, the Philippines and Viet Nam under one of the assessed VSS. Strictly spoken, there are even more, since for different kinds of potatoes, cassava and manioc only one species was counted each. It is remarkable that **of these 42 species, 38 belong to mainstream commodities**, such as coffee, cocoa, tea, rice. **Wild-harvested products** - or so called “botanicals” from native species represent **only four species** – Siam benzoin gum (*Styrax tonkinensis*) and bamboo from Viet Nam, and the seeds of the illipe tree (*Shorea stenoptera*) and Kukui-tree (*Aleurites moluccanus*), both from Indonesia. In the Philippines, there were no wild harvest species found that are certified under the analyzed VSS.

Fig. 21 shows that four plant groups are the **most abundant** ones with certification of the assessed VSS, namely 1) **coconut palm tree**, 2) **fruits and seeds of other cultivated**

trees and shrubs, 3) **sugar cane (and less lemon grass)** and 4) **vegetables**. All of these plant groups are targeted by the **organic and fair trade** certifications, while vegetables only count with organic certification.

Fig. 21: Frequency of plant groups and species certified according to organic, fair trade and sustainable production standards Ecocert, Naturland, Fair for Life, UEBT and NTFP-FSC in Indonesia, the Philippines and Viet Nam (09/2022). Prepared by the author based on data from the websites of Ecocert, Fair for Life, FSC, Naturland and UEBT, see fig. 17.

Plant group or species	Frequency in current certifications VSS			
	total*	organic*	fair trade	sustainable production
Cultivated annual crops				
Rice	6	6	-	-
Sugar cane, lemon grass, aloe vera	> 19	> 11	7	1
Vegetables	> 15	> 13	1	1
Cultivated perannual crops				
Vines (pepper, vanilla)	> 6	> 5	1	-
Cardamom	2	2	-	1
Fruit trees and shrubs (including seeds for spices)				
shrubs/trees for leave and flower teas	> 4	> 3	1	1
Coconut palm	> 28	> 25	3	-
Cinnamon bark	> 4	> 1	1	2
rubber tree (gum)	1	-	-	2
Wild harvest from native ecosystem				
tree seeds	2	1	2	-
tree gum	1	-	-	1
bamboo	1	-	-	1

*for the Naturland production standard there were no detailed information about the exact number of plant group or species frequency available, thus, a “larger than”-sign is used.

c) The focus of selected VSS and its importance for biodiversity conservation

- **Ecocert Organic-Standard Europe (EOS) standard**

The European Union Organic Standard (EOS) is in place since 1991. It covers agricultural products, aquaculture and yeast. The aim of the EOS is to promote the production of **healthy food with a minimum environmental impact**. EOS is of high relevance for AMS especially for the food sector when exporting biotrade products to the European Union (see 4.1 d). ECOCERT verifies and certifies producers that export to the European Union in accordance with EOS. Out of the current active certifications for biotrade products under the assessed VSS in Indonesia, the Philippines and Viet Nam, the **EOS/Ecocert standard is the most frequent** one. The most frequent species that are certified by Ecocert/EOS in these countries are **coconut**, followed by the plant groups “**vegetable**”, “**trees and shrubs used for fruit or seed production**” and **sugar cane**. There are no EOS certifications for wild harvested species in the three AMS (Fig. 22).

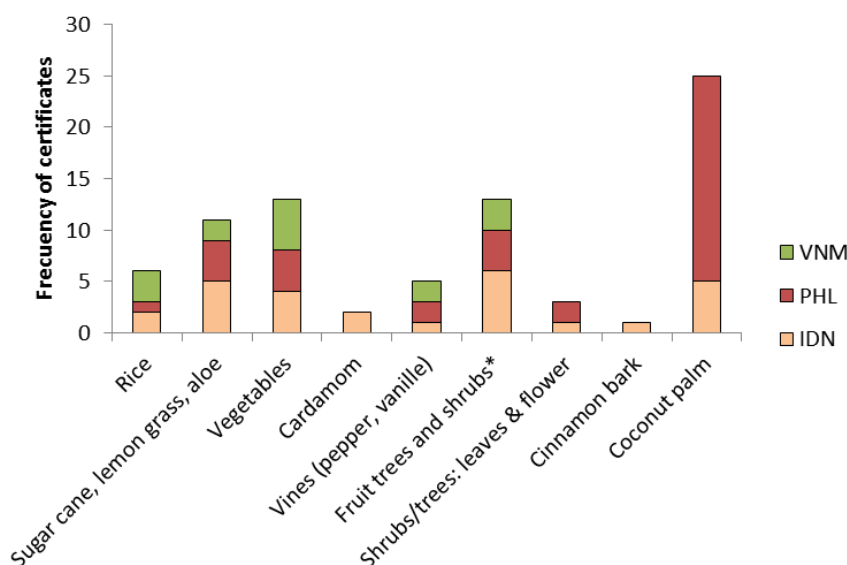


Fig. 22: Plant types groups currently certified under ECOCERT/EOS in Indonesia, the Philippines and Viet Nam. Prepared by the author based on data from the Ecocert website 09/2022.

Sugar cane and vegetables produced at commercial scale have a **rather low intrinsic potential** to contribute to biodiversity conservation due to their short life cycle and being cultivated in monoculture fields. **Fruit trees** and coconut palm have a **higher intrinsic potential** for biodiversity conservation, since they are permanent crops that can contribute to improve soil structure and health by large root systems. However, the impact on biodiversity conservation depends on the implementation of specific biodiversity measures.

EOS does not have any specific criteria for increasing biodiversity through farming activities. It rather **contributes indirectly** to biodiversity conservation by reducing the use of agrochemicals and excluding genetically modified organisms (GMO). EOS VSS further requires the maintenance and **improvement of soil health** through increasing organic matter and implementing measures that improve the biological activity and reduce soil compaction and erosion. It further addresses the **reduction of water pollution** by avoiding agrochemicals. Specific criteria to promote the efficient use of water and to reduce greenhouse gases (GHG) emissions were not found.

The strongest focus on biodiversity conservation is given by EOS in the case of wild harvest systems. The standard requires that the stability of the natural habitat and the species is not affected. Nonetheless, **there are no further specific measures foreseen for increasing or maintaining biodiversity** in wild harvest production systems.

- **Naturland fair and Naturland (organic) production standard**

Naturland is an association of organic growers and was founded in Germany in 1982 by a group of farmers, scientists and local residents⁷⁹. Naturland aims to promote organic production and the recognition of its benefits by the society. According to Naturland, the quality benchmark of the **Naturland organic standard is higher than the EOS**⁸⁰. Today, there are over 140,000 producers in 60 countries working according to Naturland guidelines

⁷⁹ <https://www.naturland.de/en/naturland/service/all-news/4193-40-years-of-naturland-the-world-s-largest-international-organic-association-is-celebrating-a-milestone-birthday-this-year.html>

⁸⁰ <https://www.naturland.de>

for organic production of about 600,000 ha of land. Main focus of organic Naturland is on food production, namely agriculture crops, animal breeding and aquatic resources.

The Naturland organic standard is **applied in all of the three AMS**. In Indonesia, the certification covers several products including **fruits** (pineapple, banana, mango), coconuts and **spices**, and in the Philippines species, **coconut and sugar cane**. In Viet Nam, Naturland organic standard is applied for **fish and seafood** (Fig. 23). Naturland is further engaged to strengthen the **Viet Nam Organic Agricultural Association (VOAA)**, founded in 2011, as an umbrella organization for organic farming.

Fig. 23: Biotrade products currently certified under Naturland production standard in Indonesia, the Philippines and Viet Nam. Prepared by the author based on data of the Naturland website (09/2022).

**to simplify, only the raw material is mentioned and not the further processed products.*

Certified companies and organizations	Products certified under Naturland organic*
Indonesia Two companies and seven cooperatives with 2,572 producers	Pineapple, banana, mango, coconut, pepper, turmeric, cinnamon, star anise, muscat, clove, vanilla,
Philippines Seven cooperatives with 3,270 producers	Coconut, pepper, turmeric, cinnamon and star anise, herbs, sugar cane
Viet Nam Three companies, two cooperatives	Fish and seafood

Since 2010, Naturland offers certification for **fair trade** production (**Naturland fair**) which is currently applied in the **Philippines** for **sugar cane, mango and other dried fruits**, produced by seven cooperatives with 3,270 producers. There are **no specific criteria for the conservation of biodiversity and natural resources** in the Naturland fair standard since the standard is **applied in combination with the Naturland production standard** that covers the issues of ecological sustainability⁸¹.

The Naturland production standard has a very broad scope and covers cultivated and wild harvest production systems, including animal products from agriculture and fishery. There is a strong focus on the conservation of the natural resources and the maintenance of ecological functional processes in order to keep health, productivity and resilience of the production system and the target species. Producers are encouraged to **increase structural elements of biodiversity such as hedges, borders and humid areas in order to improve the “self-regulation of the (production) system”**. **Monocultures have to be minimized**, and coffee and cocoa must be grown under shade trees.

So far, there are **no specific actions foreseen to identify endangered species** and habitats and measures to protect them, and no **safeguard** criteria were found to ensure that the farming activities are not related to recently **deforested areas**. Naturland has recognized the need for action and is currently carrying out **a gap analysis with the HCV network**

⁸¹Naturland claims to bring “*organic agriculture, social responsibility and fair trade ... together in its certification to the Naturland Fair standards, ... which correspond to the three pillars of sustainability*”.

about including the concept of HCV in their standard and to define rules on how to prevent certification on deforested areas. It is further planned to implement a consultation about biodiversity ("Biodiversitätsabfrage") to **establish a (global) biodiversity strategy for Naturland**. These activities are **coordinated** with further important players of the VSS-sector, such as **BioSwiss, Demeter and the Soil Association**.

In case of so-called "**wild grown products**", Naturland requires collection to be done in accordance with a yearly assessment of a sustainable harvest quota. The standard is very strict to **limit the human interventions to the ecosystem under wild harvest merely to the harvest**. Measures to enhance or protect the target species population and the related ecosystem by e.g. artificial reproduction, soil management, cutting, fertilizing, are not promoted and should be kept on a very low level⁸². This may become **critical because the extraction represents an additional, non-natural impact on the species population** and special measures may be required to maintain the regeneration of the species while being harvested.

Water and soil protection is a core element of the Naturland standard, and various criteria address a careful and sustainable use of these resources. Crop rotation is promoted to improve soil fertility and to control weeds, diseases and pests. High attention is paid to avoid nutrient losses and leakage of nitrogen into water bodies. The use of synthetic chemical substances and growth regulators is prohibited. Measures have to be undertaken to improve water absorption, and farmers have to elaborate a **water management plan**. The standard further promotes explicitly the use of renewable energy as a contribution to the reduction of GHG and the storage of carbon dioxide (CO₂) in the soil by accumulation of biomass.

- **Fair for Life and For Life / Ecocert**

Fair for Life is a certification program for Fair Trade and responsible supply-chains in agriculture, manufacturing and trade⁸³. It was created in 2006 by Swiss Bio-Foundation and Swiss Institute for Market Technology (IMO, today renamed ECOCERT IMOSwissAG), and was taken over in 2014 by the Ecocert Group to address the high demand for organic farming. Fair for Life and Fair Life cover today over 700 certified companies and organizations in more than 70 countries, with approximately 235,000 producers and workers involved.

The core principles of **Fair for Life** certification promote responsible supply chains for **good economic, social and environmental practices**. The focus is on the respect of human rights, good and fair working conditions, and fair prices for smallholder farmers and workers, based on international minimum standards. Long-term contracts are promoted throughout the supply chain with fixed minimum prices and volumes. Fair for Life recognizes other Fair Trade standards that cover the same fundamental principles, and thus recognizes certificates issued by Fairtrade Labelling Organizations (FLO), Fair Wild, Naturland Fair and the Small Producers' Symbol standard.

The **For Life** standard focuses on **Corporate Social Responsibility (CSR)**. It aims to orientate business models towards responsible practices while respecting human rights and offering decent working conditions within sustainable local development. Furthermore,

⁸² "Plants must not be cultivated, and any measures to enhance or protect growth shall not be taken, or kept on a very low level (reproduction, soil management, cutting, extensive fertilizing)." (Naturland, 2022)

⁸³ see <https://www.fairforlife.org>, accessed on 24.08.2022

mechanisms to strengthen the participation of producers in decision making processes are supported.

At present, there are six **Fair for Life** certificates issued for biotrade-products from Indonesia (3), the Philippines (1) and Viet Nam (2). The certificates cover **coconut**, **spices** (star anise from Viet Nam, cinnamon from Indonesia), as well as **wild harvested products** such as the seeds of the illipe and the kukui tree from Indonesia (both used in cosmetics) (Fig. 24). The wild harvest products have a high potential to contribute to biodiversity conservation as they are extracted from native forests or remaining forest patterns, providing motivation to local people to conserve these areas of native ecosystems with all its biodiversity components.

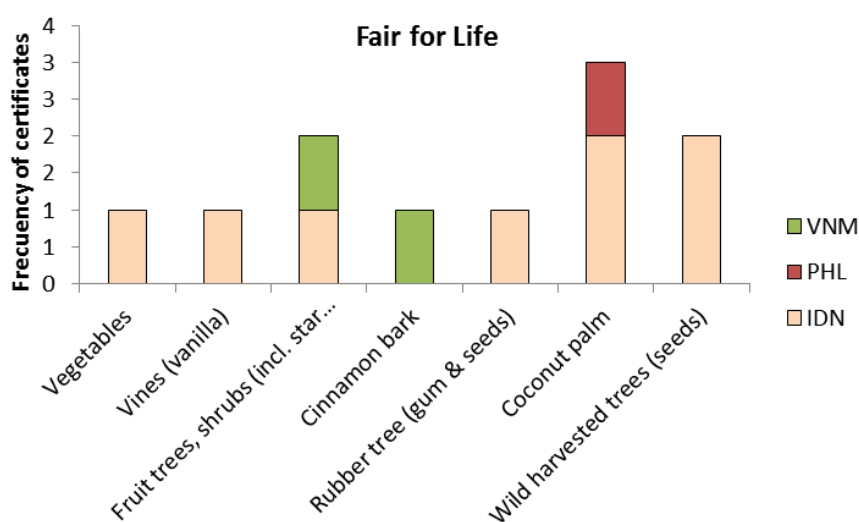


Fig. 24: Plant types certified under the Fair for Life-Standard in Indonesia, the Philippines and Viet Nam. Source: Prepared by the author based on the Fair for Life website.

