



An *Apis dorsata* honey comb being drained for its honey.
Photo Credit: NTFP-EP Cambodia

GAP ANALYSIS

OF ASEAN STANDARDS

FOR NON-TIMBER FOREST

PRODUCTS

FEBRUARY 2020

With support from:



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
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MARIA CRISTINA GUERRERO AND EMMANUELLE ANDAYA

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List of Acronyms

ABS	Access and Benefit Sharing
ACA	ASEAN Cosmetics Association
ACO	Australian Certified Organic
ACD	ASEAN Cosmetics Directive
ACT	Agriculture Certification Thailand
AEC	ASEAN Economic Community
ASEAN	Association of Southeast Asian Nations
ASOF	ASEAN Senior Officials on Forestry
BIF	Business Innovation Facility (Myanmar)
BPOM	Badan Pengawas Obat dan Makanan (National Agency for Drug and Food Control – Indonesia)
BPS	Bureau of Product Standards (Philippines)
BRC	British Retail Consortium
BSN	Badan Standardisasi Nasional (Indonesia)
CBD	Convention on Biodiversity and Development
CBI	Center for the Promotion of Imports from Developing Countries
CITES	Convention on International Trade in Endangered Species
CNFPO	Certificate of Non-Timber Forest Products Origin (Philippines)
CoC	Chain of Custody
CoP	Code of Practice
CoV	Certificate of Verification
DAO	Department Administrative Order (DAO - Philippines)
DENR	Department of Environment and Natural Resources (Philippines)
DFIIC	Department of Forest Industries and International Cooperation (Cambodia)
DoSM	Department of Standards and Metrology (Laos)
DOST	Department of Science and Technology (Philippines)
DRI	Department of Research and Innovation (Myanmar)
DTI	Department of Trade and Industry (Philippines)
ETI	Ethical Trade Initiative
EU	European Union
FA	Forestry Administration (Cambodia)
FDA	Food and Drug Administration (Myanmar)
FDBA	Food and Drug Board of Authority (Myanmar)
FDD	Food and Drug Department (Laos)
FDQCC	Food and Drug Quality Control Center (Laos)
FFF	Forest Farm Facility
FMB	Forest Management Bureau (Philippines)
FPRDI	Forest Products Research and Development Institute (Philippines)
FSC	Forestry Stewardship Council
GACP-WHO	Good Agricultural and Collection Practices – World Health Organization
GAP	Good Agricultural Practice
GAqP	Good Aquaculture Practice
GCDA	Green Community Development Association
GHP	Good Hygiene Practice
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Point
ICC	Import Commodity Clearance
IFOAM	International Federation of Organic Agriculture
INBAR	International Bamboo and Rattan Organization

ISC	Institute of Standards Cambodia
ISO	International Standards Organization
ITC	Institute Technology Cambodia
ITTO	International Timber Trade Organization
KAN	Komite Akreditasi National (National Accreditation Committee - Indonesia)
MAFF	Ministry of Agriculture, Forestry and Fisheries (Cambodia)
MFCC	Myanmar Forest Certification Committee
MFCS	Myanmar Forest Certification Scheme
MOE	Ministry of Environment (Cambodia)
MoECAFF	Ministry of Environment Conservation and Forestry (Myanmar)
MONREC	Ministry of Natural Resources and Environmental Conservation (Myanmar)
MOST	Ministry of Science and Technology (Vietnam)
MPFD	Master Plan Forestry Development (Philippines)
MRA	Mutual Recognition Arrangement
MTLAS	Myanmar Timber Legal Assurance System
MTA	Mutually Agreed Terms (Vietnam)
MTE	Myanmar Timber Enterprise
NCSD	National Council for Sustainable Development (Cambodia)
NES	National Export Strategy (Myanmar)
NFSS	National Forest Stewardship Standard (Vietnam)
NIMM	National Institute of Metrology (Myanmar)
NQP	National Quality Policy (Myanmar)
NRMP	National Residue Monitoring Plan
NTFP	Non-Timber Forest Product
NTFP-RC	NTFP- Research Center (Vietnam)
NSQD	National Standards and Quality Department
OHSAS	Occupational Health Safety and Assessment Series
PAO	Philippine Accreditation Office
PBIDC	Philippine Bamboo Industry Development Council
PCAARRD	Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development
PEFC	Programme for Endorsement of Forest Certification (Cambodia)
PFCS	Philippine Forest Certification Systems
PGS	Participatory Guarantee System
PhilFIDA	Philippine Fiber Industry Authority
PIC	Prior Informed Consent (Vietnam)
PITAHC	Philippine Institute of Traditional and Alternative Health Care
PNS	Philippine National Standards
PTRI	Philippine Textile Research Institute
QIS	Quality Infrastructure System (Myanmar)
SAC	Singapore Accreditation Council
SDC	Standards Data Center (Philippines)
SEARCA	Southeast Asian Regional Center for Graduate Studies in Agricultural Research
SIFMA	Socialized Integrated Forest Management Agreement
SMETA	Sedex Members Ethical Trade Audit
SPS	Sanitary and Phytosanitary Standards
SUFORD	Sustainable Forestry and Rural Development Project
TMI	Traditional Medicine Institute (Laos)
UNIDO	United Nations Industrial Development Organization
VCCI	Vietnamese Chamber of Commerce
VSQI	Vietnam Standards and Quality Institute
VNFOREST	Vietnam Administration for Forest

WCS	World Conservation Society
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wide Fund for Nature

Glossary

BAPPEDA	Badan Perencanaan dan Pembangunan Daerah (Area Planning and Development Body - Indonesia)
Balai Besar Pulp	Center for Pulp and Paper, a division under the Ministry of Industry (Indonesia)
CBHE	Cambodian Federation for Bee Conservation and Community-based Wild Enterprise
CSR	Corporate Social Responsibility
HHBK	Hasil Hutan Bukan Kayu (Non-timber Forest Products)
HHK	Hasil Hutan Kayu (Timber-based Product)
JMHI	Indonesian Forest Honey Network
KLHK	Kementrian Lingkungan dan Kehutanan (Ministry of Environment and Forestry - Indonesia)
PT MAL	PT Mutu Agung Lestari
Pustanlinghut	Pusat Standardisasi Lingkungan dan Hutan (Center for Environmental and Forestry Standards - Indonesia)
SISPK	Standardization Information System and Conformity Assessment (Indonesia)
SNI	Standar Nasional Indonesia (Official National Standards for Indonesia)
STAMEQ	Directorate for Standards, Metrology, and Quality (Vietnam)

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Executive Summary

This NTFP standards gap analysis was commissioned by the ASEAN Senior Officials in Forestry or ASOF, through the ASEAN Working Group on Social Forestry (AWG-SF). NTFP-EP was tasked to do this study in order to have a basis for future strategic interventions to gain competitiveness in non-timber forest products trade in the region and globally. This study can aid both ASEAN as a regional block and the ASEAN Member States (AMS) in improving their forest products to meet market requirements and ensure the quality of products. The study also seeks to inform social forestry stakeholders of preconditions and plans to standards development in ASEAN.

There is a growing interest in eco labeling and purchasing of green products by national governments (Cambodia, Indonesia), private sector (Vietnam and Indonesia) and important export markets such as the European Union, the United States and Japan. Though some countries have developed some NTFP standards (Philippines, Vietnam and Indonesia) which can cater to such trends, most trade is based on buyer/ market specifications.

With the exception of Indonesia and Vietnam, the development of NTFP standards does not seem to be a priority in the larger domain of standard development and standard bodies across ASEAN. An opportunity exists however, with the National Standard Bodies established in most of ASEAN countries. In some countries there are also special technical committees on NTFP development and per specific NTFPs (Indonesia, Philippines). While in other countries there are special technical committees on forest products (Laos) and some specifically on wood (Cambodia, Myanmar). The ASEAN Task Force on Wood based Products (TFWBP) includes bamboo and rattan as products to develop and also presents an entry point for further development and application of NTFP standards at the ASEAN level.

Gaps in standards development are in the availability of knowledgeable and trained personnel to develop and apply NTFP standards, mechanisms and processes. Many well-informed persons are ageing. The availability and financial support for equipment, laboratory facilities and calibration to test against NTFP standards and the research support necessary for the development of standards is often lacking across the region. Finally, there is a need for compliance monitoring bodies and improved information management systems.

That being said, opportunities for the recognition and application of NTFP standards are visible in programs of other ministries and sectors such as the National Council for Sustainable Development in Cambodia, the Philippine Forest Products Research and Development Institute (Department of Science and Technology) and the Ministry of Science and Technology in Vietnam. AMS can also learn from existing standards and certification systems developed for timber and for organic agriculture as in Myanmar. The presence of government funding (Indonesia, Vietnam) and foreign funding for standards development (ISO, development aid agencies) can facilitate the development of NTFP standards in various ASEAN countries. The existing ASEAN Consultative Committee on Standards and Quality (ACCSQ) is a good body on which to anchor future work on NTFP standards.

Some NTFP products have been included in organic standards (Laos) as “wild products” though these standards are still to be applied. Other alternatives such as standards developed through multi-stakeholder efforts in Participatory Guarantee Systems (PGS) also present opportunities as being tested in trials in Indonesia, Laos and Vietnam. Challenges towards the development of the NTFP sector in ASEAN countries remain. Competitive bidding of commercial NTFP concessions in Myanmar, the quota system for NTFPs in Laos as well as the permitting system for select NTFPs in

the Philippines, can be reviewed in the light of developing an enabling environment for facilitating NTFP trade in the region.

In short, the recommendations to address the identified gaps are to develop a multi-stakeholder and phased program in ASEAN on NTFP standards development. Regional cooperation and technical expertise sharing among AMS countries is advisable. ASEAN guidelines on sustainable harvest and resource management protocols should also be developed as many existing NTFP standards only cover aspects of product quality and not of resource management, despite the fact that markets are seeking proof of sustainable NTFP management. Investments and partnerships should also be mobilized for Community Forestry enterprise awareness raising and capacity building in this field. Financial support for testing facilities is also important. The exploration and recognition of alternative standards and certification schemes is wise, especially as they become more acceptable by certain markets. Finally, streamlining permitting and exporting processes is important to improve NTFP trade viability.

I. Introduction

Across the globe, it is estimated that 90 per cent of the world's poorest people rely on forests for their livelihood. This translates to approximately 1.6 billion people, of which 300 million are found in the 10 ASEAN countries.

Within the forestry sector, some 60 million people are employed or engaged in informal small and medium-scale enterprises. However, even though 90 per cent of the forest ecosystem consists of non-timber forest products or NTFPs, these are not used optimally in community forestry enterprises or has yet been valued. Globally, NTFPs account for an estimated 22 per cent of the income of close to one billion people.

Some members of the Association of Southeast Asian Nations (ASEAN) are among the biggest suppliers of NTFPs to other parts of Asia and around the world. Indonesia and Laos are large exporters of cardamom. Indonesia produces 80% of all rattan in the world. Resin, bamboo, and rattan are often ranked among the top five traded NTFPs in value and volume in many member-countries.

Despite the huge volume of production, ASEAN trade in NTFPs lags in comparison with other Asian countries. The group seeks to address this imbalance through the ASEAN Economic Community (AEC), which envisions a highly integrated and cohesive regional economy. This would be characterized by free flow of goods and minimal regulatory barriers, to achieve competitiveness and efficiency.

As part of the process, ASEAN is seeking to align national and regional product standards with international standards through Mutual Recognition Arrangements (MRAs). This includes streamlining procedures and requirements for certificates, permits, and licenses to import and export products. Sectors such as agriculture and cosmetics are moving forward in harmonizing regional standards, but forestry —especially NTFPs— has not been prioritized so far.

To enable both large and small companies to compete within the region and globally, the AEC has to ensure that their products are able to meet minimum standards and become desirable to consumers. The ASEAN Senior Officials on Forestry (ASOF) has commissioned the Non-Timber Forest Products Exchange Programme (NTFP-EP) to do a gap analysis on NTFP standards, as a starting point for bridging the economic divide among producers. This study would also ensure that social forestry stakeholders are informed and are able to participate in the process, before standards and certification systems become legally binding in the forestry sector.

II. Objectives

The following goals guide the implementation of this study:

Overall Goal (10 years): Improvement of ASEAN NTFP sector's regional and global competitiveness

Intermediate Goal (5 years): Upgrading and capacitating ASEAN forest product value chains towards conformity and compliance with regional and global standards (government or market)

Specific Project Goal (1 year): Identifying gaps of select ASEAN NTFP value chains in meeting regional and global standards

For the project goal for the first year, this gap analysis aims to do the following:

- 1) Investigate and map out existing Standards and Frameworks for NTFPs within ASEAN countries and at ASEAN level
- 2) Determine the level of awareness, knowledge, understanding, and mastery of NTFP stakeholders (government, private sector, producers, trader etc.) on NTFP standards
- 3) Determine the extent of the facilities, technology, and human resource development programs that are available in each of the ASEAN countries in relation to standards
- 4) Identify the products that have existing standards, certifications, and guarantee systems and the corresponding compliance level per country
- 5) Determine the gaps in human resources, legal mechanisms, infrastructure, and technology with regards to NTFP standards in ASEAN and provide recommendations

III. Methodology

The first step in undertaking this research was developing the criteria in selecting the top three to five NTFPs in each ASEAN Member States (AMS).

Among the 10 AMS, six were selected for ground-level interviews. Three of these countries are more advanced with regards to product standards, while the other three are less advanced. The theory behind the selection criteria was so that less advanced countries could learn from more advanced countries. For the remaining four countries, questionnaires were sent to forestry officials.

During a five-month period, the study team conducted 54 key informant interviews, desk research, and focus group discussions with key sectors.

After collating the results of the surveys and interviews, the study team analyzed the data to identify gaps and provide recommendations regarding NTFP standards in the ASEAN region.