For Life certificates are currently issued for two companies in Indonesia for cultivated pepper and patchouli, and for two companies in Viet Nam for cultivated pitahaya, and wild harvested benzoin gum, obtained from secondary forests stands grown on fallow agriculture land.

Besides the official focus on fair trade and CSR, the Fair for Life and For Life standards, both promote positive impacts on biodiversity and the sustainable use of natural resources. The standards differ mainly in their social criteria, but share the same ones to contribute to biodiversity conservation. Both have a **safeguard** included that excludes productions systems related to the **destruction of primary or secondary forests** in the last 5 or 10 years, if there are no compensation measures. Furthermore, the operation must not cause any negative impact on threatened or endangered species and their habitats. To this aim, a **diagnosis of the habitats and the existing flora and fauna** has to be done in order to identify any threatened or endangered species and habitats, and their threats. Specific measures are promoted to maintain or increase biodiversity in and around the managed areas.

In case of wild harvest systems, a **resource assessment** of the used plant (inventory) is required to establish a **sustainable collection** rate that enables the used species to regenerate over the long term. A monitoring system is required to control the collection rates. However, there are no specific measures foreseen to facilitate the regeneration of the wild harvested species (establishment of young trees/plants).

With regard to the conservation of natural resources, the producers are **encouraged to change to organic cultivation**. Further attention is given on promoting an environmental-

friendly preparation of the agriculture land through **no-burning** or only controlled small-scale burning. If any biomass is burned, compensation measures should be implemented. Any further environmental impacts of farming practices on air and water have to be minimized, and care of an efficient use of water and energy should be given.

- **Forest Stewardship Council Non-timber forest product standard (FSC NTFP)**

The Forest Stewardship Council (FSC) was founded by a group of businesses, environmentalists and community leaders after the 1992 Rio Earth Summit to create a voluntary, market-based approach to improve forest practices and to stop deforestation. The FSC certification system addresses the **ecological, social and economic dimension of long-term sustainability in harvesting of forest resources**. Today, there are 1,165 FSC members from 89 countries that hold 1,477 FSC licenses for approximately 220 million ha of certified forests and 50,000 chain-of-custody certificates. The FSC is a member of ISEAL Alliance and is compliant to the ISEAL Codes of Good Practice in Standard Setting, Assurance and Impacts⁸⁴. FSC's head quarter is in Germany.

Since 1999, FSC provides certification for **NTFP management systems on a case to case basis** (the first FSC-NTFP certification was for chicle in Mexico). FSC-NTFP **certification takes place according to local specific standards** endorsed in FSC National Standards (e.g. for Brazilian nuts in Bolivia and Peru, bamboo in Colombia, cork in Spain, pine kernels and chestnuts in Italy). Further, FSC accredited certification bodies can define specific "interim standards". In the ASEAN, the FSC-certification body GFA established the first interim standard for **NTFP in Viet Nam** in 2018; it covers bamboo, rattan, rubber, nuts, fruits, resins, seeds, mushrooms, honey and others. A first smallholder group was certified in 2021 under FSC-NTFP for the use of **acacia logs and native bamboo**⁸⁵. In **Indonesia**, a FSC standard for NTFP from smallholder plantations (< 20 ha) was approved in July 2022⁸⁶ and is at a stage of pilot testing. In the Philippines there is a FSC standard, but not for NTFP.

FSC-NTFP addresses the challenges of wild harvest and promotes specific measures for sustainable production, including principles for **long-term tenure and use rights** of the land and forest resources. FSC-NTFP is quite strict and complete in ensuring that ecological functions are not negatively affected by harvest but are enhanced or even restored. It considers **all the different levels of biodiversity**, from the genetic resource to species, habitat, and landscape level. **Safeguards** exist to prevent negative effects to **threatened and endangered species, and conservation zones and protection areas** have to be established. In this context, FSC has developed the concept of "**high conservation value (HCV) areas**", that is currently promoted by the HCV-network and adopted by several private and public actors world wide⁸⁷.

The FSC-NTFP requires the development of a **forest management plan** as a base for a sustainable production. The plan establishes the collection rate of the used species based on inventories, scientific research, or any other long term experience. The plan further indicates actions **to maintain the current natural composition and structure of NTFP populations**, including measures for **improving the natural regeneration** by enrichment planting and selection and protection of seed or trees. **This focus of FSC-NTFP to actively contribute**

⁸⁴ <https://www.isealalliance.org/iseal-community-members>

⁸⁵ <https://vietnamtimes.org.vn/first-fsc-certification-for-non-timber-forest-products-in-vietnam-37254.html>

⁸⁶ <https://fsc.org/en/newsfeed/regional-forest-stewardship-standard-for-smallholders-in-indonesia-approved>

⁸⁷ <https://www.hcvnetwork.org/hcv-approach>

to the species' regeneration in wild harvest production systems is a clear difference to organic VSS that tend to limit the impact of human activities to the extraction of the target species.

The FSC-NTFP interim standard for Viet Nam also has specific criteria for **soil conservation** and promotes non-chemical pest control. High toxic and persistent pesticides are prohibited. Specific criteria for reducing GHG emissions were not found. However, the aim of sustainable forest management and the prevention of forest destruction is part of the fundamental motivation of FSC and its compliance contributes to preserve GHG sinks.

- **FairWild standard**

The FairWild Standard focuses on **botanical products originating from wild collection**, including herbal drugs, fungi, lichens and other plants and its parts collected from natural habitats. The standard aims to close the gap between existing broad conservation guidelines on the one hand, and collection-management plans developed for particular species and local conditions on the other. The development of the standard was supported by the German Federal Ministry for Economic Cooperation and Development (BMZ), the European Union-China Biodiversity Project (ECBP), the Swiss Import Promotion Programme (SIPPO), WWF, the IUCN Medicinal Plant Specialist Group and TRAFFIC, beside others. Until 2016, the certification services were provided only by the Swiss Institute for Market Technology (IMO). Today, certifications are issued by Ecocert Swiss AG, CERES, the Control Union Inspections in Sri Lanka as a South Asia regional office, and the China Standard Conformity Assessment.

At present, the FairWild standard is applied to 25 wild harvested species from 19 countries with 17 certified companies and approximately 4,000 collectors involved. **There are no certifications issued in ASEAN so far.**

The main objective of FairWild standard is to **ensure the long-term survival of the given wild species in their habitats**, while respecting the traditions and cultures, and supporting the livelihoods of all stakeholders, in particular of collectors and workers. It has 11 key elements that include the maintenance of wild plant resources, the prevention of negative environmental impacts and the respect of customary rights and benefit-sharing. The collection must not affect ecosystem diversity, processes and functions at the local and landscape level. **Threatened and endangered species and habitats have to be identified and measures implemented for their protection. A species or area management plan is foreseen to define adaptive, practical management and good collection practices, based on species inventory and mapping, and a regular monitoring** of the target species and collection impacts. However, measures to increase the biodiversity or to facilitate the species regeneration are not foreseen.

A further focus is given on **land tenure and use rights** combined with respect for local **communities' and indigenous customary rights to use and manage collection areas**. This is an important topic for wild harvested products, since the collection is often done in public or community forests, and thus clear use rights are a key element for sustainable wild harvest systems in the long-term (Woda, 2021).

No further criteria that target the **conservation of natural resources** soil, water, air and climate were found. This is justified by the focus of ForWild Standard on wild harvest

collection systems that aim not to alter the natural resources of water, soil, and air while maintaining the natural ecosystem and avoiding its conversion into agriculture land.

- **Union for Ethical BioTrade (UEBT)**

The Union for Ethical BioTrade (UEBT) was founded in 2007 with the purpose to promote business engagement for ethical sourcing of biodiversity. According to UNCTAD, "**UEBT encourages private sector adoption of the BioTrade P&C, through the Ethical BioTrade Standard, to ensure that trade in biodiversity-based ingredients really contributes to local development and biodiversity conservation. Companies that are members of UEBT adopt Ethical BioTrade practices within their own operations, and encourage such practices among hundreds of suppliers and supply chains**" (UNCTAD, 2017b). UEBT has a **formal partnership with CBD** and implements supply chain verifications on demand for interested companies, and provide assistance for improving supply chain operation procedures and practices to meet the BioTrade P&C. When founded, UEBT's main objective was to assess supply chains in order to establish improvement plans for companies in line with BioTrade P&C, whereas **the UEBT certification for ethical sourcing was initially not foreseen**.

UEBT certification was developed in 2015 on the demand of biotrade companies that were highly compromised to comply with the BioTrade P&C. UEBT entered into partnership with the UTZ-Certification program for herbal teas (UEBT/UTZ Herbal Tea Program) in order to fill the gap of certification schemes for mixed black and herbal teas. When UTZ and Rainforest Alliance (RA) merged, UEBT started its partnership with RA in 2020 to create the UEBT/RA Herbs & Spices Program. Thus, UEBT handles at present **five certification schemes** beside the Chain of custody approvals; they are the UEBT Ethical sourcing system certificate, the **UEBT Ingredient certificate, the UEBT UTZ herbal tea program certificate** and the **UEBT & RA Herbs & Spices Program certificate**, including herbal and fruit infusions, rooibos, vanilla, chili, and pepper and other ingredients collected from the wild. For the UEBT & RA Herbs & Spices Program, the supply chains are verified by UEBT, but certified ingredients carry the RA certification seal. By doing this, **synergies** are created using the **expertise of UEBT** in the supply chain assessment, and the **highly recognized RA seal**. UEBT is a member of ISEAL Alliance and is compliant to the ISEAL Code of Good Practices for Effective and Credible Sustainability Systems⁸⁸.

At present, nearly 100 certificates are issued worldwide under the UEBT/RA Herbs & Spices Program. In contrast, only 16 certificates are active under UEBT special ingredients certificates, and three under the UEBT UTZ herbal tea program⁸⁹. For the standards, see UEBT web page (<https://uebt.org/resources>).

In the three AMS, there are five companies certified under the UEBT, namely two in Indonesia, and three in Viet Nam. Most certificates are issued for cinnamon bark production, **grown in large scale monoculture tree plantations**. One certificate also includes other species such as vanilla, nutmeg, clove, and butterfly pea, an ingredient for herbal teas and one is given for a wild harvest tree gum (Fig. 25).

⁸⁸ <https://www.isealalliance.org/defining-credible-practice/iseal-codes-good-practice>

⁸⁹ See UEBT's list of certificate holder: <https://uebt.org/certificate-holders>

Fig. 25: Biotrade products currently certified under the UEBT/RA Herbs & Spices program in Indonesia, the Philippines and Viet Nam. Source: Own research based on UEBT website (09/2022).

*to simplify, only the raw material is mentioned and not the further processed products.

Certified companies	Certified species under the UEBT / Rainforest Alliance Herbs & Spices Programme or UEBT ingredients
Indonesia	
PT. Cassia CO-OP	Cinnamon (UEBT ingredients and UEBT /RA)
PT. Tripper Nature	Cinnamon, Vanilla, Nutmeg, Butterfly Pea, Clove (UEBT / RA)
Philippines	
-	-
Viet Nam	
Duc Phu Company	Siam benzoin gum (UEBT ingredients)
Vinasamex JSC	Cinnamon, Star Anise (UEBT / RA)
Pacific Basin Partnership Inc. / Son Ha Spice & Flavorings Co., Ltd.	Cinnamon (UEBT / RA)

Overall, the UEBT criteria are closely aligned to the UNCTAD BioTrade P&C. Both VSS applied by UEBT in the AMS, the **UEBT ingredient certificate and the UEBT/RA Herbs & Spices Programme certificate, are very similar**. They differ mainly in the sealing process. Products certified under the UEBT/RA Herbs & Spices program can carry the RA seal. In order to simplify the analysis hereafter only the herbs & spice program is assessed.

The UEBT/RA Herbs & Spices Program includes a **safeguard** that production activities must not **encroach into forests** or other natural ecosystems. **HCV have to be mapped** in and around the production or farm areas and producers are guided to implement measures to protect endangered species. **Further measures to conserve biodiversity** must be undertaken, through maintaining the natural vegetation on farm as much as possible, and increasing natural vegetation e.g. by an optimized shade coverage. Attention is also given to maintaining or restoring riparian buffers, contributing to biodiversity conservation at the landscape-level. UEBT/RA further promotes the **reduction of human wildlife conflicts**.

Regarding the management of wild harvest species, the UEBT standard considers the first aspect in a rather limited manner, since the only criterion found aims to ensure that tree crops are adequately rehabilitated. However, the sustainable use of the target species is an **integral part of the biodiversity action plans (BAP)**, which are a core element of the UEBT/RA certificate and which have to be elaborated by the companies⁹⁰. The BAP differ between the following intervention levels:

- 1) the used species: direct need to act,
- 2) the related ecosystem: need for gradually acting,
- 3) surrounding farming and extraction activities (e.g. hunting, other plant collection): promotion of gradually changes in combination of finding alternatives.

The BAP follows a 5 step-approach:

- 1) Base-line assessment to identify threats, risks and potentials,
- 2) Definition of targets,
- 3) Definition of actions,
- 4) Establishment of monitoring system,
- 5) Actions to reduce negative impact and to promote positive impacts.

⁹⁰ See UEBT guideline for BAP at <https://uebt.org/resource-pages/uebt-bap-full-guidance>

So far, the BAP of UEBT certified entities in the AMS are still in an early implementation stage. Generally, the threats and targets for biodiversity conservation were identified, but with only a few implementation activities on the ground (case study of cinnamon in Viet Nam, UEBT, 2022). The big issue is that certifications are granted based on expressed company willingness to undertake measures – not on evidence of compliance. According to UEBT, if compliance is not met after three years, certification will be terminated – but this is a negative incentive, not a positive one. At present, it seems that no meaningful positive impacts were achieved by the certification processes for cinnamon plantation – however, it may be too early, since the first certificates were issued only recently, in 2022.

The UEBT/RA Herbs and Spice Program also aims to promote measures to enhance soil fertility, soil coverage and to reduce the application of agrochemical. Nevertheless, this is not an organic certification and the **use of chemicals is allowed in a “safe, effective and efficient way”**. Also, measures for an adequate waste management and an effective **use of water** are promoted. Care has to be taken to prevent soil and water contamination and soil erosion. The producers are guided to reduce **GHG emission**, while taking care of a constant renovation of tree crops, increasing energy efficiency and reducing the dependency on non-renewable energy.

5. Discussion

This study demonstrates the high relevance of biodiversity conservation for ASEAN. The conservation of the ASEANs' biodiversity hotspots is of global relevance, and the functional biodiversity at the genetic, species, and ecosystem levels contributes significantly to the region's socio-economic growth (Sajise, 2015). About 40% of ASEAN people depend on biotrade, which contributes to 20% of the region's GDP. All AMS are parties of the CBD and other international trade conventions for biodiversity. Each AMS applies a different focus in biodiversity policies and incentives. The study was limited in its design to only three of the ten AMSs, but already provides evidence of the broad range of ASEAN experiences in promoting biodiversity conservation in trade. **This richness of experience in the ASEAN has enormous potential for identifying lessons learned and best practices for mainstreaming biodiversity conservation** in trade as effectively as possible.

The **new post 2020 Kunming-Montreal GBF** provides a good moment to push for biodiversity conservation in trade and business engagement in the NBSAPs that will be developed. The third edition of the ASEAN Biodiversity Outlook (ABO 3) shows that efforts on **biodiversity conservation have focused so far on the improved conservation of flora and fauna in protected areas**. In this sense, the ASEAN Center for Biodiversity (ACB) has promoted important major regional programs, such as the Greater Mekong Sub-region⁹¹, the Heart of Borneo⁹², The ASEAN Heritage Parks⁹³, Sulu Sulawesi⁹⁴, and the Marine Hotspots in Southeast Asia. Nevertheless, ACB has also implemented the "Biodiversity-based products (BBP) Project" as part of the ASEAN-German Cooperation with the aim to improve livelihoods and biodiversity protection based on the use and trade of biodiversity-based products.

However, at the end of 2021, ASEAN expressed in its joint statement to the GBF⁹⁵ the intention to **shift the focus** by mainstreaming biodiversity across various sectors to address the drivers of biodiversity loss and apply best practices on sustainable use. This responds to the CBD's **Global Biodiversity Outlook** (Secretary of CBD, 2010) that sought a decade earlier to change the focus of biodiversity conservation on protected areas and single species to actions that **tackle the underlying causes of biodiversity loss** and that ensure benefits from ecosystem services are enjoyed in the long term through adopting a **landscape approach**.

ASEAN's focus on Green Growth

ASEAN is making great efforts to promote green growth and the modernization of the agricultural sector. In 2014, the **ASEAN Institute for Green Economy (AIGE)** was launched, and two years later, ASEAN explored collaboration with the Global Green Growth Institute⁹⁶. In its **Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry** (2016 - 2025), ASEAN (2017) aims to ensure equitable, sustainable and inclusive growth, increasing resilient and sustainable forest management. Its objective is to achieve an **eco-friendly reputation** for ASEAN products for improving market access. The **Strategic Plan of Action for ASEAN Cooperation on Crops**⁹⁷ focuses on the integration of

⁹¹ <https://greatermekong.org/>

⁹² https://wwf.panda.org/discover/knowledge_hub/where_we_work/borneo_forests/

⁹³ <https://ahp6.aseanbiodiversity.org/the-asean-heritage-parks/>

⁹⁴ <https://www.conservation.org/places/sulu-sulawesi-seascape>

⁹⁵ <https://asean.org/wp-content/uploads/2021/11/ASEAN-Joint-Statement-to-CBD-COP15.pdf>

⁹⁶ <https://hazeportal.asean.org/2016/04/12/asean-and-global-green-growth-institute-explore-collaboration/>

⁹⁷ <https://asean.org/wp-content/uploads/SPA-for-ASEAN-Cooperation-on-Agricultural-Cooperatives-2021-2025-Final.pdf>

producers and their organizations into “modern value chains”. The **ASEAN Vision 2040** reconfirms the aim to modernize the agricultural sector through increased productivity using smart technologies and digital transformation. However, all these approaches do not necessarily support biodiversity conservation. This remains in contrast to ACB’s efforts in promoting the mainstreaming of biodiversity in agriculture across ASEAN since 2017. Already eight years ago, Sajise (2015) in his study “Empowering Communities and Countries to Conserve Biodiversity at the National and ASEAN Levels” provided a very comprehensive analysis of status, challenges, and ways forward (in the form of clear targets) to enhance biodiversity conservation and its sustainable use in ASEAN. Only a few of his recommendations seem to have been addressed to date.

ESG - born of increased awareness needs a stronger focus on biodiversity conservation.

Increasing global civil society concerns about biodiversity loss (and climate change and social issues) is pushing ASEAN to meet sustainability standards. Efforts are underway to shape the ESG framework of ASEAN^{98, 99}. Critical will be, how and to what extent biodiversity conservation is incorporated in ESGs and other green growth processes and procedures (e.g. EIAs, afforestation initiatives, etc.) that go beyond the conservation of natural resources. Access to sound information on trends in biodiversity, its challenges, and effective conservation tools will be essential to facilitate appropriate decision making in designing the ESG. The UNCTAD’s Trade and Biodiversity (TraBio) Statistical Tool provides basic trade information on over 1,800 biodiversity-based products¹⁰⁰ and can be seen as a first step. Furthermore, ACB has achieved important milestones by creating the **ASEAN biodiversity dashboard** with key information about biodiversity status, forest cover and further biodiversity related data for AMS, and by establishing the **ASEAN Clearing-House Mechanism**¹⁰¹ that presents biodiversity-related information and tools for conservation planning, monitoring, and decision making, including a list of national policies. More information for some AMS is provided by the **Open development Mekong’s dashboard**¹⁰². All these databanks are helpful for national monitoring and reporting on the new GBF targets. Nonetheless, **lessons learned and best practices for policies and incentives** for strengthening biodiversity conservation in trade are **missing**.

ESG is based on a market approach that responds to the increasing interest of investors in putting their money in initiatives and companies that comply with ESG criteria. A clear ESG framework helps companies to align with ESG criteria. However, even without an ESG framework, companies interested in applying good practices can already move forward by getting certified under one of the multiples VSS. **In fact, certified companies can be considered as being in line with the ESG framework since the criteria of VSS are generally stronger than ESG**, and probably readily comply with ESG criteria. Thus, the promotion of the ESG framework can create additional economic benefits for certified companies under VSS through enhanced access to finance (Wong et al. 2021). However, the effects on biodiversity conservation are not clear. As the study shows, there are fundamental differences among the various VSS regarding their impact on biodiversity conservation (see below: “The role of national standards and voluntary sustainability

⁹⁸ Economic impact, 2022: Data point: what’s driving ESG adoption in ASEAN countries?

<https://impact.economist.com/sustainability/resilience-and-adaptation/data-point-whats-driving-esg-adoption-in-asean-countries>

⁹⁹ e. Go ESG ASEAN 2022 Summit, UN Global Compact. <https://www.malaysia.ahk.de/events/event-details/go-esg-asean-2022-summit>

¹⁰⁰ https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?IF_ActivePath=P%2C227923

¹⁰¹ <https://asean.chm-cbd.net/about>.

¹⁰² <https://opendevlopmentmekong.net/dashboards>

standards (VSS), Fig. 26). Thus, as in the design of the ESG framework, the proper integration of biodiversity conservation criteria into VSS as minimum criteria is of critical importance.

Adaptation of national legal frameworks and regulations

Biodiversity conservation in trade requires action at different levels, which can be summarized in four key processes with associated actions, notably to 1) **avoid negative impacts**, 2) **reduce negative impacts**, 3) **restore natural habitat**, and 4) **transform landscapes** with better conditions for biodiversity¹⁰³. These key processes refer to different implementation levels and require the participation of different stakeholders. Perhaps it is the complexity of the issue that still makes it difficult to mainstream biodiversity conservation in trade. Therefore, **clear legal regulations** and the assignment of **clear responsibilities** for each level are needed to guide value chain actors and related stakeholders to act in line with biodiversity conservation. A combined approach is needed here, using the **top-down approach** to make biodiversity conservation measures mandatory for all trade action of biodiversity-based products through the establishment of norms and regulations. However, care must be taken to **ensure that the design and content of these regulations are based on a bottom-up approach**, where **local knowledge** of best practices and **(customary) sustainable using rights and practices** will be considered and incorporated into the design of the standards. This is of highest relevance **to avoid non-intended impacts** such as excluding local and indigenous communities in the use of biodiversity based products while setting high standards for biodiversity conservation. (In the author's experience, this problem often occurs in VSS certification processes that require clear access and use rights for natural resource use, where local producers often have only customary rights that in some cases are not recognized). The recognition of local knowledge is further of highest importance to promote effective measures for biodiversity conservation with significant actions and impacts on the ground.

Taking a closer look at the previously mentioned four core processes for biodiversity conservation, the following scenarios can be described:

- 1.) **Avoiding negative impacts** on biodiversity conservation in trade: Here, the design of clear legal regulations and norms that integrate biodiversity-related criteria are the very base to be applied when issuing or extending company operation licenses. In this sense, the eighth COP to the CBD in 2002 encouraged countries to implement biodiversity-inclusive environmental impact assessments (EIA). So far, the AMS seem to apply different approaches and methods in EIA. Bigard et al. (2017) mentions semantic confusion between avoidance, reduction and offset measures along EIA concepts at the global level. Thus, a review of applied concepts and mainstreaming of biodiversity conservation safeguard criteria along all AMS is highly recommended, ideally promoting the integration of the HCV concept. EIA are often the responsibility of the Ministry of Environment. This can bring some issues in implementation, especially when the production unit to be assessed is far away from the environmental ministries offices which often have only limited staff resources in the field. Limited resources may limit the EIA to larger interventions (such as mining and road building projects), with little attention to smaller interventions - which may nevertheless have strong impacts on biodiversity on the ground (e.g. collection of wild plants). Here, a stronger cross-sectorial cooperation can be useful, in order to

¹⁰³ <https://www.thebiodiversityconsultancy.com/>

optimize the use of resources of different public institutions – not only of staff, but also for better knowledge management making use of the different experiences within the various departments and offices of the agriculture, forestry and environmental sectors.

- 2.) **Reducing negative impacts:** For reducing negative impacts on biodiversity conservation well-conceived legal regulations are an essential base. However, to ensure their application it seems even more important to encourage the various stakeholders along the value chain to improve and adapt to biodiversity conservation. In this sense, it becomes crucial to combine legal regulations with financial incentives (see next paragraph for examples of financial incentives).

Furthermore, the voluntary alignment of producer organizations and companies to VSS and their certification schemes contribute to reducing the negative impacts on biodiversity (e.g. through organic farming or by establishing and respecting sustainable harvest quotas for wild harvest species). The criteria and rules applied are often even stronger than required by national regulations. **By aligning to VSS these private sector efforts on biodiversity conservation can be strengthened through public incentives.** An example is provided by Viet Nam, where tax reductions apply for organically certified companies.

- 3.) **Restoring natural habitat:** This concept gained much attention at COP 15 and is promoted by many organizations under the term “nature plus”, although an official definition for “nature plus” is still missing. IUCN (2022) defines nature plus in their concept paper as follows: “A *nature-positive future means that we, as a global society, halt and reverse the loss of nature measured from its current status, reducing future negative impacts alongside restoring and renewing nature, to put both living and non-living nature measurably on the path to recovery.*” The idea is to encourage private and public sector organizations to provide nature-positive contributions. **At present, it seems that especially the private sector is moving to identify and apply “new” regenerating production systems** with the aim of increasing biomass and biodiversity. The concept is adopted by smaller companies such as Lush from the United Kingdom. This cosmetic company carries out **international awards for best practices in social and environmental regeneration** (The Lush spring price)¹⁰⁴. However, **larger global players such as Nestlé** have also adopted this concept¹⁰⁵. In Viet Nam, the concept of environmental restoration to ensure the right to live in a clean and safe environment was recently integrated in the Environmental Protection Strategy (Socialistic Republic of Viet Nam, 2022). The concept includes among others, the promotion of ecological and organic agriculture, but also of high-tech agriculture, in which the reuse of agricultural by-products is increased. It further restricts the use of inorganic fertilizers, plant protection chemicals, and antibiotics in cultivation, husbandry, and aquaculture.

The restoration of habitats is often conducted to increase biomass as a contribution to climate change. Nevertheless, as shown in the chapter 4.2 b, the **focus on carbon sequestration and ‘climate integrity’ do not necessarily promote biodiversity conservation.** This was also concluded by IPBES and IPCC on their joint Workshop on Biodiversity and Climate Change in 2021 (Pörtner et al. 2021)¹⁰⁶. The report

¹⁰⁴ <https://springprize.org/>

¹⁰⁵ <https://www.nestle.com/sustainability/nature-environment/regenerative-agriculture>

¹⁰⁶ <https://ipbes.net/events/ipbes-ipcc-co-sponsored-workshop-biodiversity-and-climate-change>

highlights the fact that “*bioenergy crop plantations, including trees, perennial grasses or annual crops in monocultures over large areas are detrimental to ecosystems and reduce the supply of many other nature’s contributions*”. In the same way, it is said that “*afforestation, which involves planting trees in ecosystems that have not historically been forests, and reforestation with monocultures, especially with exotic tree species, can contribute to climate change mitigation but are often detrimental to biodiversity and do not have clear benefits for adaptation*”. This makes clear that specific efforts are needed to combine biodiversity conservation with climate actions. In this sense, **nature-based solutions** for climate change play an important role, but synergies for biodiversity depend on which ecosystem are used. The **integration of protected areas and community based solutions** are important instruments for achieving the expected synergies and for minimizing eventual trade-offs and harmful effects for people and nature. This focus is also reflected by the GBF that includes steps to tackle the causes of biodiversity loss, including climate change and pollution, in an integral way¹⁰⁷.