IV. Scope and Limitations

The study focused on these major categories of NTFPs: bamboo, rattan, resin, traditional medicine, cosmetics, natural dye, honey, and one principal product per country.

Key informant interviews and workshops were done in the following countries: Cambodia, Indonesia, Laos, Myanmar, Philippines, and Vietnam. Surveys were done in Brunei, Malaysia, Singapore, and Thailand. The basis of the selection was the level of development of NTFP industries, so that those with more advanced standards frameworks like the Philippines, Indonesia, and Vietnam could be compared with countries that are just developing their NTFP enterprises such as Myanmar, Laos, and Cambodia. In this way, the report could capture lessons and share them across ASEAN member states. Budget limitations also meant that the researchers had to focus on countries where they had existing financial resources and access to information and to human resources to conduct interviews and other activities related to this study.

Due to budget limitations, the study team had to spend a limited number of days per country. This hampered data gathering, as most of the information was found in various departments and required more in-depth research and more time than expected. Language barriers were also encountered in some countries.

The study team found it difficult to determine the accuracy of some of the national trade and export trade data, as NTFPs are not recorded on a regular basis and not just with one entity. It was also

challenging to isolate the data for individual NTFPs as some of the statistics are collected per category, as in the case of bamboo and rattan.

Thus, this gap analysis is only based on available data collected within the time frame allotted for the study, and the resources available to the study team.

V. NTFP standards in ASEAN Member States

This chapter provides an overview of the status of NTFPs in six priority countries and four non-target countries, in alphabetical order.

CAMBODIA

The government of Cambodia defines NTFPs as “all forest resources that are not timber, including products from non-timber plants, wildlife, their processed products, and services from the forest.”

Although the government owns the forest land, the State provides customary access rights to local and indigenous communities for forest products and by-products. Forest dwellers may apply for community forestry permits to formalize access and management rights beyond traditional use and subsistence, so that their right to harvest NTFPs and recognized and protected.

The country has a total of 900 NTFPs, classified as follows:

- | | |
|---|---|
| 1) Lower class wood, poles, and other non-timber used in traditional construction | 8) Material producing dye or chemical substance |
| 2) Fuel wood | 9) Edible plants |
| 3) Bamboo, palm tree, rattan, liana | 10) Ornamental plants |
| 4) Medicinal plant/wood | 11) Wood for carving |
| 5) Aromatic plant/wood | 12) Non-timber products for crafts |
| 6) Resin/gum | 13) Wildlife products |
| 7) Wax | 14) Forest services |

The top 3 NTFPs in Cambodia and latest production figures are as follows:

NTFP	National Volume and Value of Trade
1. Resin	442 tonnes (2018-2019)
2. Agarwood	3 tonnes (2018-2019)
3. Bamboo	6 tonnes (2018-2019)

Source: Personal interview with Mr. Sim Soumeng from the Department of Forest Industry and International Cooperation of the Forestry Administration, Ministry of Agriculture, Fisheries and Forestry. June 4, 2019

According to the Department of Forest Industries and International Cooperation (DFIIC), there is no quality standard for NTFPs, especially for export. However, there are legal requirements pertaining to protocols for quotas and permits.

These are the five legal documents needed to export products:

1. Quota of Import/Export
2. License of Import/Export (from the Council of Ministers)
3. License of Import/Export (from the Ministry of Agriculture, Forestry and Fisheries — depending on relation to Forestry Law)
4. Transport permission (from the Forestry Administration)
5. Custom Permit

Legal requirements are also not available for NTFPs but for various other products. There are national standards for domestic use for NTFPs within the scope of the Ministry of Industry and Handicrafts, but these are barely used, and exporters are not requesting compliance to these standards.

For many of the export oriented NTFPs, quality standards depend on the exporter and importer. For resin, agarwood and bamboo exports, no official standards have been used.

In terms of certification, there is growing interest towards green/eco labelling at the national level which is being spearheaded by the National Council for Sustainable Development (NCSD). At a recent National NTFP Forum, a representative from the NCSD expressed interest in piloting an eco-label for NTFPs. As of now however, eco-labelling has mainly been used for export commodities. In some cases, it used as a method to certify Eco-Tourism sites, through a project under the Ministry of Tourism in collaboration with the Ministry of Environment. Similarly, the Ministry of Agriculture, Forestry and Fisheries is aiming to develop a certification scheme under the Programme for Endorsement of Forest Certification (PEFC). Both these schemes are still at an early stage.

Rattan and Bamboo

As raw materials, rattan and bamboo cannot be sold outside the country. Only finished or semi-finished goods can be traded abroad. The legal certification for international trade of NTFPs is the responsibility of the exporter. There are no specific grading guidelines, although WWF is interested in FSC certification for bamboo products.

The quality required for export depends on the market for bamboo, which can be used to produce fiber, laminates, and furniture, or as materials in construction. Each sector has different standards.

In general, bamboo that is dried properly, has no splits and of the right age are factors that indicate good quality bamboo. For furniture production or construction, for example, the bamboo poles will be assessed for its size and straightness. The bigger and straighter the bamboo, the better its quality.

Processed bamboo should have sugar content removed. This involves a process where salt and cooking oil is used to boil the bamboo.

Honey

The Institute of Standards Cambodia (ISC) developed standards for honey between 2010 to 2013. These are general standards mainly for honey from *Apis mellifera*, the exotic and domesticated species of bees. The ISC has informed NTFP-EP that voluntary standards for forest honey can be submitted for review, and ISC will formulate a standard if there is interest and support for it.

In 2010, NTFP-EP helped organize the Cambodian Federation for Bee Conservation and Community based Wild Enterprise (CBHE), which developed honey standards and protocols. These

are contained in the guidebook *Cambodia Forest Honey Khmum Prey Protocols and Standards*. It covers key principles ranging from honey collection to processing, capacity development, market linkages and benefit sharing. The guidebook was updated in 2016 and is still in use today.

Agarwood (*Aquilaria* spp.)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora or CITES requires permits for purchases of Agarwood. The system to ensure compliance involves local officers from the Forestry Administration conducting site visits to agarwood plantations and processing factories, to verify the source of raw materials. This helps to estimate the total quantity available, calculate its production potential, and set quotas.

Agarwood, by its very nature, is a trade based on its scent profile. Standards for agarwood by-products are therefore very subjective, and often based on the individual preference of the buyer. For example, the same wood piece that is considered high quality by a buyer from the Middle East may smell too earthy or sweet to buyers from Japan. There is currently no universally accepted grading scale for agarwood; instead there are certain indicators that may appeal to certain countries.

Agarwood wood chips with high resin content, usually pieces with a dark complexion, are considered a good indicator of superior quality. The heavier the piece, the better its quality. For agarwood oil, the color of the oil (Cambodian oils are usually honey-like) and how long the scent lingers on the skin after application – the longer the better- are all factors that indicate high quality oil.

Resins

There are no specific quality standards for liquid resin exports. Its trade is based solely on the requirements of individual buyers, most of whom are located within the region. Most of the traders are middlemen whose aim is to export it to different countries, and do not seem to be interested in any third-party certification. Current practice in enforcing market standards for resin include the following:

- Resin can only be considered export quality if it has no impurities. This means the final product should contain no leftover ash, leaves, or wood that are used in the production process. Filtering usually takes place at the provincial level, and in some cases, the village level.
- If the resin is harvested during the rainy season, local tappers need to filter the resin for water. If the resin contains too much water, local traders will deem the resin to be of lower value.
- Resin that is transparent – almost petrol-like – is considered the highest quality resin in most resin-tapping communities. Most resin aggregators, however, prefer to mix different species together to increase trade volume and do not seem too concerned about individual resin species.
- In the past, resin was used to chalk boats, but this demand is now being replaced by cheaper synthetic versions from China.

In 2011, NTFP-EP developed a *Guide to Sustainable Collection and Management of Dipterocarp Oleoresins or Balsams* in cooperation and consultation with resin tappers in 10 villages in Mondulkiri and PreahVihear provinces. The guide covers 13 steps to ensure quality liquid resin: 1. Resin secretion 2. Size of cut trees 3. Technique of cutting a hole and size of the hole 4. Number of resin holes 5. Burning duration 6. Resin tapping 7. Tapping interval 8. Prevention of resin from spillage 9. Cleaning and Semi-Processing 10. Resin storage 11. Maintaining the tapping holes 12. Processing of Crystallized resin and hard black resin 13. Seedling protection. Other organizations that assisted in producing the guide, which also includes processes to aid in monitoring, are WWF, My Village (MVI), Ponlok Khmer and the Creative Industries Support program.

In 2015, there were enterprises that were interested in specific species, but this did not last long. Today, provincial traders accept mixed species of resin.

The ISC and most people working on NTFPs in the country are not aware of any specific laws or policies governing NTFP standards. One of the facilities at the ISC is the Industry Laboratory Center, which is mainly testing food products and chemicals. It is currently building a new “Industry laboratory Centre” which aims to provide certification services for all commodities. It is believed that this laboratory will eventually be equipped with the capacity and technology to test by-products for NTFP standards. However, NTFPs are not a priority at present.

There are some university-based, research, and private laboratories as well. The Institute Technology Cambodia (ITC) is one of the centers that has a laboratory. They mostly work on phytosanitary standards. Depending on the product, the Department for Regulation and Registration may accept tests from other accredited laboratories such as Cam Control (Cambodia Export Inspection and Fraud Repression Directorate General).

TABLE 1. STATUS OF NTFP STANDARDS IN CAMBODIA

Framework document and year	* Law on Standards of Cambodia adopted (National Assembly in April 2007, Senate in May 2007) * partial updating of Standards Law in 2018
National Standards Body (NSB)	Institute of Standards Cambodia (ISC)
Standards Body for forest products	No specific committee on forestry and NTFPs
Number of staff for national standards	Out of 91 staff at the ISC, 15 are focusing on the development of standards
Number of staff on forest standards	None focusing on forestry
Number of NTFP standards adopted	ISC has accepted 57 standards for harmonization under ASEAN WG 1 TF for wood-based products * None on NTFPs * There is a honey standard, but it is based on the exotic, domesticated bee, <i>Apis mellifera</i>

According to the ISC, the process of national standards development in Cambodia is as follows:

1. Drafting of standard

2. Testing
3. Review of Technical Committee
4. Presentation for public comment, should other information need to be added. (60 days)
5. Second round of review at the Technical Committee
6. Submit to National Standard Council (NSC) MIME for approval
7. Submit to Ministry of Industry for signature

If there is no available data and international standards, the process usually takes longer. This process is mainly for voluntary standards. To make a standard mandatory, it has to be endorsed by relevant ministries. Approval will depend on the NSC, the proposal of ministries, and its impact on consumers' safety. The estimated cost of developing a voluntary national standard is around USD 2500 – 3000.

TABLE 2. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN CAMBODIA

GAP	OPPORTUNITY
Human resource	
There are no specific personnel under the ISC dedicated towards the development of NTFP standards. On the other hand, there are multiple government agencies (MoE, FA, NCSD) working on a host of policies that are related to NTFP/forestry certification.	The ISC has a mandate to coordinate and develop national standards. In terms of structure, they report to the National Standards Council which is comprised of representatives from several ministries. This mechanism, if strengthened (via technical expertise and financial support) could serve as a powerful mechanism to develop NTFP standards.
Legal/ Policies	
There are currently a host of forestry- related policies and certifications such as PEFC, Green Eco-labelling, FSC and CITES that are either being studied, tested or implemented under various ministries and departments. There is currently no agency responsible for collecting, comparing, and analysing all these studies as a whole.	The recently activated National NTFP technical working group could support the ISC in harmonizing these policies via their network of national agencies and INGOs/NGOs. They could gather data sets and analyze policy recommendations from various institutions in order to assist the ISC in the development of national standards based on technical feedback.
Infrastructure/ Technology	
In order for NTFP standards for forest products to be accepted, there needs to be a “conformity assessment.” This ensures the methodology or technology used to test the product is recognized and accepted both nationally and regionally. The success of these tests therefore depends on the technical skills and experience of the national certification body. Before NTFP standards can be adopted, the infrastructure including technology and human resources needed to test these products must be developed.	The ISC is currently building a new “Industry Laboratory Center” for testing. With the right technical training and coordination, they could play a role in ensuring conformity in testing standards for NTFPs.

Information & Knowledge Management

<p>There is currently no overall body that coordinates and exchanges data and information on policies related to NTFPs at the national level.</p>	<p>The ISC could play a role but would probably benefit from coordinating with other inter-ministerial bodies such as the National Council for Sustainable Development which has taken a keen interest in piloting Green/Eco labeling. Working with these working groups could provide another avenue for collaboration.</p>
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INDONESIA

Indonesia defines NTFPs as both vegetable and animal forest products, along with their derivative and cultivated products, except wood originating from the forest ecosystem.

Plant-based NTFPs have been grouped into resin, essential oils, vegetable fats, tannin, dyes and latex, medicinal and ornamental plants, palm and bamboo, alkaloid and others. There are about 575 plant species that are utilized as NTFPs in Indonesia.

Animal-based NTFPs have been categorized into prey or hunted animals, trapped animals, and animal by-products such as bird's nests, honey, and silk.

Natural Cosmetics

The Indonesian consumers' demand for natural or organic beauty products will continue to be a significant driver of the country's personal care industry. According to research, Indonesia's personal care market will experience the highest growth within the next five years. In an interview with Cosmetic Design Asia, the leading natural cosmetics company Martha Tilaar Group mentioned that because of the size of Indonesia's population and growth rate, particularly in the middle-income class, the purchasing power for personal care is higher. The company also confirmed that Indonesian consumers tend to prefer natural, organic, and eco-friendly products.

The Indonesian government has been highly involved in the development of cosmetic standards, dissemination of information and capacity building of small producer companies in the industry. In Indonesia, facilitation and awareness programs and workshops can be given by the Indonesian Drug and Food Control Body (BPOM), the Health Ministry, the Industrial Ministry and the Trade Ministry, where they will mostly collaborate with the local cosmetics associations such as PERKOSMI.