- 4.) **Transforming landscapes:** The concept of creating better conditions for biodiversity in a landscape approach is promoted by various initiatives at the international level, such as regulations on due diligence and deforestation-free supply chains, e.g. set by the European Union and England (United Kingdom of Great Britain and Northern Ireland Environment Act 2021¹⁰⁸). Global supply chain actors are requested to improve traceability, and to respect human rights and environment for selected commodities, including the criteria of deforestation-free. A positive example in this regard is Indonesia. In response to high social pressure to reduce deforestation in palm oil production, a mandatory national standard for sustainable palm oil production was developed (ISPO), that later entered in partnership with a market-based VSS (RSPO). As a result, Indonesia is today among the world's vanguard in piloting the **jurisdictional certification for deforestation free supply chains** at the landscape level. The approach is in line with the principle of “**leaving no-one behind**” by including all present farms, and seeks to increase biodiversity conservation by applying the concept of **High Conservation Values** (HCV). This entails the identification of HCV, their possible threats, and a prioritization of the most urgent actions to implement (HCV Resource Network, 2020). In addition to the positive impact on biodiversity, these achievements provide a strong competitive advantage in accessing international markets compared to other AMSs, some of which report increasing tensions between palm oil producers and the European Union¹⁰⁹.

The national efforts for improved regulations for biodiversity conservation in trade have further turned Indonesia into the **first country worldwide in timber FLEGT licensing**. However, Indonesia claims in its 6th NBSAP that timber export to European Union still occurs by countries that do not practice adequate due diligence processes, and calls for a stronger control of compliance not only within the producer countries, but also the consumer countries.

¹⁰⁷ <https://www.un.org/en/climatechange/science/climate-issues/biodiversity>

¹⁰⁸ <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

¹⁰⁹ <https://www.reuters.com/markets/commodities/growing-tensions-between-asian-palm-oil-producers-european-union-2023-01-13/>

Financial incentives

As discussed, financial incentives should be applied in addition to regulations put in place to promote biodiversity conservation. Promising in this regard is the increased interest of several countries to adopt the concept of **Green GDP** (Schweinfest, 2022) that reflects the benefits of biodiversity and natural resources, and the costs of their loss in the macro-economic accounting system. **Viet Nam** has some **pilot experience** with green GDP calculations; this provides an opportunity to disseminate the methodology throughout the ASEAN region.

The OECD report 2020 on Economic Instruments and Finance for Biodiversity lists Indonesia and the Philippines as the only AMS with biodiversity-relevant taxes. No AMS is reported to implement biodiversity-relevant fees, or to implement any PES. This differs from the NBSAP of Indonesia, the Philippines and Viet Nam (2019) that mention **several financial incentives**:

i) Taxes and fees for conservation of biodiversity and natural resources:

- **Fees for the use of natural resources:** In Viet Nam, several fees are in place for the use of natural resources, e.g. for pasture, fisheries and EIA permits and their review, as well as for environmental protection, inspection and wastewater discharge licenses;
- **Reduction of tax:** National labels for environment-friendly products and services are promoted e.g. in Viet Nam. These products are defined in the Environmental Protection Strategy (see above: Restoring natural habitat). The aim is to reduce environmental pollution and to optimize the use of natural resources by promoting reuse under sustainable methods. Biodiversity conservation is not always directly addressed, but is covered in an indirect way (e.g. efforts are made on promoting biodegradable packaging that contributes to the reduction of marine plastic pollution with positive impacts for marine biodiversity). Certified units benefit from reduced corporate income tax and land rent fee;
- **Taxes on harmful products:** Disincentives are given in Viet Nam by taxing the import and selling of product groups that cause negative impact to the environment, climate and biodiversity, such as oil, coal, gas, plastic bag, pesticides, and others.

ii.) Elimination of harmful subsidies and taxes

- **Control of subsidy use:** Subsidies for activities harmful to biodiversity in agriculture, fisheries and for fossil fuels are indicated to reach about USD 1.8 trillion per year (Business for Nature, 2022) or even USD 4-6 trillion per year (Groom, 2021). This dwarfs the funding available for conservation, of which \$640 billion is for fossil fuels, \$520 billion for agriculture, \$155 billion for forestry, and \$50 billion for marine fisheries (Business for Nature, 2022). To reduce the amount of subsidies that are harmful to biodiversity in the fishery sector, the WTO Agreement on Fisheries Subsidies¹¹⁰ to combat IUU fishing is an important achievement. In this context, Indonesia has introduced a digital fishermen's card for increased transparency in the use of subsidized fuel in fisheries (to avoid IUU fishing), that directly contributes to GBF target no. 8. Similar initiatives to reduce subsidies harmful to biodiversity in the agriculture sector were not found by the author in any of the three AMS, and may need special attention to be addressed.

¹¹⁰ WTO Agreement on Fisheries Subsidies. https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm

- **Elimination of adverse taxes (and bureaucratic barriers):** The identification and elimination of adverse taxes and bureaucratic barriers for the trade of lesser known wild harvest biodiversity-based products is an ongoing challenge. Adverse taxation and overregulation for wild harvested products can affect the economic viability of adding value to biodiversity-rich ecosystems, creating disincentives for their conservation. According to Laid et al. (2010) this is a global phenomenon that needs to be urgently addressed. An example for ASEAN is the case of Siam benzoin gum produced in the Lao PDR. According to a study by Bouphe (2022), this wild harvested NTFP is produced mainly on fallow agriculture land and is subject to high taxation, whereas in Indonesia for a similar product (Sumatra Benzoin gum) such tax does not exist. The different taxation quotas represent a clear disadvantage for Lao's Siam benzoin gum, since the high tax affects competitiveness along the international market. Here, similar tax regulations along ASEAN would be of benefit. None of the assessed AMS reports any action in their NBSAP regarding this topic.

iii) Payment for Ecosystem Services (PES), ecological fiscal transfers and the need for biodiversity paybacks

- PES are implemented in all three AMS, mainly with a focus on watershed management, but also for marine ecosystems. Rudolf et al. 2022 show that PES in Indonesia is a promising policy tool to motivate farmers to increase biodiversity in palm oil farms, but positive impacts for biodiversity depend on coordination and communication along the stakeholders, and how the collected funds are spent. So called "biodiversity paybacks" are needed, ensuring the funds are spend on meaningful actions for biodiversity.
- **Ecological fiscal transfers** (EFT) are an important instrument for funding biodiversity conservation based on collected fees and taxes for the use of biodiversity and natural resources, including PES and REDD+. Indonesia has a progressive EFT system in place for funding protected areas and for compensating local governments' efforts in environmental conservation (Putra et al, 2019). However, Cao et al. (2021) found that although EFT stimulates local governments' efforts to improve environmental quality, the results fall short of expectations. This is because EFTs still do not have an effective incentive and coordination function, but serve more as supplementary funding. A **systemic approach is needed** in which biodiversity conservation is integrated as a strong element from the very beginning phase (**planning, EIA**), throughout **implementation** of any intervention related to the use of natural ecosystems and biodiversity.

The role of national standards and voluntary sustainability standards (VSS)

The Philippine National Development Plan (2023 – 2028) points out that the country has lost tremendous ground in export compared to other AMS, as the ... *"main market access barriers today are the high standards that exporters must meet in terms of consumer health and safety, environmental protection, and overall product quality. The country's relatively cheap wages are no longer sufficient to carve a niche in the global market. Enhancing the country's ability to meet such standards is crucial to supporting the efforts of local firms to venture into new export markets, Without know-how and access to standards and certification testing facilities nationwide, local exporters will be unable to exploit premium prices in organic goods, produced according to environmentally and socially responsible practices..."*

This statement demonstrates the **high relevance of the state of a country's economy** to comply with sustainability (and quality) standards, including national standards, international standards and voluntary sustainability standards (VSS), to **stay competitive** along international markets. It also **justifies public support** to private organizations and companies that aim to comply with these kinds of standards, including VSS. The government should ensure the creation of **enabling conditions that facilitate compliance with the sustainability criteria**. This can be done e.g. in the form of i) aligning national regulations with selected criteria of sustainability standards, ii) providing technical support notably information on sustainability standards, iii) integrating the content of sustainability standards within public technical extension services, iv) providing financial incentives such as tax reduction for certified entities, and financing services for certified entities and those progressing towards certification, and v) special market promotion for certified entities at the national and international level, among others.

Today, more than 500 VSS exist in biotrade, mainly applied in mainstream export commodities (coffee, cocoa, tea, and palm oil), whereas staple foods (maize, rice, and wheat) are less commonly certified (Tayleur et al. 2017). Overall, a study by Verma (2022) shows a high alignment of 11 VSS to the UNCTAD-BioTrade principles 1 "Conservation of biodiversity" and 6 "Respect for actors' rights". On the other hand, there are many studies that **question the impact of VSS on biodiversity conservation** (Gullison, 2003; Hardt et al, 2015; Ting, et al. 2016; Trolliet & Vogt, 2019; Lehtonen et al., 2021) and there is concern about certification being an exercise in **greenwashing** (Groom & Turk, 2021). It seems that there is somehow a gap between good intentions (the criteria of VSS) and the results for conserving biodiversity.

The large number of VSS makes it difficult to understand the different scopes and criteria. There have been several attempts to bundle standards, e.g. by UEBT, UTZ and RA. In ASEAN, a mutual recognition agreement on organic agriculture certification is foreseen across the ten AMS¹¹¹. However, the study shows that while all analyzed VSS aim to contribute to social, environmental, and economic sustainability; they take different approaches to biodiversity conservation. All VSS prohibit, or at least recommend avoiding the use of highly toxic agrochemicals as a key criterion for biodiversity conservation. Nonetheless, **only Fair for Life and UEBT have an explicit safeguard for deforestation-free production**, that is an essential element to contribute to biodiversity conservation of forests (Fig. 26). By contrast, FSC and FairWild seem to follow the logic to produce within forests, making such a form of safeguarding unnecessary. However, NTFP or timber production may also occur in planted forests that have previously replaced natural forests, so the inclusion of this criterion would be useful also here.

Further important differences along the VSS are given with regard to **the high conservation value (HCV)** concept. The HCV concept **was developed by FSC** and is consequently included in its standards, and is further integrated by **UEBT/RA**. Fair for Life requires the identification of valuable species and habitats in terms of biodiversity conservation, but not necessarily under the concept of HCV. Naturland is currently in the process of integrating the HCV concept into its standards based on a global gap-analysis.

Biodiversity action plans (BAP) are so far only required by UEBT/RA. Other VSS (Fair for Life and FSC) also require measures for biodiversity conservation, but are not using the specific format of a BAP. The original impetus for BAP derives from the CBD. The aim of the

¹¹¹ <https://ariseplus.asean.org/mra-workshop/>

BAP is to prioritize threatened habitats and species and to set respective conservation or restoration targets and actions. A BAP can be developed at the country level (as done e.g. by the United Kingdom), or at a smaller scale, e.g. for a production system. A BAP typically includes the following elements: (a) inventories of selected species and/or habitats; (b) assessment of their conservation status (c) targets for conservation and restoration; and (d) action plan, budgets, timelines, institutional partnerships, e) monitoring system (see also chapter 4.4.c, UEBT approach to BAP). As shown, BAP are **specifically designed to identify threats to biodiversity and to establish targets and actions that will improve biodiversity conservation**. Thus, they identify and address real needs and contribute to identify tailored actions for improving the conservation status. This **makes them different to other approaches, in which biodiversity conservation is applied in a more “passive” way** (e.g. renouncing the use of chemical inputs, or excluding part of the farm land from any production activities as a reserve for biodiversity). These “passive” mechanisms are important and effective as well, but assume different functions within the whole package of measures of biodiversity conservation.

To the author’s opinion, all of the criteria listed in Fig. 26 are critical for contributing to biodiversity conservation in production systems and should be included as **minimum biodiversity criteria in any biotrade VSS**. Ideally, they should be in place in order to receive certification, and not be applied on a gradual basis once certification has been granted. The need for improved performance for biodiversity conservation seems to be recognized by some of the certification organizations. For instance, Naturland is currently conducting a global assessment of biodiversity conservation together with other certifiers (BioSwiss, Demeter, Soil organization) to develop a new conservation strategy. Among others, it is foreseen to include a criterion for a minimum area on each farm that has to be excluded from any production activities in order to keep it for biodiversity.

Fig. 26: Key criteria for biodiversity conservation in VSS. Source: own research based on the VSS.

Key criteria for biodiversity	EOS Ecocert	Naturland production	Fair for Life	FairWild	FSC/NTFP	UEBT/RA
Prohibition of high toxic agrochemicals	yes, including the use of further agrochemicals	yes, including the use of further agrochemicals	yes	recommended	yes	yes
Safeguard for deforestation free production	--	--	yes	--	--	yes
Identification of HCV areas	--	under discussion to be included	diagnostic of valuable species & habitats, no HCV	--	Yes. FSC has developed the HCV concept	yes
Biodiversity action plan (BAP)	--	under discussion	measures for biodiv. are foreseen but no BAP	--	measures for biodiv. foreseen as part of the forest management	yes
Management of the used species (wild harvest)	--	--	yes	yes	yes	included as part of the BAP

VSS are market-driven instruments that are developed by the private and civil sector. Nonetheless the VSS must comply with national laws and regulations as a minimum. Thus, the **better the countries' own biodiversity conservation regulations, the better the VSS and greater the impact** can be expected. Again, Indonesia can be cited here as a good example. The national standard for palm oil production ISPO creates positive economic impacts (Rodhiah et al., 2019) and reduces forest conversion and increases conservation areas (Pasimura et al., 2022). The **collaboration between the public mandatory standard ISPO and the RSPO's market-driven VSS** has resulted in a globally unique pilot project for the certification of palm oil production at landscape-level¹¹², which is expected to have positive impacts on biodiversity by effectively avoiding deforestation¹¹³ (see also "Adaptation of national legal frameworks and regulations" in this discussion chapter).

The establishment of national regulations that provide a minimum base for biodiversity conservation in mainstream agriculture commodities can draw on many available studies and best practices (e.g. shading systems for coffee, cocoa in agroforestry, sustainable palm oil production, e. g. Philpott, et al. 2008, Utomo et al. 2016, Noor et al. 2017 and Schoneveld et al. 2019). However, the situation changes for the many wild harvest products and other lesser know and traded species. These so-called "**botanicals**", **NTFP** or biodiversity-based products have a very high potential in ASEAN to contribute to biodiversity conservation. NTFP often play an important role in the livelihoods of local, often marginalized communities while requiring fewer inputs in their production (when wild harvested) compared to agriculture products. In addition, they often contribute to climate and economic resilience through income diversification based on forest or other native ecosystems (Woda, 2021). NTFP trade especially benefits producer communities when they can develop small and medium enterprises to sell their products or services. This adds value to existing resources, thus motivating the sustainable use of the target species and the conservation of the ecosystems in which the harvest takes place. In this way, trade can bring several benefits, including economic incentives for biodiversity conservation, the generation of income, jobs and new businesses, at the same time as helping countries to wisely use and transform their biodiversity into economic opportunities (UNCTAD, 2021).

Despite the great potential of NTFPs or biodiversity-based products, **national regulations for sustainable NTFPs are often limited to taxing** the use of a forest products (Woda, 2021). This brings certain risks, since the commercial use of NTFP may lead to **overexploitation**. This has happened for instance in the case of rattan production in Indonesia (Meijaard et al. 2014) and in the collection of medicinal herbs in China (Larsen & Olsen 2007; Chen et al. 2017). Still, many VSS refer to national regulations in their requirements for the design of sustainable wild harvest collection systems, despite the often missing national regulations for a sustainable use of NTFP or biodiversity-based products (Woda, 2021). It seems that **responsibility is shifted from one to the other**, without providing a practical solution.

Overall, most VSS criteria for sustainable wild harvest systems are limited to extraction activities. The Naturland VSS and EOS VSS explicitly abstain from any management activities in the ecosystem where the harvest takes place in order to minimize human interaction (Fig. 26). This **ignores the fact that the collection of the species is a non-natural process to the ecosystem, and consequently, compensation measures are needed** to ensure long term sustainability. Many wild harvest species depend in their

¹¹² Similar approaches are ongoing by RSPO in Ecuador.

¹¹³ <https://rspo.org/ispo-and-rspo-enter-into-strategic-co-operation/>

regeneration on specific site conditions (e.g. high light intensity, thin litter layer) that can only be ensured by carrying out specific management measures (e.g. thinning, regulation of canopy density, soil measures). One example known to the author is the production of Siam Benzoin Gum in Viet Nam. The tree is a pioneer species that requires full sunlight for growth. Therefore, it will not persist long in a natural forest once succession has begun and shade trees dominate. In this case, there are only two options: to open the canopy to provide brighter conditions for the benzoin tree (which is not allowed for conservation reasons), or to stop benzoin production in older forests. However, this would mean the end of benefits for the local communities that have gained their income from the production of the benzoin.

The limited attention paid by VSS to species-specific management measures may be due to a lack of information and knowledge. To be fair, it may be **economically unviable for certifying agencies to conduct the complex research on individual species, such as resource assessments/inventories and regeneration capacity studies**, given that the target species are often certified by only a few entities. The same issue is relevant for the BAP. As shown, the BAP's content is based on **species and habitat inventories**, and an assessment of the **threats** to them. Thus, a **BAP can only be as good as the information available**, as well as information about techniques for a proper management of the target species.

This fact shows the need to obtain sound information from the field, which is often costly and time-consuming to obtain. Thus, an **improved cooperation** among the certification organizations and other stakeholders from the public, research and civil sector is needed to **create and exchange knowledge and best practices for the sustainable management** of species. For example, given the high demand for certificates for cinnamon production but the lack of information about improved management of cinnamon in monocultures, UEFT was forced to invest in basic studies on the challenges and options of sustainable production for its BAP in cinnamon production in Vietnam. The information gathered is of great interest to other certification entities in the region, but also for national policy makers so that they can adapt and improve their own standards and regulations for mainstreaming the efforts on biodiversity conservation.

6. Conclusions: Seven actions to turn the tide

The study shows the increasing relevance of biodiversity conservation in ASEAN and the need to adapt policies, incentives, and sustainable standards to properly address biodiversity conservation in trade. The **ASEAN vision 2040** provides several **entry points** to promote biodiversity conservation in trade by highlighting the need to meet sustainability standards and ESG for export market development. The vision further focuses on adapting to the Fourth Industrial Revolution through fostering **cross-sector digitization**. In the agriculture sector, ambitious transformation processes are foreseen for improved natural resource management and increased resilience. The vision explicitly refers to the need of “*developing governance systems, incentives, policies and institutions so that the practical applications of industry 4.0 technologies will respond not only to market needs but also to the broader sustainability and resilience goals*”. Examples for “practical applications of 4.0 technology” for biodiversity conservation are digital support to farmers for improved access to **weather and site condition information**, permitting a more **rational and biodiversity-friendly use of natural resources and inputs**, as well as remote sensing for **improved monitoring** of forests and fisheries, and **block chain traceability** for increased transparency along supply chains.

The transversal character of mainstreaming biodiversity requires the involvement of at least two ASEAN departments¹¹⁴: the **ASEAN Socio-Cultural Community (ASCC) Department** with its Sustainable Development Directorate and the Environment Division, and the **ASEAN Economic Community (AEC) Department**. AEC leads the Sectoral Development Directorate with the Food, Agriculture and Forestry division, the **market integration directorate** and its divisions for **trade facilitation** and for **standards and conformance**, and furthermore the integration monitoring directorate that heads the **statistics division** for monitoring socio-economic topics and finance. Given this complex institutional landscape, **clear coordination guidelines** are needed to promote biodiversity conservation at the cross-sectoral level. Ideally, the incorporation of biodiversity conservation aspects **should be mandatory for all entities**, incorporating mechanisms that **encourage participatory processes** in the design of regulations, policies, and procedures to incorporate local knowledge and best practices adapted to specific local conditions.

The mandate for biodiversity conservation is at first sight in hands of ACB. The recently created **ASEAN Centre for Sustainable Development Studies and Dialogue (ACSDSD)** - a platform for policy dialogue amongst AMS, ASEAN, and its external partners - might be a powerful partner for ACB in mainstreaming biodiversity. However, effective mainstreaming requires commitment at the highest levels for biodiversity conservation, and clear commitment is needed from each of the institutions. In addition, each institution should ideally **designate staff specifically responsible for external coordination of biodiversity issues as well as internal promotion of biodiversity measures** within their own institution, based on a concrete action plan with its respective monitoring system.

As a conclusion of this study, the following priorities for mainstreaming biodiversity conservation in trade along the AMS are recommended:

- 1. Systematization of experiences and dissemination of best practices and lessons learned in policy dialogues:** The study shows the richness of experiences in policies

¹¹⁴ see: <https://asean.org/the-asean-secretariat-basic-mandate-functions-and-composition/organizational-structure-of-the-asean-secretariat-2/>

and incentives for biodiversity conservation in trade among the AMS. What is challenging is that **these experiences are not available in form of systematically analyzed information, but "hidden" in individual reports** (e.g., NBSAP) and statistical data (dashboards and online databases). Thus, it would be helpful for policy makers and other interested stakeholders involved in biodiversity conservation to have access to **summarized information of best practices and lessons learned** along the AMS of promoting biodiversity conservation in trade (e.g. policy briefs).

In addition, **learning networks** need to be strengthened as part of the ASEAN Biodiversity Clearing House Mechanism for facilitating the exchange among the ten AMS based on country studies and other best practices and lessons learned. To this aim, guidance may be needed on how to systematize the information of each country so that data is comparable and analyzed using the same criteria. It may be also useful to review together with the AMS the use of the terms “biotrade”, “BioTrade” and biodiversity-based products in order to consolidate the **nomenclature** along the ASEAN institutions and their use in the presentation of statistical data, e.g. with the statistic division of the AEC Department. Furthermore, support may be given to ACB and ACSDS in **facilitating dialogues with policy makers, technology developers and environment experts** for exploring feasible solutions, defining concrete action plans and ideally identifying resources to implement them. It is important to ensure the appropriate **participation of the civil society** in this process, to consider local knowledge and to build inclusive solutions.

- 2. Fostering economic valorization of biodiversity:** To increase motivation for biodiversity conservation in trade, the value of biodiversity and natural resources needs to be made more visible – ideally in economic terms - to policy and decision makers at the national level. This objective is also mentioned in the ASEAN Initial Inputs to the Kunming-Montreal GBF¹¹⁵. In this sense, Viet Nam's efforts to introduce a **green GDP** are promising. It is recommended that lessons learned from this initiative are used to facilitate exchanges with AMS and promote discussion about adapting their national accounting systems. It might be worth also considering in this regard the **System of Environmental-Economic Accounting** (SEEA EA) that has been adopted by the United Nations Statistical Commission¹¹⁶. This accounting system allows the contributions of ecosystems to society to be expressed in monetary terms so that such contributions to society's well-being can be more easily compared against other goods and services with which policy makers, the private sector and civil society are more familiar.

The SEEA EA pays special attention to ecosystem services. In this context, it is also recommended to systematically analyze the various experiences with PES among the AMS, especially regarding the impacts achieved for biodiversity on the ground. Particular attention should be paid to experiences with the implementation of meaningful **biodiversity paybacks** and **ecological fiscal transfers** regarding impacts and feasibility of upscaling.

Another promising initiative might be the development of the global market for **biodiversity credits** (WRI, 2020). Here, the **development of clear rules** is needed on how this new market-based biodiversity valorization tool can be used to achieve

¹¹⁵ <https://www.cbd.int/api/v2013/documents/A724EB8A-292A-0A71-1289-D8B775852A35/attachments/211504/ASEAN-1.pdf>

¹¹⁶ <https://seea.un.org/ecosystem-accounting>

real **positive impacts on the ground** among the AMS, especially for the communities involved in sourcing activities.

- 3. Adaptation and monitoring of taxes:** One of the central targets of the Kuming-Montreal GBF is *to identify by 2025, and eliminate, phase out or reform incentives, including subsidies harmful for biodiversity, in a proportionate, just, fair, effective, and equitable way (target 18)*¹¹⁷. The achievement of this target can be supported by the AMS through the increased use of taxes that are already being applied in various ways to promote environmentally friendly production. Incentives for good practices are provided through tax reduction, and fees or taxes are charged for practices that are harmful to the environment and climate. For instance, Viet Nam applies tax reductions for certificate holders of certain sustainability standards. Thus, the author recommends country **studies for detecting and eliminating harmful taxes and subsidies** for biodiversity conservation - as done already in Indonesia for the fishery sector - and for identifying options for the use of taxes (reduction) as incentives for biodiversity conservation. This assessment is of special relevance for wild harvest species that have high potential to improve the livelihoods of local, marginalized communities and to conserve natural ecosystems, but which are often subject to high taxation and bureaucratic barriers that affect competitiveness and reduce the potential for sustainable use.

Nonetheless, so far it is not clear to what extent the instrument of taxes contributes to biodiversity conservation in practice. May et al. (2012) recommend defining **clear indicators** and establishing **monitoring systems** to better understand the **impact of taxes for biodiversity** that may be established in parallel to the proposed country studies on taxes in the AMS. Monitoring should ideally involve stakeholders from different sectors to ensure an inclusive approach and identify potential negative impacts of tax incentives such as on social dimensions.

- 4. Biodiversity-inclusive environmental impact assessments (EIA):** The best way to avoid negative impacts for biodiversity in trade is through an assessment of any intervention from the very beginning. Since the Eighth COP of CBD in 2002, countries are encouraged under the CBD to include **biodiversity-inclusive environmental impact assessments**. The mainstreaming of biodiversity-inclusive EIA was also discussed and agreed at CBD COP15. So far, the AMS seem to apply different approaches and methods in EIA. Bigard et al. (2017) mentions semantic confusion between avoidance, reduction, and offset measures among EIA concepts at the global level. Thus, a review of applied concepts and **mainstreaming of biodiversity conservation safeguard criteria among all AMS** is highly recommended. The author also recommends discussing if the concept of **HCV can be included**. The "ASEAN Initial Inputs to the Post-2020 GBF"¹¹⁸ goes even further in aiming for spatial development plans in accordance with the NBSAPs as a more systemic approach to integrate biodiversity in development. EIA are generally the responsibility of the Ministry of Environment. However, a cross-sectorial cooperation, especially with the Ministries for Agriculture and Forestry in conducting the assessments may create positive synergies for a better use of resources and knowledge management.

¹¹⁷ <https://www.un.org/sustainabledevelopment/blog/2022/12/press-release-nations-adopt-four-goals-23-targets-for-2030-in-landmark-un-biodiversity-agreement/>

¹¹⁸ ACB: ASEAN Initial Inputs to the Post-2020 Global Biodiversity Framework.

<https://www.cbd.int/api/v2013/documents/A724EB8A-292A-0A71-1289-D8B775852A35/attachments/211504/ASEAN-1.pdf>

5. Sharpening biodiversity in the ESG framework, climate action national standards: In addition to strengthening biodiversity in EIA and improved fiscal incentives, guidance may be needed to integrate biodiversity conservation into ASEAN's ESG regulatory framework and AMS' national regulations to effectively promote conservation in trade. The **ASEAN Taxonomy for Sustainable Finance** (2021) is the base for the ASEAN ESG and includes in its environmental objectives the protection of healthy ecosystem and diversity. However, it focuses more on the conservation of natural resources, carbon sinks and to minimize impacts on environmental pollution, whereas **clear criteria for biodiversity conservation are missing**. It is recommended to shape the concept for **stressing even more the do's and don'ts** for economic activities and investment. These should allow for creating synergies between actions for biodiversity conservation and minimizing trade-offs and harmful effects for people and nature. Special attention should be given to ensure **biodiversity conservation in actions for climate change mitigation**, e.g. by the creation of clear criteria the promote nature-based solutions under the integration of natural ecosystems, protected areas and community based solutions.