For natural ingredients (including NTFPs) that are used in cosmetic products, the Indonesian Health Ministry and BPOM have published the following guides, standards books

- The Codex for Cosmetics in Indonesia (*Kodeks Kosmetika Indonesia*)
- Medical Material (*Material Medika Indonesia*)
- Herbal Pharmacopoeia Indonesia (*Farmakope Herbal Indonesia*)
- Natural Cosmetics Materials Indonesia (*Material Kosmetika Bahan Alam Indonesia*)

These books can guide small enterprises to meet the needed standard for natural ingredients. Currently still in progress, the Indonesian Ministry of health is going to publish

- The standard of essential oils for cosmetics
- The quality standard of marine ingredients.

Natural Resins

Damar is the trade name for resin in Indonesia. It is processed into 'copal' and comes from the damar tree (*Agathis dammara*), which is native to the Maluku, Sulawesi, and Philippine islands. The tree is now cultivated in other places, including the island of Java.

Damar also refers to the resin from a number of trees of the genus *Shorea* and *Hopea*. These are known as *damar mata kucing* or cat's eyes resin because of its yellowish color. It is one of the major products in the district of Pesisir Barat, Lampung on the island of Sumatra. Krui, the capital of Pesisir Barat, is known as a producer of resin of the highest quality in the world. It is the largest producer of cat's eye resin in the country, with 80 percent of the total national production. Damar has a large contribution in supporting the local economy, as forests cover 60% of the total area of the district. The community-based resin forest management system known as *repong* stems from local wisdom in cultivation, which has proven to be successful. The Damar Repong cultivation system is carried out in the clan forest area, and also in the Bukit Barisan Selatan National Park.

Based on data from BAPPEDA Barat Pesisir Regency, the total area of damar area reached 17,160.75 hectares with a production of 6,720.2 tons per year in 2016. Damar resin is an important sub-sector that supports the economy in this area. Data shows that 80 percent of the average income per capita of the coastal Krui community comes from resin production, with a GDP of 14.5 billion rupiah. As an exported commodity, resin is also a source of foreign exchange for the country. Export destinations include India, Germany, the Philippines, France, Belgium, United Arab Emirates, Bangladesh, Pakistan, and Italy.

There is already a national standard for copal resin: SNI 7634:2011 Copal resin (*Agathis dammara* resin). Visual parameters include visual appearance of dryness, the color is clear and pale, and cannot be strained through a sieve. Laboratory testing includes tests for acidity, saponification, melting point, level of impurities, ash content,

There are already standards for damar resin (*Shorea javanica*): SNI 2900.1.2012, Damar mata kucing – Part 1 Requirements based on visual tests and SNI 2900.2.2013, Damar mata kucing- Part 2. Requirements based on laboratory testing. Visual requirements include color and size of masses (chunks). Laboratory testing checks if samples are insoluble in toluene, softening point, ash content, acidity

Forest Honey

Indonesia has a long history of use of *jamu* or natural herbal products for health. Honey is considered a *jamu* and it is consumed widely across the country. Differentiation of forest honey from imported or cultivated non-native honey is still relatively unknown. There are several companies selling forest honey such as AMWAY, East Java and Co. and Nourish Indonesia. In 2017, the country exported USD1.7 million of natural honey; however, it is likely that this type of honey comes from the *A. melifera* bee or cultivates sources, rather than from native or wild bees.

The SNI for honey covers both cultured honey from exotic bees like the *A melifera* and also honey from native bees. The previous standard was SNI 3545:2013 which has since been revised as SNI 8664: 2018. The quality standards have since been revised to differentiate parameters for forest honey, cultured honey and stingless bee species. The standard is also a combined standard for quality and management. Parameters are widely based on the Codex for Honey released by the FAO. These include organoleptic tests such as aroma/smell, and taste as well as laboratory tests

including: tests for enzyme diastase activity, HMF, moisture content, glucose, sucrose, acidity, melting point, ash content, metal content, arsenic content, chloramphenicol content.

The Indonesian Forest Honey Network (JMHI) has also developed standards and protocols for sustainable honey harvesting from *Apis dorsata* hives. (JMHI, 2006)

Rattan and Bamboo

At least 350 out of the 600 globally known species of rattan are found in Indonesia. Only 6-7 species are traded commercially in the rattan furniture industry. Approximately five million people depend on rattan, half of them in the processing industry while the other half works in harvesting and raw material production.

Indonesia supplies 80% of the global demand for raw rattan. However, since 2012, there has been a ban on the trade of raw and semi-processed rattan materials (Permendag 35/2011) to reduce competition for local furniture and handicraft enterprises from countries like China, which also produce finished products. The ban has placed a heavy burden on the farmers, as prices have dropped to a very low level due to the glut in the market.

Meanwhile, there are approximately 160 bamboo species (belonging to 22 genera) in the country. Bamboo covers around 2.1 million hectares of land, of which around 700,000 hectares are found in forest areas and 1.4 million hectares are located within gardens or farm property.

Indonesia is a major producer of bamboo and rattan products, accounting for 9 per cent or USD175.7 million of global exports in 2012, making it the third largest bamboo and rattan products exporter in the world, after China and the European Union. The main products include bamboo and rattan seats, and furniture and rattan basketwork.

The Indonesian national standards for rattan and bamboo are as follows:

- SNI: 7208: 2017: The species, nature/ characteristic, use and distribution of rattan
- SNI 7254: 2017: Rattan as raw material
- SNI 8366: 2017: Bamboo shoots as food ingredients

Recent developments in bamboo standards are as follows:

At present, there has been a standardization for the use of bamboo. Head of the National Standardization Agency (BSN) Bambang Prasetya said, bamboo standardization was needed to ensure the safety of the processes, technology / machinery used, and workers; to advance the use and acceptance of technology; to provide basic references, or benchmark requirements for certain product characteristics and quality; provide a way to reduce production costs; as a market reference and access to markets; to guarantee the safety, health and security of consumers; and guaranteeing environmental protection, both during the production process and the use of the final product.

BSN has established 5 Indonesian National Standards (SNI) related to bamboo, namely SNI 8020-2014: Usefulness of Bamboo, SNI 7944-2014: Lamina Bamboo General Use; SNI 01-4033-1996: Bamboo Shoots in Cans; and SNI 7555.22-2011: Furniture - Part 22: Guest chairs – Bamboo.

In addition, in the 2017 National Standard Formulation Program (PNPS), there were three new standards related to bamboo that were to be formulated, namely bamboo for structural components,

guidance for manufacturing lumber from laminated bamboo for building material, and guidance for preservation of bamboo for civil construction

In formulating international standards related to bamboo, Indonesia also actively participates in the International Organization for Standardization (ISO) by becoming a member of ISO / TC 165 Timber Structures and ISO / TC 296 Bamboo and Rattan.

Improvements were still needed in the standardization activities for bamboo.

First, the bamboo product industry needs to introduce more advanced management system standards such as improving product performance and quality to meet market and consumer needs; increase efficiency in the use of raw materials and energy to reduce production costs and negative environmental impacts; ensure the health and safety of production staff.

Second, it is necessary to improve the bamboo standardization system and the rattan standard in Indonesia.

Third, since the nomenclature for engineered bamboo is still in process, attention needs to be paid to its terminology, classification, specifications and methodology.

Fourth, strengthening communication and coordination between the Technical Committee for bamboo is needed (TC 79 and TC 165).

Fifth, strengthening management is still needed in internal members of the Technical Committee (BSN, industry associations, the Ministry of Environment and Forestry, the Ministry of Public Works, the Ministry of Trade, the Ministry of Industry and university researchers) and should be focused on developing bamboo standards.

Finally, standardization of management systems must cover raw materials, technology, machine operations and maintenance, product quality and performance, testing and monitoring, safety-sanitation and the environment.

The top five NTFPs in Indonesia and latest available production figures are as follows:

Product	National Volume and Value of Trade
1. Rattan	Export USD 202-M in 2012 (Min of Industry 2013)
2. Lac, Gums and Damar - Resin	Exports USD 54.4-M in 2018 (Kemendag 2019)
3. Essential oils and cosmetic fragrances	Exports USD 779.2M (Kemendag 2019)
4. Forest Honey	Local trade approx.. 1000 tons = USD 21.4M (JMHI, 2019)
5. Bamboo	215,000 Tonnes worth USD4-M in 2000 (FAO, 2007)

Policies on NTFPs

The government has shifted from a corporate to community approach in forest tenure through various social forestry models. The change in policy has allowed communities to access NTFPs for harvest, utilization, and trade. It has also become a tool for addressing land conflicts. Previously, centers of support and collaborative work for NTFPs were being established across the nation through the “Sentra” approach. Unfortunately, the various restructuring processes going on in the

Ministry of Environment and Forestry has led to less clear and consistent support for NTFPs which needs attention.

There are financial channels to support NTFP development within village and forestry programmes including: Village fund – USD3.5 billion (2018) & USD4.9 billion (earmarked for 2019); Peoples Business Credit (KUR) – USD7 billion (2017); and the Creative Economy Agency.

The prices of NTFPs such as rattan and dammar resin are very low which does not provide an incentive to conserve forests containing such species. Innovative policies are important to avoid conversion of forests into more economically viable crops. Policies such as minimum support price to stabilize the price and provide option for the farmers to sell to the government through a warehousing receipt process “resi gudang” have been proposed.

TABLE 3. STATUS OF NTFP STANDARDS IN INDONESIA

NTFP policy	English translation	Coverage
Peraturan Pemerintah Republik Indonesia Nomor 6 Tahun 2007	Forest Arrangement and Preparation of Forest Management Plans, and Forest Utilization	Covers mostly timber but also includes NTFPs within conservation forest, protected forest, and production forest
Permenhut No. P.35/Menhut-II/2007 ttg Hasil Hutan Bukan Kayu sebanyak 565 jenis (Kelompok Nabati 490 jenis dan Kelompok Hewani 75 jenis)	Ministry Decree on NTFPs stating that there are 565 species (flora-490 species and fauna 75 species)	Covers NTFPs across the country
Peraturan Menteri Kehutanan Republik Indonesia Nomor: P. 46/Menhut-II/2009	Ministry Decree on the Procedure for Granting Permit for Collection of Timber or Non-Timber Forest Products in Production Forests	Permit IPHHBK covers the collection of NTFPs and regulates harvest within the production forest, natural forest, planted forest, and rehabilitation planted forest
Peraturan Menteri Kehutanan Republik Indonesia Nomor : P.19/Menhut-II/2009 tentang Strategi Pengembangan hasil Hutan Bukan Kayu Nasional	Ministry Decree on the National strategy for the development of NTFPs 2009	Covers NTFPs across the country
Peraturan Menteri Kehutanan Republik Indonesia Nomor: P.21/Menhut-II/2009 tentang Kriteria dan Indikator Penetapan Jenis Hasil Hutan Bukan Kayu Unggulan	Ministry Decree providing criteria and indicators identifying the type of key NTFPs	Criteria covers economic aspect, biophysical aspect, environmental aspect, institutional and social aspect as well as technology
Perpres No. 36 tahun 2010 tentang Daftar Bidang Usaha yang Tertutup dan Bidang Usaha yang Terbuka dengan persyaratan di Bidang Penanaman Modal	Presidential decree on supporting on enterprises for financial support	Supports at least 11 NTFP commodities Komoditas HHBK.

Standards for NTFPs in Indonesia

The Badan Standardisasi Nasional (BSN) or the National Standards Body was formed with the Presidential Decision in 1997 and strengthened with law 20/2014 on Standardization and Conformity Assessment. It has 398 staff. The BSN has created standards bodies or centers in the Ministries of Agriculture, Public Works, Industry, and the Communications and Information Ministry, but none in the Ministry of Health.

The Standards Body working on forest products and other environmental processes is Pusat Standardisasi Lingkungan dan Hutan (Pustanlinghut) or the Center for Environmental and Forestry Standards. This agency was under separate ministries of environment and forestry in 1997 and 1999, respectively, and became one body after the two ministries merged in 2014. The Pustanlinghut, under the KLHK, is directly under the secretary general. It has three divisions:

1. Division on Management standards
2. Division on Product Standards
3. Division on Technology standards and testing

There are more than 30 personnel working on environment and forestry standards under Pustanlinghut as of 2019. Technical committee No. 65-02 focuses on NTFPs. Each technical committee is composed of multiple stakeholders including regulators, experts, producers, and consumers.

As of January 2019, there were 27 NTFPs with official national standards (SNI):

TABLE 4. NTFPS WITH OFFICIAL NATIONAL STANDARDS IN INDONESIA

No.	SNI Number	SNI Title
1	SNI 01-3391-2000	Gambir/Gambier (<i>Uncaria gambir</i>)
2	SNI 7631: 2011	Agarwood
3	SNI 7632: 2011	Seed lak
4	SNI 7633: 2011	Turpentine oil
5	SNI 7634: 2011	Copal resin (<i>Agathis dammara</i> resin)
6	SNI 7635: 2011	<i>Bombyx mori</i> L. cocoon
7	SNI 7636: 2011	Gondorukem (resina colophonium)
8	SNI 2900.1: 2012	Damar mata kucing (<i>Shorea javanica</i>) – Part 1: Requirements based on visual tests
9	SNI 2900.2: 2013	Damar mata kucing (<i>Shorea javanica</i>) – Part 2: Requirements, laboratory testing
10	SNI 3545: 2013	Honey
11	SNI 7898: 2013	Gemor bark
12	SNI 7899: 2013	Management of honey as raw material
13	SNI 7938: 2013	Porang tuber (<i>Amorphophallus muelleri</i> Bl.)
14	SNI 7939: 2013	Serpil porang tuber (<i>Amorphophallus muelleri</i> Bl.)
15	SNI 7940: 2013	Kemenyan (<i>Styrax</i> spp.)/Incense
16	SNI 7941: 2013	Masohi bark (<i>Masosia aromatica</i> BECC)
17	SNI 7942: 2013	Jelutong gum
18	SNI 3954: 2014	Eucalyptus oil
19	SNI 29003: 2016	Tengkawang fat (oil derived from a tengkawang or illipe nuts) as raw material
20	SNI 7209: 2016	Names of traded planted and animals
21	SNI 7837: 2016	Pine resin
22	SNI 8349: 2016	Names of non -timber forest products
23	SNI 8285: 2016	Masohi oil (<i>Masosia aromatica</i> BECC)

24	SNI 8365: 2017	Nyamplung (<i>Calophyllum inophyllum</i>) as raw material for biodiesel
25	SNI 7208: 2017	The type, nature, utility and distribution of rattan
26	SNI 7254: 2017	Rattan as raw material
27	SNI 8366: 2017	Bamboo shoots as food ingredients

The technical committee on NTFPs is under the jurisdiction of the Ministry of Environment and Forestry. However, there is a specific committee for bamboo and rattan under BSN because of the need to fulfill ISO requirements.