Furthermore, an **exchange** among the AMS **on experiences and performance of national sustainability standards** and other regulations that promote biodiversity conservation is recommended to promote best practices and lessons learned. This is of special relevance since they are part of the **framework for VSS** and its impact on biodiversity conservation.

6. VSS with biodiversity minimum criteria and meaningful actions supported by national policy frameworks: In the market-oriented certification organizations there is currently momentum to adapt the VSS to new international requirements for biodiversity conservation as a result of the Kuming-Montreal GBF. Nonetheless, there are still several VSS within the biotrade sector that do not include basic concepts such as being deforestation-free, HCV, biodiversity action plans, prohibition of highly toxic pesticides, and mandatory management for wild harvest species (see also UEBT, 2022). It is recommended to **promote the inclusion of these concepts as minimum criteria** for all environmental VSS, without which certification cannot be granted.

Here, it would be helpful to achieve a common statement among the AMS regarding what is expected by the VSS, and to harmonize a common language and definition in the AMS policy frameworks. Even if the VSS are a voluntary initiative by the private sector, the national governments can set the rules for minimum criteria, since all VSS have to align with national laws and regulations. On the other hand, the national policy framework can have a positive influence on the allocation of VSS by supporting awareness raising activities, the elaboration of guidelines, capacity-building, trade promotion for certified production units, and considering VSS in financial incentive schemes, e.g., in the form of tax reductions or financing services under special conditions for certified production entities, or those on the way to becoming certified.

In any case, **knowledge exchange with the certification organizations** should be promoted, not only among the different certifiers, but also with the **public sector and civil society**. This is of especially high relevance for the lesser-known species with smaller trading volumes, since it is simply not efficient (too costly, time-consuming, and complex) to create sound information from the field on a case-by-case basis. Thus, improved cooperation among the certification organizations and stakeholders

from the public, research and civil sector may support the definition of best practices for a sustainable management of species and habitats, and the design of meaningful conservation and restoration measures.

7. Increasing consumer awareness and visibility of biodiversity in trade: "*You only protect what you love, and you only love what you know*" - this quote by Konrad Lorenz is very true for mainstreaming biodiversity conservation in trade in which awareness-raising can be seen as the first step. Although many biodiversity-based products are part of our daily life in the form of food, medicine, cosmetics, fragrances, industrial applications, textiles, and other goods, **most of them are unknown to consumers**, and even less known is the way they are produced. Data is also lacking on the impact of consumer choices on biodiversity, although since 2009, UEBT has been using a "biodiversity barometer" about consumer awareness of biodiversity. Comparing its first edition in 2009 against its edition in 2022, costumers have increased their understanding about and awareness of biodiversity (UEBT, 2022).

However, there is still a lot to do. Various industries seek to **replace botanicals and NTFPs with synthetic products** that are cheaper, standardized and constantly available. One example is the replacement of star anise for manufacturing the medicine Tamiflu against bird's flu by Roche. The company now synthesizes shikimic acid based on bacterial fermentation instead of extracting it from the star anise seeds¹¹⁹. Another example is the production of palm oil-based cocoa butter equivalents to replace illipe butter, which is derived from wild-collected seeds of an endemic tree in West Kalimantan, Indonesia¹²⁰. The replacement of such biodiversity-based products can strongly affect communities that depend on collection activities for their livelihoods. Losing the option to generate value from sustainable sourcing may not only deteriorate their economic condition but encourage them to resort to unsustainable practices that increase the pressure on natural resources and biodiversity.

Only consumers have the opportunity to halt this process by demanding natural, biodiversity-based and sustainable products. Efforts are needed to raise awareness and change habits so that biodiversity-friendly products are purchased preferentially. This requires coordination at the international level with actions in the production and the consumption countries under a multistakeholder approach that brings civil society, the public and private sector together. The **Biodiversity Communication Toolkit** by the Global SCP Clearinghouse provides useful guidance and tools for communication related to consumption and biodiversity.

For orientating the consumers, there are several initiatives in place, e.g., the "ethical shopping guide"¹²¹, and the "Guide for sustainable consumption for biodiversity and ecosystem services"¹²². Furthermore, there are several online guides that examine the various sustainability certifications. However, the focus is mainly on fashion and less on biodiversity-based products. Major certification and environmental civil society organizations also recognize the need to provide evidence about the impacts achieved by VSS and manage special information platforms on this topic¹²³. All these

¹¹⁹ <https://www.chemistryworld.com/news/the-shortest-recipe-for-tamiflu/3003978.article>

¹²⁰ <https://www.musimmas.com/the-ideal-cocoa-butter-alternative-for-chocolates/>

¹²¹ <https://www.ethicalconsumer.org/>

¹²² <https://www.adelphi.de/en/publication/sustainable-consumption-biodiversity-and-ecosystem-services>

¹²³ see e.g. "evidensia", run by the ISEAL Alliance, the World Wildlife Fund (WWF) and Rainforest Alliance..

initiatives offer opportunities for the AMS to present their efforts in biodiversity conservation and their broad range of biodiversity-based products. In addition, along the AMS, country-based or ASEAN-wide platforms could be established to promote lesser-known biodiversity-based products, the specific challenges faced for biodiversity conservation, but also the positive impacts on livelihoods, nature and to the consumers' health/wellbeing.

Companies should be further encouraged to align with BioTrade. To this aim, the "BioTrade self assessment tool"¹²⁴ developed by UNCTAD and the International Trade Center (ITC) can be of help, whereby interested parties can inform themselves about business models of promising biotrade and "BioTrade" initiatives. Companies already aligned with BioTrade and or biodiversity conservation measure deserve further special promotion along the national and international markets. Here, the connection to already established platforms for promoting green business in purchasing decisions in business to business (B2B)¹²⁵, and other sector-specific information platforms (e.g. the Sustainable Herbs Program¹²⁶) should be examined, and their incorporation promoted within the ESG framework. These efforts can be linked to special biodiversity action days or initiatives, such as the World Wildlife Day, the Biodiversity Day, or UN Decade on Ecosystem Restoration.

There are so many opportunities - so let's get going.

¹²⁴ https://unctad.org/system/files/information-document/BT_Self-Assessment_Tool_Factsheet_v2-1-1.pdf

¹²⁵ Examples for B2B online marketplaces are EUROPAGES (<https://www.europages.de/>), Kompass (<https://de.kompass.com/>), Green trade for organic products (<https://www.greentrade.net/>), Wer liefert was platform (<https://www.wlw.de/>)

¹²⁶ <https://sustainableherbsprogram.org>

Annexes

Fig. A1: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the EOS standard (VO5), published by ECOCERT¹²⁷.

Positive impacts by VSS for biodiversity conservation (adapted from IUCN, 2016)	Respective criteria in the Ecocert-EU-Organic-Standard VO5
1. The farming activities/the wild harvest systems protect forests stands and other natural eco-systems	not found
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	not found
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	not found
4. Endangered species are protected and all native flora and fauna are conserved	Weed, pest and disease management shall rely primarily on the protection by natural enemies, the choice of species and varieties, crop rotation, cultivation techniques and thermal processes.
5. Conservation of the diversity of genetic resources	Prohibition on the use of genetically modified organism (GMO).
6. The used species is sustainably managed	The collection does not affect the stability of the natural habitat or the maintenance of the species in the collection area. The collectors shall be trained and supervised ... for the sustainable collection within the determined area and in line with official permission and under respect of permitted quantities.

Fig. A2: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the EOS standard (VO5) published by ECOCERT¹²⁷.

Expected positive impacts by VSS for the conservation of natural resources (adapted from IUCN, 2016)	Respective criteria in the Ecocert-EU-Organic-Standard VO5
1. Soil health is maintained and improved, and erosion is minimized	Use of tillage and cultivation practices that maintain or increase soil organic matter, enhance soil stability and soil biodiversity, and prevent soil compaction and soil erosion. The fertility and biological activity of the soil shall be maintained and increased by multiannual crop rotation including legumes and other green manure crops, and by the application of livestock manure or organic material, both preferably composted, from organic production.
2. Water pollution is minimized and water is efficiently used	Mineral nitrogen fertilizers shall not be used. All plant production techniques used shall prevent or minimize any contribution to the contamination of the environment; Organic/mechanic/thermic management of pests, diseases and weeds and respect of maximum of amount of livestock manure.

¹²⁷

<http://ecocertcej.cluster020.hosting.ovh.net/websites/turkey.ecocert.com/sites/turkey.ecocert.com/files/EOS%20v05%20final%20version/index.pdf>

3. On farms and throughout production systems, the net greenhouse gas emission are reduced	not found
--	-----------

Fig. A3: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the Naturland organic production standard¹²⁸.

Positive impacts by VSS for biodiversity conservation (adapted from IUCN, 2016)	Respective criteria in the Naturland organic production standard
1. The farming activities/the wild harvest systems protect forests stands and other natural eco-systems	not found
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	The farmer is obliged to conserve and, if required, to recreate structural elements of the landscape, such as hedges, borders, humid areas, oligotrophic grassland and other elements. This applies especially to large field units and serves the promotion of ... the self-regulation of the eco-system.
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	The self-regulating potential of an ecological system should be backed up by landscape management. Coffee and cocoa production has to be done under shade trees (70 N/ha minimum, and at least 12 different varieties, the principle one not more than 60 %). Maximum size for monoculture plantation of banana is 5 ha.
4. Endangered species are protected and all native flora and fauna are conserved	not found
5. Conservation of the diversity of genetic resources	Products must not include genetically modified organisms (GMOs) and GMO derivatives
6. The used species is sustainably managed	Only for wild-grown: Before the start of each collecting season, the maximum amount to be harvested has to be defined annual-ly to prevent overexploitation. The collecting and any treatment measures must show proof of their ecofriendly nature, whereby damage to the ecological system from long-term exploitation has to be excluded. Plants must not be cultivated, and any measures to enhance or protect growth <i>shall not be taken, or kept on a very low level</i> (reproduction, soil management, cutting, extensive fertilizing).

Fig. A4: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the Naturland organic production standard¹²⁸.

Expected positive impacts by VSS for the conservation of natural resources (adapted from IUCN, 2016)	Respective criteria in the Naturland organic production standard
1. Soil health is maintained and improved, and erosion is minimized	Crop rotation is a core principle in the cultivation of annual and perennial crops to improve soil fertility and control the weeds, diseases and pests, and to guarantee the long-term yield stability and economic viability. Biodegradable matter of microbe, vegetable or animal origin forms the basis of fertilization. The use of synthetic chemical substances and growth regulators is prohibited

¹²⁸ https://www.naturland.de/images/01_naturland/_en/Standards/Naturland-Standards-on-Production.pdf

	<p>for pest, disease and weed control. Further measure has to be undertaken to improving water absorption and retention and increasing the storage of CO₂ in the soil as a contribution to the protection of the climate.</p> <p>The humus balance has to be at least at an equilibrium within the margin of varied crop rotation. Permanent crops require under sown crops or permanent ground coverage.</p>
2. Water pollution is minimized and water is efficiently used	<p>Farms draw up a water management plan. Excessive exploitation of water resources is not allowed. Wherever possible, rain water is collected and used.</p> <p>A balance sheet of the nitrogen level on the farm has to be presented annually. Nutrient losses during storage and the application of liquid fertilizers and dung as well as in irrigation have to be reduced to a minimum. The quality of the ground water and surface water may not be negatively affected.</p>
3. On farms and within the production systems net greenhouse gas emission are reduced	<p>Energy should be used as efficiently as possible and renewable energy resources should be used for preference.</p>

Fig. A5: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the Fair for Life and For Life standard¹²⁹.

Positive impacts by VSS for biodiversity conservation,	Respective criteria in the Fair for Life and For Life standard
1. The farming activities/the wild harvest systems protect forests stands and other natural ecosystems	The production does not affect any primary or old growth secondary forest or other valuable natural or semi-natural ecosystems. Any land which was made cultivable by clearing primary or secondary forests up to 10 years before can only be accepted if considerable efforts are implemented to repair the damages caused. Any destruction or conversion in the preceding 5 years before must be compensated by adequate ecosystem conservation practices.
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	not found, except the criteria that care must be taken when potentially invasive species are introduced;
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	Measures are taken to maintain or [...] increase, biodiversity (diversity of habitats, flora, fauna, fungi and microorganisms) in and around the managed areas
4. Endangered species are protected and all native flora and fauna are conserved	Diagnosis of the habitats and the existing flora and fauna (at least vertebrates and for the ecosystem relevant insects); Identification of threatened or endangered species of fauna and flora and their habitats, and the threats to their conservation. There must be no evidence that operation has negative impact on threatened or endangered species and/or habitats.
5. Conservation of the diversity of genetic resources	Measures are taken to maintain or increase, biodiversity, including different varieties of same crops and planting of indigenous non-target plant species. The propagation materials used are not genetically modified.
6. The used species is sustainably	There is a written baseline resource assessment and data

¹²⁹ https://www.fairforlife.org/client/fairforlife/file/Standard/Fair_for_Life_Standard_EN.pdf

managed	<p>on sustainable collection rate to define the intensity and frequency of collection that enables the target species to regenerate over the long term.</p> <p>There is a monitoring system in place in order to ensure that sustainable collection rates are effectively applied, that includes consolidated records on amounts harvested, and other relevant information to monitor long-term sustainability (e.g. age and size of plants collected and regeneration rate).</p> <p>There are no indications that the collection frequency exceeds the rate of regeneration</p>
---------	--

Fig. A6: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the Fair for Life and For Life standard¹²⁹.

Expected positive impacts by VSS for the conservation of natural resources	Respective criteria in the Fair for Life and the For Life standard
1. Soil health is maintained and improved, and erosion is minimized	<p>Farmers are encouraged to implement organic farming or to provide a 3 years' environmental plan to move towards more environmentally sustainable practices linked to the reduction of agrochemicals.</p> <p>Land clearing is done in accordance with national and local legal requirements, with the assistance of an environmental expert. It is promoted not to burn in case of clearance, or to implement only controlled small-scale burning. Compensations measures should be taken.</p>
2. Water pollution is minimized and water is efficiently used	<p>Only for irrigation systems: the operator has to know the source and quantity of all surface and ground water used, and adequate water use practices are applied. Contamination of groundwater and surface water bodies as well as air pollution is minimized. Waste is reduced and managed responsibly with adequate efforts to compost and recycle</p>
3. On farms and within the production systems net greenhouse gas emission are reduced	<p>Energy consumption is monitored. Renewable energy sources and further measures to reduce or compensate the operation's impact on the climate change are sought</p>

Fig. A7: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the FairWild standard¹³⁰.

Positive impacts by VSS for biodiversity conservation,	Respective criteria in the FairWild standard
1. The farming activities/the wild harvest systems protect forests stands and other natural ecosystems	<p>Management activities supporting wild collection of target species do not adversely affect ecosystem diversity.</p>
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	<p>Management activities supporting wild collection of target species do not adversely affect ecosystem diversity, processes and functions at the landscape level</p>
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	<p>not found</p>
4. Endangered species are protected and all native flora	<p>Rare, threatened and endangered species and habitats that are likely to be affected by collection and management of</p>

¹³⁰ <https://www.fairwild.org/the-fairwild-standard>

and fauna are conserved	the target species are identified and protected.
5. Conservation of the diversity of genetic resources	not found
6. The used species is sustainably managed	A species / area management plan defines adaptive, practical management processes and good collection practices. Collection and management practices are based on adequate identification, mapping, inventory, assessment and monitoring of the target species and collection impacts. The collection rate (intensity and frequency) of does not exceed the target species' ability to regenerate over the long term. The conservation status of target species and populations is assessed and regularly reviewed.

Fig. A8: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the FairWild standard¹³⁰.

Expected positive impacts by VSS for the conservation of natural resources	Respective criteria in the FairWild standard
1. Soil health is maintained and improved, and erosion is minimized	not found (it is promoted not to use inputs that are prohibited by relevant organic standards)
2. Water pollution is minimized and water is efficiently used	not found
3. On farms and within the production systems net greenhouse gas emission are reduced	not found

Fig. A9: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the FSC NTFP GFA interim standard for Viet Nam¹³¹.

Positive impacts by VSS for biodiversity conservation	Respective criteria in the FSC NTFP interim standard
1. The farming activities/the wild harvest systems protect forests stands and other natural ecosystems	Ecological functions and values shall be maintained intact, enhanced, or restored, including genetic, forest regeneration and succession, species, ecosystem diversity and natural cycles that affect the productivity of the forest ecosystem. An assessment of environmental impacts shall be done appropriate to the scale, intensity of forest management and the uniqueness of the affected resources, and adequately integrated into management systems.
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities.
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	NTFP harvesting and management shall consider the ecological function for other associated species (e.g. food of birds and mammals, seed spread by animals, etc.)
4. Endangered species are protected and all native flora and fauna are conserved	Safeguards shall exist which protect rare, threatened and endangered species and their habitats. Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled. NTFP of endangered species

¹³¹ https://www.gfa-cert.com/wp-content/uploads/2018/10/RSP_GFA_STD_NTFP_FM_Vietnam_V-1.0_e.pdf

	of local or international lists shall not be harvested.
5. Conservation of the diversity of genetic resources	Measures shall be implemented to maintain the current natural composition and structure of NTFP populations (e.g., natural regeneration management, enrichment, selection and protection of seed trees)
6. The used species is sustainably managed	Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest. The rate of harvest of forest products shall not exceed levels which can be permanently sustained (intensity, frequency and seasonality of NTFP exploitation shall be based on a combination of scientific research, experience and/or long term local knowledge) PRINCIPLE 7: MANAGEMENT PLAN as a base for sustainable operation and production system is required

Fig. A10: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the FSC NTFP interim standard of GFA for Viet Nam¹³¹.

Expected positive impacts by VSS for the conservation of natural resources	Respective criteria in the FSC NTFP interim standard
1. Soil health is maintained and improved, and erosion is minimized	NTFP exploitation and management shall minimize the impacts on forest composition and structure, and on soil structure and fertility. Intensive management or NTFP harvesting of undergrowth in natural forests do not cause erosion, ... nor affect negatively the soil structure or its fertility (only for plantation systems) Management systems shall promote the adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, ... shall be prohibited.
2. Water pollution is minimized and water is efficiently used	Intensive management or NTFP harvesting ... do not reduce water quality (applies only for plantation systems)
3. On farms and within the production systems net greenhouse gas emission are reduced	not found.

Fig. A11: Positive impacts on biodiversity conservation expected by VSS (adapted from IUCN, 2016), and respective criteria of the UEBT/Rainforest Alliance Herbs and Spice Programme¹³².

Positive impacts by VSS for biodiversity conservation	Respective criteria in the UEBT/RA Herbs and Spices standard
1. The farming activities/the wild harvest systems protect forests stands and other natural ecosystems	Producers must not have encroached into forests or other natural ecosystems.
2. The farming activities/the wild harvest systems contribute to landscape-level conservation	Producers implement measures in case of medium or high risk to the High Conservation Value Producers maintain or restore riparian buffers

¹³² <https://uebt.org/resource-pages/standard>

	Integrated Pest Management practices are implemented to prevent pests and reduce the use of agrochemicals
3. The farming activities/the wild harvest systems increase the amount and diversity of native vegetation	Producers maintain on farm the natural vegetation, increase natural vegetation and optimize the shade coverage. Human wildlife conflicts are minimized
4. Endangered species are protected and all native flora and fauna are conserved	Producers take measure to protect endangered species and native flora and fauna, as well as in case of medium or high risk to the High Conservation Values
5. Conservation of the diversity of genetic resources	There are no genetically modified (GMO) crops on the farm, and locally adapted genetic resources should be maintained and used
6. The used species is sustainably managed	Adequate renovation of tree crops

Fig. A12: Positive impacts on the conservation of natural resources expected by VSS (adapted from IUCN, 2016), and respective criteria of the UEBT/Rainforest Alliance Herbs and Spice Programme¹³².

Expected impact for the conservation of natural resources	Respective criteria in the UEBT/RA Herbs and Spices standard
1. Soil health is maintained and improved, and erosion is minimized	Producers implement measures to enhance soil fertility Optimized fertilizer use; improved soil coverage, Planting and rotation practices improve soil and crop health Agrochemicals are used in a safe, effective and efficient way Integrated Pest Management practices are implemented to prevent pests and reduce the use of agrochemicals
2. Water pollution is minimized and water is efficiently used	Agrochemicals are used in a safe, effective and efficient way Producers use water efficiently. Waste water from processing operations does not contribute to soil erosion or contamination. Waste is managed in a safe and environmentally friendly way
3. On farms and within the production systems net greenhouse gas emission are reduced	Adequate renovation of tree crops Producers increase energy efficiency and reduce dependency on non renewable energy sources If biomass is used, producers minimize the effects on natural ecosystems

II. Literature

- Alessandro, M M., & Marchettie, L. M. (2011): FSC-certified non timber forest products and forest services: is there an evidence of marketing advantages? International Symposium Multiple Forest Outputs: Silviculture, Accounting and Managerial Economics Viterbo, Italy.
- ASEAN 2017: Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture and Forestry (2016-2025). <https://asean-crn.org/vision-and-strategic-plan-for-asean-cooperation-in-food-agriculture-and-forestry-2016-2025/>
- ASEAN 2020: ASEAN Vision 2040 Volume I: towards a bolder and stronger ASEAN community. Author: Economic Research Institute for ASEAN and East Asia. <https://asean.org/book/asean-vision-2040-volume-i-towards-a-bolder-and-stronger-asean-community/>
- ASEAN 2021a: ASEAN Investment Report 2020–2021 – Investing in Industry 4.0.: ASEAN Secretariat, Jakarta. <https://asean.org/wp-content/uploads/2021/09/AIR-2020-2021.pdf>
- ASEAN 2021b: ASEAN taxonomy for sustainable finance. <https://asean.org/wp-content/uploads/2021/11/ASEAN-Taxonomy.pdf>
- ASEAN, 2021c: ASEAN joint statement to the fifteenth meeting of the conference of the parties to the convention on biological diversity (CBD COP 15). <https://asean.org/wp-content/uploads/2021/11/ASEAN-Joint-Statement-to-CBD-COP15.pdf>
- ASEAN: ASEAN Initial Inputs to the Post-2020 Global Biodiversity Framework. <https://www.cbd.int/api/v2013/documents/A724EB8A-292A-0A71-1289-D8B775852A35/attachments/211504/ASEAN-1.pdf>
- Bain & Temasek (2022): Southeast Asia's Green Economy 2022 Report: Investing behind new realities" (with contributions from Microsoft) <https://www.bain.com/globalassets/noindex/2022/bain-temasek-sea-green-economy-2022-report-investing-behind-the-new-realities.pdf>
- Beech, E., Rivers, M., Oldfield, S., & Smith, P. P. (2017). GlobalTreeSearch: The first complete global database of tree species and country distributions. *Journal of Sustainable Forestry*, 36(5), 454-489
- Bigard, C., Pioch, S., & Thompson, J. D. (2017). The inclusion of biodiversity in environmental impact assessment: Policy-related progress limited by gaps and semantic confusion. *Journal of Environmental Management*, 200, 35-45.
- Braun A, Dung NT, Pistorius T (2017): Assessment of the policy impacts of the 'Temporary logging ban' in Viet Nam's natural forests. Unique, Study for GIZ Viet Nam.
- Boupha, T (2022): Political Economy Analysis of Value Chain Development for Benzoin Product in Northern Provinces of Lao PDR. Helvetas study report, not published.
- Business for Nature, 2022: Reform \$1.8 trillion yearly environmentally harmful subsidies to deliver a nature-positive economy. <https://www.businessfornature.org/news/subsidy-reform>. Or at the Guardian: <https://www.theguardian.com/environment/2022/feb/17/harmful-subsidies-why-is-the-world-still-funding-the-destruction-of-nature-aoe>
- Burke et al (2021): Viet Nam: Major changes in the new Environmental Protection Law. 2021 Baker & McKenzie, <https://insightplus.bakermckenzie.com/>
- Cao, H., Qi, Y., Chen, J., Shao, S., & Lin, S. (2021). Incentive and coordination: Ecological fiscal transfers' effects on eco-environmental quality. *Environmental impact assessment review*, 87, 106518.
- CBD: Impact assessment: Voluntary guidelines on biodiversity-inclusive impact assessment. <https://www.cbd.int/decision/cop/?id=11042>
- CBD 2021: First draft of the post-2020 global biodiversity framework. Open ended working group on the post-2020 global biodiversity framework. 3rd meeting, Online, 23 August – 3 September 2021, Item 4 of the provisional agenda. <https://www.cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf>
- Chen, S. L., Yu, H., Luo, H. M., Wu, Q., Li, C. F., & Steinmetz, A. (2016). Conservation and sustainable use of medicinal plants: problems, progress, and prospects. *Chinese medicine*, 11(1), 1-10.
- CIFOR, 2019: The context of REDD+ in Viet Nam: Drivers, agents and institutions [2nd edition]. <https://www.cifor.org/knowledge/publication/7402/>
- Cochard R, Ngo DT, Waeber PO & Kull CA (2017): Extent and causes of forest cover changes in Viet Nam's provinces 1993-2013: A review and analysis of official data. *Environmental Reviews*.

- Dasgupta, P (2021): The Economics of Biodiversity: The Dasgupta Review. HM Treasury, London
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962785/The_Economics_of_Biodiversity_The_Dasgupta_Review_Full_Report.pdf.
- Ernst and Young (EY, 2021): Sustainable finance roadmap for the Philippines.
- European Union(2022): Agri-Food Trade Statistical Factsheet European Union - ASEAN (Association Of South-East Asian Nations). <https://ec.europa.eu/info>
- FAIR FOR LIFE (2022): Fair for Life Certification standard for Fair Trade and responsible supply-chains. Version May 2022. www.fairforlife.org
- FAO (2015): Global Forest Resources Assessment. Desk reference.
- Görg, C. (1997). Schutz durch nachhaltige Nutzung? Der Konflikt um die biologische Vielfalt. In Nachhaltige Entwicklung (pp. 111-129). VS Verlag für Sozialwissenschaften, Wiesbaden.
- Gullison, R. E. (2003): Does forest certification conserve biodiversity? *Oryx*, 37(2), 153-165.
- Handayani, M. K. Y. (2019). The effect of ESG performance on economic performance in the high profile industry in Indonesia. *Journal of International Business Economics*, 7(2), 112-121.
- Hardt, E., Borgomeo, E., dos Santos, R. F., Pinto, L. F. G., Metzger, J. P., & Sparovek, G. (2015). Does certification improve biodiversity conservation in Brazilian coffee farms? *Forest Ecology and Management*, 357, 181-194.
- HCV Resource Network (2020): HCV screening: Guidance for identifying and prioritising action for HCVs in jurisdictional and landscape settings.
- Houghton, K., & Naughton, H. (2017). Trade and sustainability: The impact of the International Tropical Timber Agreements on exports. *International Environmental Agreements: Politics, Law and Economics*, 17, 755-778.
- Huntley, B. J., & Redford, K. H. (2014). Mainstreaming biodiversity in Practice: a STAP advisory document. Global Environment Facility, Washington, DC, 88.
- IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. 1148 pages.
<https://doi.org/10.5281/zenodo.3831673>
- IUCN (2016): Policy matters. Certification and biodiversity – how voluntary certification standards impact biodiversity and human livelihoods. IUCN commission on environmental, economic and social policy. <https://portals.iucn.org/library/sites/library/files/documents/Policy-Matters-Issue-21.pdf>
- IUCN (2022): Towards an IUCN nature-positive approach: a working paper.
<https://www.iucn.org/sites/default/files/2022-10/nature-positive-summary-highlights-oct-2022.pdf>
- Jambeck, JR et al. (2015): "Plastic Waste Inputs from Land into the Ocean". *Science*. 347 (6223): 768–771. Bibcode:2015Sci...347..768J. doi:10.1126/science.1260352. PMID 25678662. S2CID 206562155.
- Kumara N (2017): New Regulation On Economic Instruments In Environmental Matters. Legal news.
<https://budidjaja.law/2017/12/new-regulation-on-economic-instruments-in-environmental-matters/>
- Koh, L. P. 2007. Impact of land use change on South-east Asian forest butterflies: a review. *Journal of Applied Ecology* 44: 703 – 713
- Kok, M. T., Alkemade, R., Bakkenes, M., van Eerd, M., Janse, J., Mandryk, M., ... & van Vuuren, D. P. (2018). Pathways for agriculture and forestry to contribute to terrestrial biodiversity conservation: a global scenario-study. *Biological Conservation*, 221, 137-150.
- Laird, S. A., McLain, R. J., & Wynberg, R. P. (Eds.). (2010). *Wild product governance: finding policies that work for non-timber forest products*. Earthscan.
- Larsen HO, Olsen CS 2007. Unsustainable collection and unfair trade? Uncovering and assessing assumptions regarding Central Himalayan medicinal plant conservation. *Biodivers Conserv.*;16:1679–97.
- Lehtonen, E., Gustafsson, L., Löhmus, A., & von Stedingk, H. (2021). What does FSC forest certification contribute to biodiversity conservation in relation to national legislation? *Journal of Environmental Management*, 299, 113606.
- Macfadyen, G. and Hosch, G., 2021. The IUU Fishing Index, 2021. Poseidon Aquatic Resource Management Limited and the Global Initiative Against Transnational Organized Crime.
<https://globalinitiative.net/wp-content/uploads/2021/12/IUU-Report-2021.pdf>