Types of Standards and Mechanisms

Businesses can choose to have their products certified using SNI standards, or they can choose the Eco-labelling process that covers specific environmental claims. These standards and processes still need to be reviewed by Pustanlinghut. A verification organization does not need to be registered with KAN Komite Akreditasi Nasional (the National Accreditation Committee), although it still needs review and screening by Pustanlinghut.

There are 2 types of Eco-labelling processes:

Type 1 uses SNI official standards and 3rd party certifying organizations that have official accreditation, such as Balai Besar Pulp (Center for Pulp and Paper, a division under the Ministry of Industry) and PT Mutu Agung Lestari (PT MAL), a private certification company. With this type, a full eco-label image can be placed on products passing this type of certification.

Type 2 uses a standard that is developed by others, like an association or group such as the Indonesian Forest Honey Network Indonesia (JMHI) that has developed a standard for its members on forest honey. This type of standard is for self-declaration purposes and the eco-label image granted is different from Type 1

So far, there are no NTFP products that have eco-label for Type 1. Pustanlinghut has said there have been no mechanisms, and clear procedures for this type yet and no demand.

If there is a request, a product standard is developed and a policy or internal decision document is released officially, following the Standard Formulation Proses.

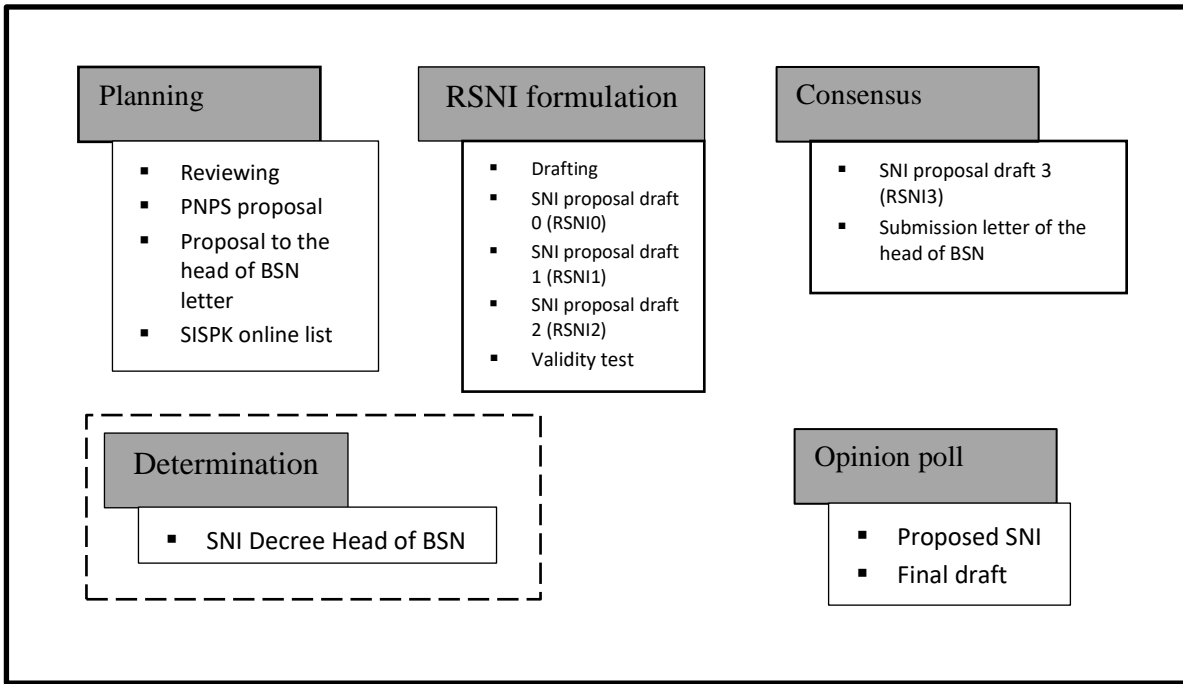


FIGURE 1. BUSINESS PROCESS FOR STANDARD FORMULATION IN INDONESIA
Reference: Kinerja Strategis Pustanlinghut 2017

There is also a business process for applying the SNI standard, with a certification scheme.

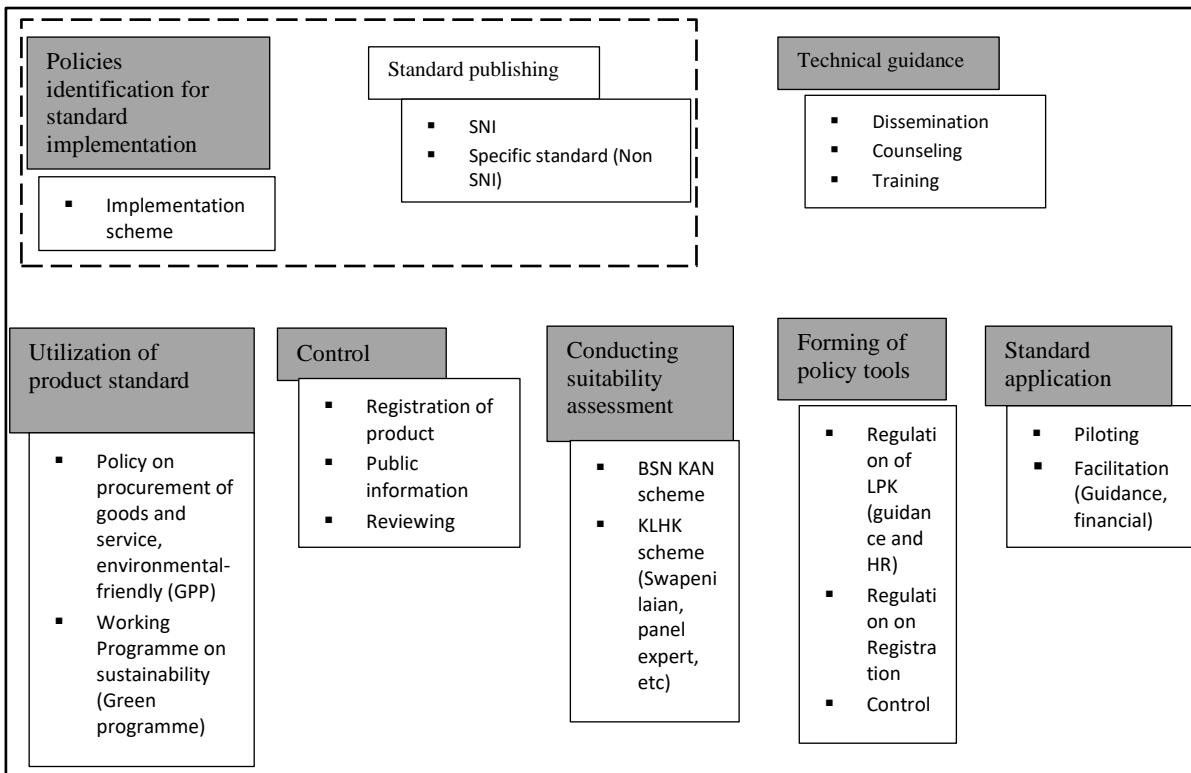


FIGURE 2. STANDARD APPLICATION PROCESS IN INDONESIA

There are technical guidance sessions (*bimbingan teknis*) eight times a year where they discuss and share information about standards, and guide interested parties on how to meet standards. The forest

honey stakeholders are aware of the standards because their network, JMHI, was part of the development of the standards. There are also ongoing projects with them on honey. But for other products, there is not that much stakeholder knowledge about the standards.

The budget for the preparation of one standard is 150 million rupiah (USD 10,640). Presentation is made to BSN, but KLHK covers the budget.

Targets of Pustanlinghut are developed yearly. For 2019, there are 15 targeted standards divided as follows: 5 product standards, 2 Hasil Hutan Kayu (HHK) or Timber-based Products, 2 Hasil Hutan Bukan Kayu (HHBK) or Non-timber Forest Products, and Ecological products related to technology. This year the NTFPs chosen for standards development are *porang*, a type of tuber, and *kulit kayu manis* or cinnamon.

For the top three NTFPs in Indonesia, the existing guarantee system is covered by the following:

Products	Standards / Systems Used	Results/ Observations
1 Rattan	Forest Stewardship Council (FSC) standards, Participatory Guarantee System (PGS) Standards, requested for ETI (Ethical Trade Initiative) standards	Growing interest for certified rattan particularly in Europe. Many are not insisting use of national standards (or national legality systems) nor 3rd party standards (unlike for timber)
2 Forest Honey	SNI (used as reference), organic standards, BIOCERT 3rd party, Eco-labeling Type 2 – self declaration, Geographic Indications	Organic certification is favored for some buyers (Amway), otherwise the SNI for honey is used as reference. Eco-labeling with association-developed standards is being tested. GI not yet providing tangible benefits
3 Eco-textile	Eco-labeling Type 2 – self declaration	Project-driven and not buyer-driven, still expensive for self-declaration process

For national standards, most local producers are not getting certification from government bodies. They are merely using these standards as reference, as 1) many NTFPs do not have local certifying bodies, and 2) certification costs a substantial amount of money and the bureaucratic process is quite long.

The standards body of Indonesia is quite complex, with the most access to funds and the most embedded in various ministries with clear reporting lines as well as tasks.

Indonesia is not so far advanced on NTFPs in the field of sustainable production. Markets are searching for more quality standards. The government's eco-labelling process for self-declaration still mirrors the SNI-based certification process, which may make it less attractive.

TABLE 5. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN INDONESIA

GAP	OPPORTUNITY
Human resource	
There is no Lembaga Sertifikasi Product (product certifying organization) for NTFP products There is no scheme or procedures for interested enterprise and entities to apply for SNI certification	Pustanlinghut is interested to work on SNI for NTFP products with various organizations on a case-to-case basis, e.g. JMHI. for eco-labelling for Type 2
Legal / Policies	
The ban on sale of raw and semi-processed rattan has dampened interest in the production of rattan Participatory Guarantee System (PGS) rattan not yet institutionalized	PGS rattan is being implemented and has multi-stakeholder representation. There are also markets interested in PGS certified products. There have been various policies to support NTFP development (Table 3)
Infrastructure / Technology	
Pustanlinghut does not have laboratory facilities. Testing facilities for food standards, to trace the absence of antibiotics (such as chloromphenicol) for instance, or to check against honey standards, are only found in Jakarta and Bogor. Chloromphenicol testing is a requirement for food by Badan Pengawas Obat Makanan (BPOM), the National Agency for Drug and Food Control. Thus, it is difficult and expensive for small businesses outside Jakarta, and outside Java, to have these tests. There are some laboratories in the provinces but not all are KAN-accredited	There are many government and private laboratories that are able to do extensive tests in Indonesia. To date, there are 25 laboratories with government accreditation (KAN) The government could initiate a project to support the cost of testing needs for MSMEs
Information and Knowledge Management	
Interviews with those in the resin industry show little knowledge about NTFP standards.	Pustanlinghut and BSN can strengthen its information dissemination process considering it has dedicated staff. Online and offline promotion is possible
Funding	
There may be a lack of funding for laboratories outside the capital city. There may be also lack of funding to bring local stakeholders to better understand standards and lack of funding to harmonize with existing standard systems (PGS)	Pustanlinghut has USD 10,700 budget per year per standard, with support for approximately 2-3 NTFP standards per year

LAO PDR

The government of Lao PDR defines NTFPs as parts of plants, insects, and wild animals. Some examples include roots, leaves, flowers, seeds, bark, oil, rubber, mushroom, and bees. This definition is mentioned in the forestry law of 2007.

Various studies have shown that NTFPs play an important role in the livelihoods, culture, and traditions of the Laos people. In 2009, official values of exports of NTFPs were only USD 3.9

million. These figures are quite low and may be due to a factor of under-reporting to avoid tax burden. Studies have shown that the value of NTFPs to cash incomes of Laos people is much higher than these trade figures. According to the MAFF-SUFFORD project, NTFPs contribute 39% to the total average cash incomes for rural families. Other studies show that NTFP incomes could be worth USD 510, which is close to 10% of national GDP.

The top five NTFPs in Lao PDR and latest available production figures are as follows:

NTFP	National Volume and Value of Trade
1. Cardamom	3,115 MT in 2016 (Tridge, 2018) * Laos is the fifth largest producer in the world
2. Bamboo	USD 4M (OHK 2006)
3. Benzoin	59 tonnes per year worth USD 1.53M. High quality benzoin is found in Laos (S, Vongkhamho & M.L, Ingalls. 2018)
4. Traditional Medicine	Trade figures are scant, but market potential and Lao PDR product quality is high
5. Rattan	Vietnam sources 5000-6000MT/ year from Laos (WWF, 2010)

The 2005 Strategy of Laos Forests includes sections on NTFPs, particularly on the improvement of the exploration and marketing of NTFPs. There are plans for the next forestry law to include a policy on the management of NTFPs.

In previous years, there have been government proclamations to encourage the management, protection, development, and utilization of NTFPs in an appropriate way. There was also a project on the trade of timber and NTFPs.

Cardamom

Two types of cardamom, the wild cardamom from the forest and cultivated cardamom. The wild cardamom (*Amomum* spp.) comes from China and the other variety is called *paksong*. Many local farmers are shifting to cardamom after earning a lucrative income from growing this crop and selling it to Chinese traders. Other markets are Thailand and Vietnam. Some families have earned as much as 40 million kip (US\$4,900) per year from growing cardamom. The price has steadily increased over the past 10 years, but price fluctuation makes farmers wary, especially if there is oversupply in the future.

The plant is found in many provinces above 700 meters above sea level, especially in such places as Huaphan, Luang Namtha, Phongsaly, and Champasak. Previously, cardamom grew abundantly in the wild, but it is now grown more commonly in plantation-type conditions. There are two types of cardamom; the Guangdong species fetches the best price and is used for herbal medicine production.

Cardamom is in high demand in China, which needs a lot of volume but is not so particular on quality standards. Low prices offered by traders, over-harvesting, and rapid conversion of forests are the main problems in the Laos cardamom value chain.

Bamboo

Bamboos are fast-growing species with two categories of products: (1) bamboo canes and (2) bamboo shoots. Bamboo canes are processed into construction material, household items, handicrafts, incense sticks, etc. Bamboo shoots are processed for food. Bamboo products are either locally consumed or exported.

Bamboo plants are important for the economic and cultural life of Lao villagers. A total of 52 species from 15 genera have been documented from different forest types all over the country. There are about 6,000 square kilometers of bamboo forests across Lao PDR.

Dominant genera are *Dendrocalamus*, *Cephalostacyn*, and *Oxytenanthera*.

There is no official national standard on bamboo, but traders from Vientiane mentioned that for sticky rice boxes and baskets, what is important is the size and thickness of bamboo strips. For bamboo shoots, the taste is naturally bitter because these contain toxins that need to be reduced through soaking.

Rattan

In the past thirty years, wild rattan resources and cultivated rattan shoots have been declining in Lao PDR due to export-driven over-exploitation and deforestation. Laos has documented more than 31 rattan species used for cane and for edible shoots. However, several species are endangered. More and more rattan are being cultivated to produce edible shoots. The sustainable rattan harvesting, and production project supported by IKEA and SDC through WWF during the last decade provided a model of a rattan supply chain from sustainable rattan forest management by using FSC (Forest Stewardship Council) certification. Six species of high value are the following: *Calamus poilanei*, *C. nambariensis*, *C. gracilis*, *C. palustris*, *C. viminalis* and *C. solitarius*

According to one rattan company, their sources for rattan are Bolikhamxay, Attapue, and Oudomxay. The standard is given by the buyer of the product (USA) and the specification is in relation to the size of the product (Phoxay rattan shop, 2019).

Medicinal Plants

Most of the 600 plant species used as traditional medicine in Lao PDR are wild plants, but some of them are increasingly being domesticated and cultivated. Some medicinal plants are used by villagers to treat various diseases, while others are collected and sold to markets or to pharmaceutical factories in or outside Lao PDR. Among the most well-known drugs are berberine from *Cosciniium fenestratum*.

Over-exploitation, loss of natural habitats, and growing pressure on natural resources are among the challenges in the medicinal plants industry. Main problems include (1) no systematic and scientific approaches to harvesting (2) no specific plans for cultivation, and (3) no strict enforcement of laws and regulations.

According to the Traditional Medicine Institute (TMI), the industry follows standards prescribed by the Food and Drug Department of the Ministry of Health, ASEAN, and the World Health Organization (WHO). There are two factories producing traditional medicine. According to TMI, traditional medicine is still used by 90 per cent of the population.

In 2003, the Prime Minister released a decree on medicinal plant resources, with additional guidance in 2007 (No. 252/MOH). Due to over-harvesting practices that affect the abundance of traditional medicine sources, the decree provided for a monitoring program to avoid extinction of these resources. The decree also prohibits any export of raw materials for traditional medicine and requires approval from the Ministry of Health for all cottage industries. However, the decree does not specify the standards on Traditional Medicine being applied in Laos.

Benzoin

Benzoin is a balsamic resin obtained from the bark of several species of trees in the genus *Styrax*. It is used in perfumes, some kinds of incense, as flavoring, and medicine. Benzoin Siam or *Styrax tonkinensis* is the species found in the Mekong region. It is used in the flavor and fragrance industries, as compared to Benzoin Sumatra which is used more in the pharmaceutical industry. In perfumery, benzoin is a fixative which slows the dispersion of essential oils and other fragrances into the air. It is also used in cosmetics, veterinary medicine, and scented candles.

In Laos, there are a few companies in Northern provinces that process and export benzoin. They are owned by the French and the Chinese. The major sources are in the provinces of Luang Prabang and Oudomxay. Agroforex, a French company, is one of the firms processing and selling benzoin in Laos. The quality of Laos benzoin is very high. Much of it is exported to Europe for cosmetics and perfume, and as an ingredient for food processing. Villages that sell benzoin sell to traders, who then sell to companies like Agroforex that grades the benzoin and gives a price of USD 80-200/ kilo. Some harvesters also sell to China for 25 USD/ kilo of raw benzoin. Other destinations are India and Myanmar.

According to traders, the principal quality that buyers look for is the dryness of the benzoin. They burn a small section of the bark and smell the fragrance to check for dryness. Villagers collect benzoin from September to February, the best time to harvest the product in the forest. They cut the benzoin bark from trees that are 6-7 cm tall and dry it in the sun.

Wild Sugar Palm

Wild sugar palm fruit (Mak Tao) comes from the *Arenga westerhoutii* tree, a palm native to Southeast Asia. This tree proliferates freely in humid forests and typically grows near streams, rivers or other water sources. The fruit is consumed as a dessert in Lao PDR and Thailand. The tree provides several other products: palm wine from the apex of the flowers, and roofing material from the leaves.

Exact production is unclear, but it is estimated that about 1,000 tons of unprocessed seeds are exported to Thailand (Khamhoung, A. and Dirk Van Gansberghe, 2016). Some Mak Tao is being collected in northern Sayaboury (mainly Xienghone district), Oudomxay, Xieng Khouang, Bolikamxay and Khammouane provinces. Palm fruit quality is broadly categorized by color and pre-processing moisture levels, with three grades: (a) White dry fruit (b) white fruit soaked in water, and (c) blackish fruit, which can be bleached by the processor.

According to a palm fruit canning plant manager in Vientiane, farmers that sell the product have been trained on how to manage the raw material to conform with factory regulations. The international standard CODEX is followed. The product also gets Good Manufacturing Practices (GMP) certification from the Department of Food and Drug in the Ministry of Health in Laos, HACCP from the Institute of Food from Ministry of Health in Thailand, and BRC from the trader in

England. Canned wild sugar palm fruit are marketed to Thailand, Vietnam, Cambodia and Malaysia.

Honey

Forest honey, either from *A cerana* or *A dorsata*, has a big potential in Laos. Local consumers, Asian expats, and tourists believe that Laos honey is a healthy, non-toxic food that they consider natural and pure. Because there are no clear regulations and quality standards for Lao forest honey or Lao honey in general, there is a lot of poor-quality honey in Laos and consumers often cannot tell the difference. Misinformation that crystallized honey is fake honey is also affecting market perceptions, despite the fact that crystallization is often a natural process.

Recent surveys show that honey consumption in Laos is high, at an estimated 296 tons a year (Andaya, 2017). Traditional medicine companies are also buying honey.

Standards Framework

Laos has a total of 441 standards: 400 were adopted from International Standards, and 41 were developed in-country for products that had no international standards. Some of the rice varieties, for example, need a special biophysical environment found only in Laos; thus, these need special standards. One example of this is Xiengkhouang Chicken Rice. Other standards were developed domestically to protect Laos products.

Standards are developed by Laos or adopted from existing standards based on 1) economic policies and 2) company needs. Companies usually need compliance against standards for export purposes. They come to the Department of Standards and Metrology (DoSM) for consultation.

Under the DoSM, there are 11 committee sectors that include health and pharmaceutical products, electrical, construction, and NTFPs. The agency has limited human resources to cover eight sectors. There are 4 divisions – administration, standards, consumer protection, and a regulatory division — and 4 centers – quality, metrology, accreditation, and information.

While the DoSM is still establishing its committees, there are various ministries that release certificates. But when the National Standards Body is fully functioning, it should be the only body releasing certifications against standard compliance for final product quality. There exists a standard on wood, but the private sector is not really considered it so much, according to the DoSM.

A national technical committee on NTFP standards was created in 2018, led by the Ministry of Forestry and Agriculture. Members come from the ministry, related companies, and associations. The function of the technical committee is to propose and adopt standards. So far, the committee has not developed standards yet, and no NTFP standards are planned for development in 2019, as these are not yet the main priority of the Laos government. The priorities in 2019 are food and drink, rice, and construction. The Food and Drug Department (FDD) is the focal point for food and medicinal plants standards.

There is a Laos standard mark. When companies apply for certification, those that pass the standard process can use the mark. Once a company receives the mark, there is monitoring every six months. Quality samples will be tested. If quality is poor (e.g. quality samples do not pass tests) warnings will be given to the company. If there is no sufficient compliance after three warnings, then the mark is taken back from the company. Laboratory tests are done to check priority products, and there is a plan to have a mobile laboratory to do this procedure.

For consumer protection, there is a government hotline for questions and complaints.

Only Laos government certifies products; there is no private sector entity that certifies against quality standards. According to DoSM, the National Standards Council leads the process to develop standards at a cost of USD 5000-6000 per standard.

TABLE 6. STATUS OF NTFP STANDARDS IN LAOS

Framework document and year	Law on Standards, 2014 Food Law, 2013 National Food Safety Policy, 2009 Traditional Medicine Decree, 2007
National Standards Body (NSB)	Department of Standards and Metrology; ISO member at correspondent level. Endorsed 2007, established in 2011
Standards Body for forest products	NTFP technical committee formed in 2018. Not active.
Number of staff working on national standards	5 persons as of 2019
Number of staff for forest standards	Nobody specifically works on forestry standards (priority for standards is food and construction)
Number of NTFP standards adopted	No standards on NTFPs, 1 on Timber * There are organic standards with wild product section
Facilities	Laboratory facilities are limited, and some food standards cannot be tested in country. * Laos is working on lab accreditation

Awareness and knowledge on standards

Traders for five products — rattan, bamboo, malva nut, benzoin, and palm fruit — were interviewed, along with one government employee at the provincial level, civil society members and a farmers' organization regarding their knowledge about NTFP standards. Many are not aware of any government standards on NTFPs, so they are following standards set by the market instead. These are mostly unwritten rules, and quality is tested through ongoing engagement with local producers.

The following is a summary of traders' responses, from interviews conducted in April and May 2019, regarding major NTFPs in Laos:

Bamboo

Source of information: Somboun handicraft

Location of enterprise: Vientiane

Sources of products: Xamnuae District, Houaphan and Nongbeau village, Vientiane

Finished products: Sticky rice box, sticky rice basket

Quality points: Size and thickness of the bamboo strips

Markets: Dongmakkhai market, Xaythany District in Vientiane

Malva nut

Source of information: Mr. Vilavong

Location of enterprise: Champasak

Sources of products: Xekong, Attapue and Champasak

Finished products: Baked and dried nuts

Quality points: Products are baked nicely, not too dry; the product has to be certified by the agriculture unit from each province where the nuts are sourced

Markets: Middleman buys from the traders' group then sells to Vietnam, Thailand, and China

Benzoin

Source of information: Mr. Sichan

Location of enterprise: Luang Prabang

Sources of products: Phonsaad village and Pakmong village in Luang Prabang province

Quality points: Villagers collect benzoin from September to February, the best time to harvest the product in the forest. They cut the benzoin bark from trees that are 6-7 cm tall and dry it in the sun.

The buyer and seller will check the dryness by burning a small section and smelling the bark.

Markets: Companies that export to China and France

Benzoin

Source of information: Mr. Khamfung

Location of enterprise: Luang Prabang

Sources of products: Phonthong district and Nambak district in Luang Prabang province

Quality points: The buyer will burn the skin to check for a good smell.

Markets: Traders cross the border to buy the product and export to China, India, France, Myanmar.

Rattan

Source of information: Phoxay rattan shop

Location of enterprise: Vientiane

Sources of products: Bolikhamxay, Attapue, and Oudomxay

Quality points: Ordered by size

Markets: Buyer from USA

Palm fruit

Source of information: Ban Keun canning plant

Location of enterprise: Vientiane

Sources of products: Vientiane and Xaysombum province

Quality points: Farmers who sell the product have been trained on how to manage the raw material to conform with factory regulations. The international standard CODEX is followed. The product also got GMP certification from the Department of Food and Drug in the Ministry of Health in Laos, HACCP from the Institute of Food from Ministry of Health in Thailand, and BRC from the trader in England.

Markets: All products are sent by container to Thailand, and they are also exported to Vietnam, Cambodia and Malaysia.

Some groups, such as the Laos Farmer Network, doubt the need for standards as many NTFPs are marketed to China, which do not pay so much attention to standards. If there is a benefit for the farmers, standards are helpful for them. There needs to be a guarantee. If the standard can help to increase the price, then it makes sense to develop it and it makes sense for them to use it.

Organic Standards

The Lao government released its agricultural standards through a decision of the Ministry of Agriculture and Forestry in September 2011. The standards were formulated on the basis of models developed by the International Federation of Organic Agriculture (IFOAM) and Agriculture Certification Thailand (ACT). The standards go through periodic review and revision to reflect the growing changes among Laos stakeholders in organic agriculture. The standards include Article 16 on Wild Products, as follows:

1. Wild products mean products produced from wild plants or animals without any cultivation.
2. Operators shall only collect or harvest wild products from clearly defined areas where prohibited substances have not been applied
3. Chemicals prohibited in organic production must not have been used for at least 3 years in the collection or harvesting area
4. The collection or harvesting area shall be at least 25 meters from the conventional farms, and other sources of pollution and contamination
5. Harvesting of wild products is only permitted when it does not have a negative impact on the environment and does not endanger plant or animal species.
6. The producer or operator who applies for the wild product certification shall be a member of the community who has been approved by the local community as producer or operator who has the potential to harvest the product in a sustainable manner

These wild product standards have yet to be implemented. The Department of Agriculture has so far implemented the standards for other products like coffee, vegetables, fruits, silk, and sugar.

While these standards are a good start, they remain guideposts and do not recognize the unique biological characteristics of the many kinds of NTFPs that exist in Laos forests. Thus, following these standards alone may not ensure that an NTFP is sustainably harvested and processed. For example, the manner for sustainably harvesting rattan —with regards to regeneration checks, cutting at a distance from the stem, leaving multiple stems on the clump etc. — is very different from harvesting mature honey from a hanging Giant Bee comb. Provision number 5 in Article 16 does not cover and guarantee that sustainable harvesting for each NTFP is ensured. Clearer standards and protocols are needed per species.

During the interview with the Department of Agriculture in February 2019, the standards were being revised to be aligned with ASEAN organic standards. This was to be completed in March and to be signed by the Minister. It is uncertain whether this has been followed through as planned.

PGS standards

The Participatory Guarantee System (PGS) is an alternative certification system which has been tested in Laos for bamboo shoots. This system, based on a bottom-up approach and built on trust between producers and buyers, was the basis of the engagement. The French NGO GRET supported bamboo shoot producers from Huaphanh in the process of seeking certification and in connecting with a buyer in Vietnam in 2016. The organic certification system under the Laos government was used, providing a different angle from the usual independent PGS processes. In addition, administrative and bureaucratic hurdles of cross-border trade made the transaction too expensive to be replicated.

For organic vegetables, testing was limited to pilot sites under short-term projects. These tests have been discontinued, after the farmers found the steps to comply with standards and meet certification too cumbersome. The process came with a great investment of time and resources, and the resulting

benefit was not attractive enough (i.e. prices did not increase substantially) for them to continue with the tests.

For the top three NTFPs in Laos, the existing guarantee system is covered by the following:

Product	Standards / Systems Used	Results/ Observations
1. Bamboo shoots	Laos organic standard, Alternative Certification System – Participatory Guarantee System (PGS_	Laotian market was interested in Laos fresh shoots and in using PGS system but problems with export processes made cross-border trade
2 Rattan	FSC 3 rd party	Sold to Swiss company but partly for CSR purposes
3 Perfumes / Essential oils	SEDEX Members Ethical Trade Audit (SMETA) for four pillars: Labour, Health and Safety, Environment, Business Ethics	Market-led social and environmental audits appear to be acceptable to European consumers

Facilities

Some of the testing for compliance to standards is done overseas. The NSB certifies some quality centers.

According to DoSM, testing for food safety depends on the standards used by private companies. Some companies are using Thai standards for example, while others are using EU standards, depending on the destination of the products. The Department is currently working on laboratory accreditation, which entails application for ISO 17045 for a neighboring country such as Vietnam. The Food and Drug Department has a Food and Drug Quality Control Center (FDQCC) that is able to test for food safety. But they are not able to test against all standards for food quality.

There is a laboratory at TMI for testing traditional medicine. Clinical trials for toxicity are conducted. Some traditional medicine is labeled health supplements if they do not undergo testing. Other laboratories in Vientiane specialize in mining or testing against environmental standards. Phanthamit, ALS Geochemistry laboratory and others are dedicated to detecting and treat diseases, such as the Pasteur Institute and the Rodolphe Merieux Laboratory.

TABLE 7. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN LAOS

GAP	OPPORTUNITY
Human resource	
<ul style="list-style-type: none"> • Very few people working on standards 	<ul style="list-style-type: none"> • No need to develop new standards • Work on adopting useful standards from ISO on priority products
Legal/ Policies	
<ul style="list-style-type: none"> • Government priorities do not include NTFPs • No clear plans for development of NTFP industries • Unfinished land use and land allocation with unclear forest and bamboo management policies, not allowing protection and efficient harvesting of NTFPs, is a disincentive for NTFP management • Current tax policies are perceived to have a negative effect on the development of NTFPs 	<ul style="list-style-type: none"> • Other sectors can learn from the government's organic certification process • The utilization of traditional medicines in Lao PDR has been receiving political support since 1976 and, as a result, there is an Institute of Traditional Medicine in Vientiane with 10 provincial branches and also several public and private pharmaceutical factories manufacturing various drugs • PGS pilot tests for bamboo shoots can serve as jump off point for more trials across other products
Infrastructure/ Technology	
<ul style="list-style-type: none"> • Lack of capacity and technology to test against all standards 	<ul style="list-style-type: none"> • Support for laboratories, especially those working on food safety may be possible through cross ASEAN collaboration
Information and Knowledge Management	
<ul style="list-style-type: none"> • Traditional knowledge on medicinal plants should be protected as intellectual property rights of Lao traditional healers • More scientific and community-oriented management of medicinal plant resources need support 	<ul style="list-style-type: none"> • Website functioning well, could be used as reference for more technical capacity building purposes in various departments • The presence of forest-based projects such as TABI have developed web-based platforms for information sharing such as Pha Khao Lao

MYANMAR

The government has identified 58 NTFPs, with 27 main products collected and traded. These include spices, medicinal plants, straws, tanning barks, perfumes, exudates, honey and beeswax, bushmeat, lac and bat guano. Other NTFPs that support local livelihood are charcoal, resin, latex, turpentine, and orchids.

Most NTFPs are used in the handicrafts, furniture, cosmetics, traditional medicine, and food industries.

Rattan, bamboo, and lacquer are important inputs to the handicrafts industry. Myanmar exported USD 12.4 Million worth of handicrafts in 2015 to the EU Market alone. With export experience and a stable supply of raw material, rattan ware was identified by the CBI (Dutch Center for the Promotion of Imports from Developing Countries) as the most promising product group for exports in the home and decoration sector. There is also an ongoing project between SEARCA and the

Forest Research Institute on value-chain development of Rattan (*Calamus* sp.) in Putao. Lacquerware makes use of Burmese Lacquer (Thitsi,) a resin tapped from lacquer trees (*Melanorrhoea usitata*). Some barriers to exports that are related to quality and standards include risk of child labor in the rattan sector, lack of food-safe colors and inputs for high quality finishing for lacquer, and non-use of AZO-free dyes for textiles.

Among the NTFPs used in cosmetics in the country are thanaka, beeswax, and honey. Thanaka (*Hesperathusa craenulata*) is an important NTFP for the domestic market. Its bark is ground into a paste, which is directly applied onto the face. Thanaka is mainly harvested from plantation or family orchards. Shwe Pyi Nann Group of Companies is the largest manufacturer of thanaka. Sarna, a half-Thai, half-Myanmar company, sells cosmetics products containing thanaka from Myanmar, although the products are manufactured in Thailand where production costs are lower. Plan Bee, a small social enterprise in Myanmar, produces lip balm and beeswax infused with essential oils.

Medicinal plants, honey and some spices are used in traditional medicine in Myanmar. Traditional medicine is part of the national health policy and is overseen by the Department of Traditional Medicine under the Ministry of Health. This government agency is responsible for 20 hospitals, the Traditional Medicine University, and two factories producing a full range of traditional drugs. It also maintains a number of herbal gardens covering 120 acres. There is also the National Herbal Park established by the Ministry of Progress of Border Areas and National Races and Development Affairs in Nay PYi Daw, with over 13,340 plants comprising 87 species. Over 13,000 traditional drugs are registered at the Department of Traditional Medicine. The Food Value Chain Roadmap 2016-2020, published by MOALI and the MAFF of Japan, stated the need to introduce facilities such as nurseries for multiplication and commercial production, and an in situ and ex situ conservation of domesticated varieties as well as wild species of medicinal plants. Japanese companies and development projects have been supporting the development of medicinal plants in the country.

In the food industry, NTFPs include edible bird's nests, honey, fruits and spices. Bird's nest harvesting permits are auctioned by the government to companies. These can be harvested from the wild, in managed natural spaces, and in man-made structures. For spices, Cardamom (*Elettaria cardamomum*) in Than Daung was identified for a value-chain development project supported by SEARCA. There are also plans to develop 50 community forestry products — one community, one product — by 2020. Spices such as ginger, turmeric, cinnamon, and hot pepper —raw or processed— are exported to India, China and Bangladesh. These spices are also sent to Japan and Pakistan for primary processing. Myanmar honey feature a variety of monofloral honeys such as kapok honey, jujube, etc. Over half of the 2,000 tons of honey produced in Myanmar is exported through border and sea trade to China, Thailand, Japan, Korea, India, and Canada. There are ongoing preparations to be able to export to the EU.

Myanmar has a tradition of using natural dyes, mainly because of the practice of hand-woven textiles in the country. About 20 small groups make use of natural dye in their products. Social enterprise like Sunflowers Textiles and Organic Dyes promote and conserve the use of natural dyes. There is some research on natural dyes at the Yangon Technological University (YTU). Processes are based on traditional practice, enhanced with techniques learned from other countries like Japan. The most important dye-yielding plant species are meyaing (*Indigofera* spp.), pauk (*Butea monosperma*), megyi (*Strobilanthes flaccidifolius*), pein-ne (*Artocarpus heterophyllus*), nibase (*Morinda* spp.), tein-nyet (*Caesalpinia sappan*) and te (*Diospyros burmanica*)

Production and trade

NTFPs are estimated to make up 2% of the forestry products sector's total output, with timber and timber products making up the rest. For fiscal year 2018-2019, NTFP exports reached close to USD 3.2 Million, down from USD 3.9 Million from the previous year. Top three exports of the past two years in Myanmar are rattan, edible bird's nest, and bamboo.

A new export product is dried nipa palm, which is sent to South Korea for use in the cosmetics industry. Another NTFP monitored for export is catch, which is extracted from the heartwood of she (*Acacia caetechu*) that grows in dry areas of Myanmar. It is used as a dye and a preservative for fishing nets and canvas. It is sold in block or liquid form. Other NTFPs exported are bark powder and sandalwood chips.

Trade figures for major NTFPs are as follows:

NTFP	Fiscal Year 2017 - 2018			Fiscal Year 2018 - 2019		
	Volume (MT)	Value	%	Volume (MT)	Value USD	%
Bird's Nest	7.06	1,613,775.00	41.6%		829,500.00	26%
Rattan		1,576,131.79	40.6%		1,542,947.05	48.4%
Bamboo		397,864.90	10.2%		464,878.50	14.6%
Cutch Total	440.94	269,717.74	7%	193.58	111,222.28	3.5%
Dried Nipa Palm	0.5	20,292.00	0.5%	0.73	106,617.00	3.4%
Bark Powder	24.03	5,887.35	0.2%	103	25,241.86	0.8%
Dried Nipa Palm				46.85	105,956.81	3.3%

Source: Forest Department Yangon, June 2019

Overview of Standards and Quality Infrastructure

The National Standards and Quality Department under the Department of Research and Innovation (DRI) of the Ministry of Education is the national quality body of the country. It has three divisions: Standards Development Division, Accreditation, and Metrology. There are 23 Technical Committees (TC) working on different product groups, including cosmetics, wood products and traditional medicine. The Food and Drug Administration (FDA) is tasked with monitoring consumer products that could be harmful to the public. The Food and Drug Board of Authority (FDBA) under the Ministry of Health, along with the FDA, are responsible for enforcing regulations and standards in the food and pharmaceutical industries.

The National Quality Policy (NQP) was developed under a project supported by the UNIDO. The NQP is the basic government instrument that sets out the nation's objectives in Metrology, Standardization, Accreditation and Conformity Assessment. It defines the goals of the future quality infrastructure and serves as a road map for setting it up. The development of a quality policy is a chance to increase public awareness of the importance of the Quality Infrastructure System (QIS) and inform national actors of how they can benefit from it. Stakeholder involvement is therefore crucial to ensure that the NQP and QIS meet the needs of the nation.

The Law on Standardization of 2014 is the main legal framework for standards development in Myanmar. It sets the provisions for the development of Myanmar Standards, promote exports through the enhancement of quality of production organizations, products, production processes and services and the protection of consumers, users and the environment from sub-standard and hazardous products. Its objectives include the protection of the environment from impacts of products and production processes and services, as well as the conservation of natural resources. Other objectives of the law include supporting the creation of the ASEAN Free Trade Area, and to reduce technical barriers to trade. The DRI is also awaiting the enactment of the Law on Metrology.

Myanmar renewed its membership in ISO in 2005 as a corresponding member. It also participates in the ASEAN Consultative Committee on Standards Quality and is a signatory to various agreements on standards and regulatory harmonization. At the ASEAN level, Myanmar participates in the working Group on Pan-ASEAN Timber Certification Initiative.

Standards development can be initiated by any sector of the society. It has six stages: (1) Proposal Stage (2) Preparation Stage, preparation of references (3) Technical Committee Discussion Stage (4) Public Inquiry Stage, where the standard is uploaded on the department's website for public comments (5) Approval Stage and, (6) Publication and Dissemination. Standards development and enforcement of technical regulations rest with different government departments, which are generally underfunded and inefficient.

Standards Frameworks and Policies on NTFPs

There is currently no specific policy on NTFP standards development, nor is there a specific division working on NTFP standards. However, there is already an understanding and awareness in the Forest Department on the need for standards for NTFPs, especially for its harvest. Standards and protocol developments are especially necessary, as various policies promote the development of NTFPs trade to contribute to local and community livelihoods.

Management of forests follows a 30-year Master Plan (2001-2031), 10-year forest district management plans, and annual operations plans. Quotas or Annual allowable collection for NTFPs are usually based on previous quota figures instead of actual inventories. The practice of sub-contracting of harvesting makes it difficult to ensure the practice of sustainability protocols. Rattan extraction is usually sub-contracted by license holders to rattan collectors who go around the country. For those interested in cultivating thanaka or bamboo, information on registration and application process is provided by Forest Management Units and offices at Township levels to farmers.

Legal trade of forest products is subject to permits approved by the government, according to the 1992 Forest Law. Chapter 6, Section 18 stipulates that extraction of forest products for commercial use requires permits. Commercial Permits are awarded based on competitive bidding, except in cases where the actor is a state-owned enterprise, or the Minister is empowered by the government in respect to the extraction of the forest product.

The 1992 Forest Law supports conservation, sustainable forestry and socioeconomic benefits. In 2015, the MONREC established a Community Forestry National Working Group and a Community Forest Unit, tasked to transfer 918,000 hectares of forestland to community forest management by 2030. The amended Community Forestry Instruction of 2016 also allows for the commercial trade of NTFPs, along with timber and ecosystem services, from community forests. Over 3,000 community forests were awarded in 2017.

The Myanmar Forest Certification Committee is the national governing body of forest/timber certification schemes in Myanmar. Established in 2012, it replaced the Myanmar Timber Certification Committee. The change from Myanmar Timber to Myanmar Forest signifies the intention that eventually, the forest certification scheme will also cover other forest products and not just timber. There are currently two schemes operating in the country: (1) The Myanmar Timber Legal Assurance System (MTLAS) and (2) The Myanmar Forest Certification Scheme (MFCS). The MFCC published its policy on Standard Setting in 2018, which provides the rules for the standards to be used for MTLAS and MFCS. It provides that the MFCC shall support and coordinate the development of certification standards. At the moment, the MFSC for timber is under pilot stage. It is initiating a third-party audit, with three bodies identified.

The national Code of Practice for Forest Harvesting was published in 2000, following the publication of the Code of Practice (CoP) for Forest Harvesting in Asia Pacific by the FAO/Asia-Pacific Forestry Commission in 1999. However, while the regional CoP recommended national codes for NTFPs, the Myanmar CoP was focused on logging rules and procedures. The national code was prepared by the FD in cooperation with MTE and the Planning and Statistics Department of MoECAF.

The Department of Traditional Medicine was established in 1989. One of its objectives is to develop standardized method of therapeutic criteria systematically. In 2001, the University of Traditional Medicine was established, which required experienced herbal gardeners who are knowledgeable about herbal medicinal plants. The Traditional Medicine Law of 1996 was promulgated to control the production and sale of traditional medicinal products. As an important pillar of the national health policy, Traditional Medicine is a priority sector for NTFPs. The law has provisions on the registration and control of traditional drugs, and formation of Board of Authority and its functions. This was followed by a series of notifications on registration and licensing, labeling and advertising. The Myanmar Health Vision 2030 includes in its objectives the modernization and promotion of extensive utilization of traditional medicine as well as to ensure the availability in sufficient quantity of quality traditional medicine, along with other essential medicine in the country.

The Biodiversity Conservation and Protected Areas Law has provisions on the implementation of CITES. Some medicinal plants from Myanmar are registered under CITES, including a variety of orchids, resin and perennials. A CITES Standard Permit Certificate is required for importing, exporting, and re-exporting of CITES Species. This is procured from the Forestry Department. The new law designates authorities on CITES implementation, prohibition of illegal trade, penalties, confiscation and prohibition of the illegal introduction from the sea, are put in place, and Myanmar will report the CITES relevant legislation to the Secretariat.

A new National Export Strategy (NES) is currently being drafted and includes industries in which NTFPs are used. Forestry products are already part of the NES 2015-2019. The NES 2020-2025 includes handicrafts, fruits, and basic food production.

The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) which requires exported commodity to be free of unwanted dirt, seeds, pests and diseases applies to a variety of natural products, including rattan and bamboo products that are intended for export. The agreement is designed to reduce inspection, quarantine and treatment of imported forest products as prohibitive measures beyond those necessary to protect domestic human, animal and plant population of importing country.

For the top five NTFPs in Myanmar, the existing guarantee system is covered by the following:

Products	Standards / Systems	Results/ Observations
1 Bamboo	Sustainable Bamboo Harvesting Protocols (Training Provided under the BIF Project)	Only the price difference motivated some producers to follow collection protocols
2 Rattan	<ul style="list-style-type: none"> • Forest Department Permits and Certifications (Harvest, transport, export) and Management Plans for Community Forests and Private Plantations as basis of legality • Phytosanitary Certification 	<ul style="list-style-type: none"> • While permits ensure legality, the long process and different fees at different stages become a barrier to trade for exporters. There is a need to streamline controls and make it cost-effective. • Most NTFPs harvest limits are based on previous figures. • Some cases of certificates being handed out without actual fumigation
3 Medicinal Plants	<ul style="list-style-type: none"> • OHSAS 18001:2007 (2006) certification for occupational health and safety systems related to research, development and manufacturing of alternative medicine products • Myanmar Organic Agriculture Group • Good Manufacturing Practice • Traditional Medicine Registration at the Department of Health 	<ul style="list-style-type: none"> • Initiative of the private company to acquire certifications in order to expand market reach and assure consumer base of quality products • About 13,000 TM were registered and monitored by the Department of Traditional Medicine in 2017
4 Honey	<ul style="list-style-type: none"> • National Residue Monitoring Plan • Quality Standards 	<ul style="list-style-type: none"> • Under development • Under development
5 Cosmetics	Thanaka Product Standard	Proposal stage submitted by Technical Committee on Cosmetics

Level of understanding on NTFP standards among stakeholders

At the Forest Department headquarters, there is already some awareness on the need for NTFP standards. However, a lot of groundwork still needs to be done on areas such as research and inventory. This task also comes after other priorities of the department.

In the private sector, the NES of 2015-2019 observed that inadequate knowledge of Quality Management (QM) requirements on the part of farmers, processors, and traders limits the uptake of QM practices in general. There was limited application of GAP, GHP, GMP, quality and food safety systems that hinders exports to the EU and the United States. This is an important consideration as 99.4% of businesses in Myanmar are SMEs. The size of the enterprises may hinder them from acquiring the necessary technology or capacity to meet standards. Available training also reaches only a small part of the enterprises and their training needs, due to limited budget and accessibility of technical resource persons. There is also lack of environmental awareness and knowledge.

In forestry, there is still a need to upgrade the products and quality standard for the international market. There is limited training provided to workers in the private sector. NES 2015-2019 identified the need to provide training for harvesting for both timber and non-timber as well as in production techniques, use of new technology, design and quality. For community forestry

members, there is still a lack of experience in supplying raw materials like rattan and bamboo to companies, which also means weak knowledge of qualities required by companies.

In general, awareness on standards development, both at the institutional level and the public level, is still weak. The NSQD states that there is still a need to raise awareness on standards in the different ministries. The office conducts workshop on standards development every World Standards Day in order to raise awareness. In the sector of traditional medicine, there is still sub-standard traditional medicine being sold in local markets. According to a CBI study on handicrafts in 2016, in the experience of EU importers, many suppliers from Myanmar, as well as neighboring Cambodia and Laos, do not always meet the basic legal requirements.

Facilities, technology, and human resource development programs

Relevant ministries have their own testing laboratories but are still in need of accreditation. Currently, the Fishery Laboratory and the FDA laboratory are the only testing centers that have ISO accreditation. The FDA's medical testing laboratory based in Nay Pyi DAW has certifications from the US-based ANSI-ASQ National Accreditation Board (ANAB), which would lead to the recognition and acceptance of laboratory results and ISO/IEC 17025:2005. It is the first state-owned laboratory and the first in Southeast Asia to hold the ANAB certificate. The laboratory now conducts tests on food samples from markets, as well as food that is the subject of complaints. The UNIDO project that concluded in 2018 also supported seven laboratories to align quality management systems to ISO/IEC 17025, providing necessary equipment and proficiency testing services. The project especially supported laboratories geared towards testing agri-food products.

The National Institute of Metrology Myanmar (NIMM) started working on standardizing product measurement in the country. It is said to be the first of its kind of in the country and in the Southeast Asian region. It shall become the lead institution in inspecting devices that are used for measuring products, once the Measurement Law is enacted. It aims to enforce national measurement standards, and to promote the inspection of measuring devices at factories, laboratories and research facilities. There are currently seven laboratories that assist industries by measuring product mass, dimensions, pressure, volume, temperature and moisture.

The government provides assistance for SME Development in the areas of R&D, technical support, Standardization and Quality, Analysis and Testing, and others. One example is the transfer of technology on the production of five traditional medicine from the DRI to the Department of Traditional Medicine and Myanmar Pharmaceutical Factory, under the Ministry of Industry, for mass production.

Various government agencies provide training on standards and quality requirements. It is the role of the Department of Trade Promotions and Consumer Affairs to organize trainings and seminars on product standards and quality requirements to producers, manufacturers, and business communities. It also leads in the development of a Quality Management System for overall trade sector development.

The SME Center and Myantrade provide workshops on quality standards for various products. The Forest Farm Facility (FFF) Program of the FAO in Kyeintali provided training on sorting, processing and packaging for a township-level community producers association that resulted in a 20% increase in the price of palm leaf roofing materials.

The Yangon Technical University has a program on Textile Engineering and offers research program and laboratories on natural dyes.

Overview of NTFP Standards and Compliance

There are currently no national quality standards for NTFPs. The private sector or NGOs are the entities that have mainly initiated or acquired standards and certification for different products, as needed. Product standards are generally agreed by and checked between buyer and supplier.

One example of a private sector initiative is the safety sheet development for Burmese lacquer. A Japanese importer developed a product safety sheet that it shared with its supplier from Myanmar. However, this example also demonstrates the need for further R&D support in the sector. While the product quality, based on laboratory tests done in Japan, demonstrated that the quality of Burmese lacquer is at par with Japanese lacquer, the potential export of the lacquer to Japan was cut short when the importer developed allergic reactions to the Burmese lacquer.

Rattan

For rattan furniture and products, the current important certifications required for export are forest certification and phytosanitary certificates. Forest certifications are provided by the Forest Department in Yangon, that carries out documentation and physical inspection and controls. This process ensures legality of forest-sourced materials as well as control for tax or royalty collection purposes. The legality requirements of rattan product exporters start from the harvest of rattan up to the transport of raw materials from one point to the next, until the factory and finally, the export of finished products. Each piece of furniture is measured to ensure that utilized materials correspond to the reported and permitted quota of raw materials. While this serves an important purpose for the government, the whole process is a burden to the exporters. Phytosanitary certificates are provided by private testing laboratories, either foreign or locally owned, that service export companies. With regard to framework conditions, the inspection of a container takes one week. Fumigation certificates for rattan ware are sometimes handed out without having really done the fumigation. The structure of cottage-based production makes it difficult to ensure standard qualities, traceability, and control over the producer groups.

Rattan product exporters are aware that there is already some demand for companies to follow ethical and clean production standards and will therefore have to act on it in the near future. This means that exporters will need to improve traceability. However, none of the companies' current buyers have asked for any certification, and therefore this has not yet become a priority to exporters. Big buyers like IKEA currently are not of interest to exporters as margins are low but have high standard compliance requirements. Its cumbersome requirements for full compliance with its supplier certification, in addition to price pressures, including a five-year price guarantee, lead to exporters resistance to working with the giant company. According to the CBI Study, exporters have so far avoided certification and the introduction of cumbersome organisation manuals that are required by large buyers such as IKEA.

Bamboo

The private sector has initiated sustainable standards that were provided to some bamboo collectors. Business Innovation Facility (BIF)'s bamboo project, funded by UKaid, trained bamboo collectors on sustainable harvesting methods and linked them up with a buyer who agreed to purchase bamboo harvested following sustainable protocols at a premium price. The uptake of protocols was not easy, especially for those who had other sources of income and did not prioritize bamboo livelihoods. For others, the difference in price provided some motivation to follow the protocols.

The case of sustainable bamboo demonstrates how market-driven standards evolve: currently, there is only one buyer—who uses bamboo in designing structures—that requires sustainability standards, so this is a low priority for bamboo producers. It is important to generate more market interest to sustain this initiative. To ensure the safety of structures, there is a need to apply standards of bamboo for construction. The members of MRBEA are expanding into bamboo products and will require support in meeting bamboo product standards.

Medicinal plants

The Good Manufacturing Practice or GMP is the only regulatory requirement applied to herbal medicine, which is sold over the counter without any restriction. Safety requirements include traditional use without cases of harmful effects, and reference to documented scientific research on similar products. Implementation of these requirements is ensured by inspection, laboratory analysis of quality control and safety, and market surveys. The Department of Traditional Medicine owns two factories and is responsible for the manufacture of medicine that is provided free of charge to public Traditional Medicine facilities. The private sector also develops, and mass produces registered medicine according to the GMP standards. The promotion of the GMP practice has improved public trust and consumption of TM and showed progressive increase in demand for TM in the rural and urban areas. The Department of Traditional Medicine is responsible for issuing letters of recommendation for exports, registrations and product licenses. The Monograph of Myanmar medicinal plants was published in 2000.

Standardization of medicinal plants start with cultivation. The Department of Traditional Medicine maintains herbal gardens to ensure application of standard practices. FAME, the largest traditional medicine manufacturer, supplier, and exporter in the Myanmar market also cultivates their own medicinal plants. To produce high quality traditional medicine as well as to meet international standards, the company aligned its operations according to guidelines provided in the Declaration on Health Development in the South-East Asia Region in the 21st Century drafted by the World Health Organization (WHO) and the International Foundation for Organic Agriculture Movement (IFOAM). They also acquired various certifications such as the Myanmar Organic Agriculture Group in 2010, the Australian Certified Organic (ACO), and Organic certification for their production facilities in Yangon and Mandalay.

In 2017, there were reports of unregistered and sub-standard traditional medicine being sold in the market. This was discovered after the Department of Traditional Medicine conducted post-market surveillance, in collaboration with other relevant ministries, including the FDA. Small-scale manufacturers have difficulty in meeting the requirements of registration of indigenous medicine.

Honey and thanaka

Standards for honey and thanaka are currently in the development stage. The public sector and international NGOs are promoting the implementation of production standards such as Good Beekeeping Practices, GMP, and Hazard Analysis and Critical Control Point (HACCP) principles. Standards for honey are currently being developed under a project supported by UNIDO. The Trade Development Programme implemented a project on Food Safety and Sanitary and Phytosanitary Standards (SPS) from 2015 to 2017, supported the development of the National Residue Monitoring Plan (NRMP), which is a requirement for 3rd countries to export to the EU.

TABLE 8. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN MYANMAR

GAP	OPPORTUNITY
Human resources	
<ul style="list-style-type: none"> • Lack of qualified trainers and inspectors for Good Aquaculture Practice (GAQP), Good Agricultural Practice (GAP), Good Manufacturing Practice (GMP), and Good Hygiene Practice (GHP) based on international standards • Limited implementation of product surveillance programmes 	
Legal/ Policies	
<ul style="list-style-type: none"> • There is no specific office in charge of the development of standards for NTFPs, which fall under different sectors that are regulated by different ministries • Standards development for some NTFPs is mainly project-driven • Inadequate number of mutual recognition agreements • Unclear NTFP licensing process • Absence of effective traceability systems • Lack of national accreditation body 	<p>There is existing cooperation and technical backstopping with other ASEAN members e.g. DRI signed Memorandum of Understanding with Singapore Accreditation Council (SAC) in June 2017 to perform joint accreditation with MNAB, which will lead to the international recognition of its accreditation. This initiative is also done in other countries such as Vietnam and Thailand. Through the assistance of PTB (Germany), the accreditation body conducted Proficiency Testing Program for Laboratories Development with Indonesia Institute of Science</p>
GAP currently develops standards and protocols according to category instead of per product	Development of NTFP standards can draw from the experience in the implementation of the MTLAS and the MFCS for timber, and from GAP of the Department of Agriculture
<ul style="list-style-type: none"> • Many NTFPs are sourced from the wild, requiring different methods for product standardization and regulation on sustainability that requires research support • For those growing under the agroforestry model, there is no clear category, unless they were defined as NTFP from the beginning and depends whether agroforestry is done in farms or in forests. For example, elephant foot yam has been categorized as an agricultural product as it is widely cultivated now 	<ul style="list-style-type: none"> • Natural dye material cannot be standardized per se but through adjustments in recipes, colors can be standardized, and this requires support in research • Varied level of permits is required for the different products, depending on their source. Some NTFPs, when commercialized, transition into becoming an agricultural product
Infrastructure/ Technology	
<ul style="list-style-type: none"> • Testing laboratories that cater to NTFPs need to be upgraded. This includes equipment calibration, capacity building, technology transfer • Inadequate border testing 	<ul style="list-style-type: none"> • There is some cooperation with technologically more advanced countries like Japan and Singapore, which are also export destinations of some NTFP-based products. • UNIDO and GIZ have conducted various workshops on quality infrastructure.

<ul style="list-style-type: none"> • Current capacity of the SME Center is limited • Training is only able to reach 10% of all registered MSMEs for all sectors 	<ul style="list-style-type: none"> • Various INGOs support the development of the national quality infrastructure towards trade competitiveness, as well as value chain development of some key NTFPs: <ol style="list-style-type: none"> a) BIF on bamboo b) in Kayin State, SNV supported a study on cardamom c) SEARCA is researching on cardamom and rattan together with FRI
Information and Knowledge Management	
<ul style="list-style-type: none"> • Only a small portion of the research in the FRI is focused on NTFPs (The Forest Research Institute has 20 researches in 2-3 years, and only 1-2 are in NTFPs) • Weak link between research institutions and industry actors. • Research is currently done based on personal interest than at industry-level 	<ul style="list-style-type: none"> • There is a strong interest among the different stakeholders to know the situation of NTFP standards in the region. • An NTFP Sector Research Roadmap may be helpful to increase research in the field of NTFPs and strengthen link between the research and industry practice.
<ul style="list-style-type: none"> • Inadequate knowledge of quality requirements on the part of farmers and traders • Limited application of GMP, and many exporters are unable to comply with buyer requirements 	<ul style="list-style-type: none"> • Industry associations can offer support in the standards and quality development of their major products.
Funding	
<ul style="list-style-type: none"> • Limitations in budget and human resource capacity hinder the ability of some ministries to meet the requirements of ASEAN standards • Difficulty in meeting ASEAN regional standards in general e.g. private sector finds the requirements for ASEAN harmonized Occupational Safety Standards too high 	<p>There is already some awareness in the different ministries, which may help in allocating some budget for standards development. The NQSD annually holds a World Standard Day on October 14, when they conduct workshops.</p>

PHILIPPINES

The most commercially important NTFPs in the country are bamboo, split and unsplit rattan, almaciga resin, and elemi gum. In annual forestry reports, NTFPs included are Almaciga resin, anahaw leaves and poles, bamboo poles, buri midribs, nipa shingles, split rattan, unsplit rattan, Hingiw, diliman and other vines, and salago fiber.

The two most traded resins in the Philippines are *Almaciga* and *Manila Elemi*, making up 70% of the export values and 42% of export volumes for 2017. Almaciga (*Agathis philippinensis*) is a hard resin and is mainly used for paint, varnish and coating, Asphalt Production, and fireworks. It is mainly exported in raw form. Manila Elemi (*Cannarium ovatum*) is a soft, fragrant resin obtained from the trunk of three *Canarium* species: *Canarium ovatum*, *C. luzonicum*, and *C. asperum*. Its main content is Limonene and α -phellandrene.

Manila elemi is mainly used in higher value products such as perfumes. It is exported to France, Germany, Japan, Spain, Switzerland, and the United States.

Bamboo and rattan are among the top commercially used NTFPs and are used mainly in the furniture sector. In the past, the rattan furniture industry has mainly been export-oriented. In 2010 for instance, 85% of rattan furniture was exported, 10% was sold to domestic market, and 5% was sold to other exporters. However, decline in demand in the main export markets due to the recession in 2008 have led some furniture makers to close shop, while others decided to turn their focus to domestic market. The uncertainty of rattan supplies has also led furniture designers to turn to other raw materials.

The importance of bamboo, on the other hand, stems from its potential for growth. Bamboo has the fastest growth rate (15%) in the furniture industry. Seven rattan species are commercially used, with three dominant species. Around 40% of bamboo raw materials are used by the furniture and handicrafts industries, 25% for fish pens and housing construction, 10% for agriculture, and 25% for other purposes. The economic potential of bamboo has made it one of the NTFP priority sub-sectors. Various technologies have been developed to produce panels, boards, textiles and other products from bamboo. Executive Order 879 in 2010, creating the Philippine Bamboo Industry Development Council (PBIDC), has pushed for the development of the sector, especially engineered bamboo. One of the initial strategies was to secure the supply base of bamboo. Poles used in the industry come from both natural stands and plantations from public or private lands. In 2015, bamboo plantations covered 52,000 hectares. In 2018, an estimated 45 million were available for the industry. The 2nd cycle of the Bamboo Industry Development Program, expected to be implemented until 2025, projects to have at least 25 million culms available for the industry, with 42,000 hectares of bamboo plantations for culm production and 75 hectares for shoot production by 2030.

Salago is the fiber from the bark of a shrub (*Wikstroemia spp.* from Family Thymelaeaceae). The main source of salago is the wilderness around the vicinity of Mount Mayon, and Mindanao. It is mainly used for the manufacture of high-grade paper, such as paper currency, cheques and legal documents, especially in East Asian countries like Japan, South Korea and Taiwan. Mixed with other fibers, it is also used for handmade paper. In the Philippines, it is used to make strong ropes and strings, fishing lines and nets, clotheslines, sacks, textile fabrics, mosquito nets, bags, wallets and hats. In Japan, it is applied to the production of sliding doors (*shoji*), kimonos, and components for radios and microcomputers. Commercial production is concentrated in Central Visayas. The Philippine Fiber Industry Authority (PhilFIDA) is the main institution that supports the development of the salago industry, conducting research to improve cultivation, processing and marketing.

Abaca makes up 80% of fiber production, with plantations in 150,000 hectares. The Philippines supplies 87% of the demand in the international market, making the country a dominant global player. Abaca is used in three industries: pulp and paper (81%), cordage (17%), and fiber crafts (6.2%). Its fibers are applied to different products such as tea bags, sausage casing, electronic paper, capacitor paper used in mobile phones, adult and baby diapers, and sanitary napkins. These different uses require various properties such as tensile strength, busting property, absorbent property, and porosity. Abaca fiber is considered an agricultural product, but its potential for agro-forestry, as well as its export potential led to its inclusion in this study along with salago fibers.

Total documented exports of NTFPs in 2017 reached 984 Tons with a value of 1.3 Million USD. The figure represented 0.07% of the total forest-based product exports, which comprised 2.77% of total Philippine exports.

Latest trade volume of the five top NTFPs are found below.

NTFP	National Volume and Value of Trade (2017)
1 Elemi Gum	224 MT – USD 636,000
2 Almaciga	192 MT – USD 269,000
3 Rattan Poles	240 MT — USD 227,000
4 Salago (Fibers) / Abaca	290 MT – USD 203,000 / 76,000 MT / PHP 7 Billion
5 Bamboo	39 MT – USD 13,000

Source: 2017 Philippine Forestry Statistics / PhilFida Interview 2019

Overview of Philippine standards that cover NTFPs

The Bureau of Product Standards (BPS), under the Department of Trade and Industry (DTI), is the government agency designated to develop, promulgate, implement and promote standardization activities. Its mandate comes from Republic Act 4109 (Charter of BPS) approved in 1964 and Republic Act 7394 (Consumer Act of the Philippines) approved in 1992. It has four main divisions: Standards Conformity, Standards Development, Product Testing, and Standards Mainstreaming. Their functions and services are summarized here:

Standards Conformity Division (SCD)	Standards Development Division (SDD)
<ul style="list-style-type: none"> - Establishes consumer product quality and safety technical regulations based on Philippine National Standards (PNS). - Operates the BPS Product Certification Scheme to regulate the quality and safety of products offered in the Philippine market by implementing the Philippine Standard (PS) Quality and/or Safety Certification Mark Licensing Scheme for manufacturers and the Import Commodity Clearance (ICC) Certification Scheme for imported products. - Promulgates rules and regulations necessary for the implementation of the BPS Product Certification Scheme - Assists in market surveillance and monitoring activities of the DTI. 	<ul style="list-style-type: none"> - Develops Philippine National Standards (PNS) for all products of the Philippines for which no standards have as yet been fixed by law, executive order, rules and regulations and which products are not covered by the standardization activities of other government agencies. - Adopts relevant international standards as Philippine National Standards (PNS). - Participates in the standardization activities of International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC). - Recognizes and provides guidance to Standards Development Organizations (SDO) to streamline all standards development activities in the country.
Product Testing Division (PTD)	Standards Mainstreaming Division (SMD)
<ul style="list-style-type: none"> - Serves as a BPS-Recognized product testing facility where importers may have their sample product assessed in compliance with the Import Commodity Clearance (ICC) Certification Scheme. - Provides support to standards development by extending their services for developmental tests on products for which standards are being developed/formulated. 	<ul style="list-style-type: none"> - Maintains the Standards Data Center (SDC) which serves as the Official Repository of Philippine National Standards (PNS). - Functions as the National Enquiry Point (NEP) and the National Notification Authority (NNA) for the World Trade Organization- Maintains and updates the Standards and Conformance Portal Website and Social Media Accounts. - Coordinates the participation of the Philippines to bilateral or multilateral engagements - Promotes the BPS' programs and services through information campaigns and the media

Source: BPS DTI Website

The bureau collaborates with the regional offices of the DTI to conduct and strengthen monitoring and enforcement program. It formulates Philippine National Standards (PNS) or adopts relevant

international standards. The bureau operates a BPS Testing Center to provide companies with 3rd party testing to verify conformity to PNS and to comply with requirements of Import Commodity Clearance (ICC) product certification schemes. The BPS Testing Center is accredited to ISO/IEC 17025 as declared by the Singapore Accreditation Council. The BPS website has a Standards and Conformance Portal that integrates both the catalogue of published standards, technical regulations/guidelines, and the bureau's technical programme on standards development. The website enables stakeholders to provide inputs on draft standards and proposed technical regulations from WTO members. Product standards in the Philippines are not mandatory, so BPS relies on voluntary acceptance by stakeholders.

The Philippine Accreditation Office (PAO) is a separate bureau established on 11 April 2006 to carry out independent accreditation of conformity assessment bodies in the Philippines.

The Forest Products Research and Development Institute (FPRDI) was created through Executive Order No. 784 in 1982 to provide technical support for the development of NTFP-related standards. It is currently under the Department of Science and Technology (DOST), and serves as the center for research and applied technologies on the utilization of wood and non-wood products.

The Philippine Bamboo Industry Development Council (PBIDC) was created through Executive Order 879 in 2010 to provide policy and program directions for the bamboo industry. The issuance mandates the use of indigenous material for at least 25% of desk and other furniture requirements of public elementary and secondary schools, and the prioritization of its use in furniture, fixtures and other construction requirements of government