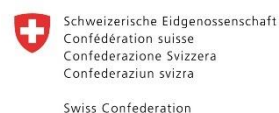
- May, P. H., Gebara, M. F., Conti, B. R., & Lima, G. R. (2012). The "Ecological" Value Added Tax (ICMS-Ecológico) in Brazil and its effectiveness in State biodiversity conservation: a comparative analysis. In Proceedings of the 12th Biennial Conference of the International Society for Ecological Economics, Rio de Janeiro.
- Meijaard, E., Achdiawan, R., Wan, M., & Taber, A. (2014). Rattan: The decline of a once-important non-timber forest product in Indonesia (Vol. 101). CIFOR.
- Myers, R. (2015). What the Indonesian rattan export ban means for domestic and international markets, forests, and the livelihoods of rattan collectors. *Forest policy and economics*, 50, 210-219.
- Mittermeier, R. A., Gil, P. R., Hoffman, M., Pilgrim, J., Brooks, T., Mittermeier, C. G., ... & Saligmann, P. A. (2004). Hotspots revisited: earth's biologically richest and most endangered terrestrial ecoregions CEMEX, Mexico City, 392.
- Naturland, 2022: Naturlands standards on production.
https://www.naturland.de/images/01_naturland/_en/Standards/Naturland-Standards-on-Production.pdf
- Nguyen & Nguyen, 2021: Incentive Policies For High-Tech Agriculture In Viet Nam: Current Situation And Implications. *International Journal of scientific & technology research* (10): 8
- Noor, F. M. M., Gassner, A., Terheggen, A., & Dobie, P. (2017): Beyond sustainability criteria and principles in palm oil production: addressing consumer concerns through insetting. *Ecology and Society*, 22(2).
- Noza Z. G. 2020: Payments for ecosystem services in the Philippines: a win-win approach for communities, businesses, and the environment. CIFOR.
<https://www.worldagroforestry.org/blog/2020/02/05/payments-ecosystem-services-philippines-win-win-approach-communities-businesses-and>.
- OECD (2020): Tracking Economic Instruments and Finance for Biodiversity 2020.
<https://www.oecd.org/environment/resources/tracking-economic-instruments-and-finance-for-biodiversity-2020.pdf>
- Overland, Indra; Sagbakken, Haakon Fossum; Chan, Hoy-Yen; Merdekawati, Monika; Suryadi, Beni; Utama, Nuki Agya; Vakulchuk, Roman (December 2021). "The ASEAN climate and energy paradox". *Energy and Climate Change*. 2: 100019. doi:10.1016/j.egycc.2020.100019. hdl:11250/2734506. ISSN 2666-2787.
- Pasimura, Indah & Afrizal, Afrizal & Novarino, Wilson. (2022). Impact of Indonesian Sustainable Palm Oil (ISPO) Certification to Environmental Behavior of Palm Oil Plantation Companies. *International Journal of Agriculture System*. 10. 26. 10.20956/ijas.v10i1.3254.
- Pattberg, P., Widerberg, O., & Kok, M. T. (2019). Towards a global biodiversity action agenda. *Global Policy*, 10(3), 385-390.
- Perfecto, I., Vandermeer, J., Mas, A., & Pinto, L. S. (2005). Biodiversity, yield, and shade coffee certification. *Ecological economics*, 54(4), 435-446.
- Pham, T. T., Vu, T. P., Hoang, T. L., Dao, T. L. C., Nguyen, D. T., Pham, D. C., ... & Hoang, N. V. H. (2022). The Effectiveness of Financial Incentives for Addressing Mangrove Loss in Northern Viet Nam. *Frontiers in Forests and Global Change*, 4, 709073.
- Philpott, S. M., Arendt, W. J., Armbrecht, I., Bichier, P., Diestch, T. V., Gordon, C., ... & Zolotoff, J. M. (2008): Biodiversity loss in Latin American coffee landscapes: review of the evidence on ants, birds, and trees. *Conservation Biology*, 22(5), 1093-1105.
- Pillay, G Kirthana (2015): Knowledge and attitude of the community on local environmental and conservation programmes in Singapore
- Pirlot, P (2019): EU Forest Law Enforcement, Governance and Trade Action Plan creation: dynamics between and beyond EU institutions. EUSA Conference, 9-11 May 20219, Denver.
<https://www.eustudies.org/conference/papers/download>
- Pörtner, H. O., Scholes, R. J., Agard, J., Archer, E., Arneth, A., Bai, X., ... & Ngo, H. T. (2021). IPBES-IPCC co-sponsored workshop report on biodiversity and climate change. IPBES and IPCC, 28.
<https://ipbes.net/events/ipbes-ipcc-co-sponsored-workshop-biodiversity-and-climate-change>
- Purwanto, E. (ed), 2019. HCV Mainstreaming in Indonesia: Tropenbos Indonesia's Experience (2004-2017), Bogor, Tropenbos Indonesia

- Putra et al, (2019), Policy Paper: Introducing EFT in Indonesia: TAPE, TAKE and TANE)
- Rainforest Alliance (2022): Rainforest Alliance Sustainable Agriculture Standard - Farm Requirements. Version 1.2. <https://www.rainforest-alliance.org/wp-content/uploads/2022/01/2020-RA-Sustainable-Agriculture-Standard-Farm-Requirements.pdf>
- Republic of Indonesia (2020): The National Medium-Term Development Plan for 2020-2024
- Rodhiah et al 2019 The impact of ISPO certification on economic, social and environmental aspect in the palm oil plantation. IOP Conf. Ser.: Earth Environ. Sci. 336 012013
- Rudolf, K., Edison, E., & Wollni, M. (2022). Achieving landscape patterns for biodiversity conservation through payments for ecosystem services—Evidence from a field experiment in Indonesia. *Ecological Economics*, 193, 107319.
- Sajise, P. E. (2015). Empowering Communities and Countries to Conserve Biodiversity at the National and ASEAN Levels: Status, Challenges, and Ways Forward. ERIA Discussion Paper Series.
- Schmidt, L., & Gerber, K. (2016). A comparison of carbon market standards for REDD+ projects. Published by Germanwatch eV. <https://www.atmosfair.de/wp-content/uploads/17247.pdf>
- Schoneveld, G. C., van der Haar, S., Ekowati, D., Andrianto, A., Komarudin, H., Okarda, B., ... & Pacheco, P. (2019 a): Certification, good agricultural practice and smallholder heterogeneity: Differentiated pathways for resolving compliance gaps in the Indonesian oil palm sector. *Global Environmental Change*, 57, 101933.
- Schweinfest, S. et al: 2022: The Rise, Fall and Rethinking of Green GDP. <https://seea.un.org/news/rise-fall-and-rethinking-green-gdp>
- Secretariat of the Convention on Biological Diversity (2010): Global Biodiversity Outlook 3. Montréal. CBD: <https://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>
- Shanley, P., Pierce, A.R., Laird, S.A., Guillén, A. (eds.) (2002). Tapping the green market: Certification and management of non-timber forest products. Earthscan, London.
- Socialistic Republic of Viet Nam (2022): Environmental Protection Strategy, No. 450/QD-TTg. <https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Decision-450-QD-TTg-2022-Approving-national-environmental-protection-strategy-until-2030-510740.aspx>
- Sodhi, N. S., Koh, L. P., Brook, B. W., & Ng, P. K. (2004). Southeast Asian biodiversity: an impending disaster. *Trends in ecology & evolution*, 19(12), 654-660.
- Tayleur, C., Balmford, A., Buchanan, G. M., Butchart, S. H., Ducharme, H., Green, R. E., ... & Phalan, B. (2017). Global coverage of agricultural sustainability standards, and their role in conserving biodiversity. *Conservation Letters*, 10(5), 610-618.
- Ting, J. K. Y., Shogo, K., & Jarzebski, M. P. (2016). The efficacy of voluntary certification standards for biodiversity conservation. *Policy Matters*, 21, 25-44.
- Trisnowati, Y., Achسانی, N. A., Sembel, R., & Andati, T. (2022). The effect of ESG score, financial performance, and macroeconomics on stock returns during the pandemic era in Indonesia. *International Journal of Energy Economics and Policy*, 12(4), 166-172.
- Trolliet, F., & Vogt, M. (2019). How does FSC certification of forest management benefit conservation of biodiversity? In *Sustainability Certification Schemes in the Agricultural and Natural Resource Sectors* (pp. 93-110). Routledge.
- UEBT, 2021: Biodiversity action plans - full guidance manual. <https://uebt.org/resource-pages/uebt-bap-full-guidance>
- UEBT, 2022: Sourcing Botanicals with respect for people and biodiversity. <https://static1.squarespace.com/static/58bfcaf22994ca36885f063e/t/634e2b3a9f5b3b7e0ce8c844/1666067999049/UEBT+Sourcing+Botanicals+with+Respect+for+People+and+Biodiversity+Oct+2022.pdf>
- UEBT, 2022b: Cinnamon in Lao Cai & Yen Bai in the Northern Region of Vietnam – a case study. <https://static1.squarespace.com/static/58bfcaf22994ca36885f063e/t/62df9f69d3f6270c6d8729c2/1658822509604/UEBT+BAP+Case+Study+Cinnamon+July+2022.pdf>
- UEBT, 2022c: Biodiversity barometer. The Biodiversity Reckoning 2022. <http://www.biodiversitybarometer.org/#uebt-biodiversity-barometer-2020>

- UNCTAD (2017a): BioTrade and Access and Benefit Sharing: From concept to practice. A handbook for policymakers and regulators. https://unctad.org/system/files/official-document/ditcted2017d6_en.pdf
- UNCTAD (2017b): 20 years of Biotrade. Connecting people, the planet and markets. https://unctad.org/system/files/official-document/ditcted2016d4_en.pdf
- UNCTAD (2020): BioTrade Principles and Criteria for terrestrial, marine and other aquatic biodiversity-based products and services. https://unctad.org/system/files/official-document/ditcted2020d2_en.pdf, or <https://unctad.org/publication/biotrade-principles-and-criteria-terrestrial-marine-and-other-aquatic-biodiversity>.
- UNCTAD (2021): 5th BioTrade Congress report: https://unctad.org/system/files/official-document/ditcted2021d1_en.pdf
- Utomo, B., Prawoto, A. A., Bonnet, S., Bangviwat, A., & Gheewala, S. H. (2016): Environmental performance of cocoa production from monoculture and agroforestry systems in Indonesia. *Journal of Cleaner Production* 134: 583-591.
- Verma, 2022: Voluntary Sustainability Standards and BioTrade: Is there a connection? UNCTAD Global BioTrade Facilitation Programme: Linking Trade, Biodiversity and Sustainable Development/Swiss State Secretariat for Economic Affairs SECO. Report in preparation.
- Viet Nam's Prime Minister Decision 1658/QD-TTg (2021): The National Green Growth Strategy 2021-2030, vision to 2050
- Wilson A (ed.) 2019: Case study: Biodiversity Impact . Learning from the cases of Siam benzoin, organic chili, Indian prickly ash and jujube in Viet Nam, Laos and Myanmar. Regional Biotrade Project In Southeast Asia <https://unctad.org/system/files/official-document/ditc-ted-04122019-biotrade-hanoi-CaseStudies.pdf>
- Woda 2021: David – versus Goliath: Niche products and mainstream agricultural export commodities – to what extent do they promote sustainable development? https://www.nachhaltige-agrarlieferketten.org/fileadmin/INA/Wissen_Werkzeuge/Studien_Leifaeden/Experten/David_vs_Goliath_FINAL.pdf
- Wong, W. C., Batten, J. A., Mohamed-Arshad, S. B., Nordin, S., & Adzis, A. A. (2021). Does ESG certification add firm value?. *Finance Research Letters*, 39, 101593.
- Yadav, M., & Dugaya, D. (2013). Non-timber forest products certification in India: opportunities and challenges. *Environment, development and sustainability*, 15(3), 567-586.

III. Consulted stakeholder

Name	Organization
Andreas Brede	GIZ
Earl Paulo Dias	ACB
Elpidio Peria	ACB
Eva Kohlschmidt	Naturland
Jane Carter	Helvetas
Jos van der Zanden	Helvetas
Lien Hahn	UEBT-Viet Nam
Lika Sasaki	UNCTAD
Natalia Derodofa	ASEAN, the ASEC Environment Division
Rik Kutsch	UEBT
Roberto Duarte	GIZ
Simona Damico	UBET



Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO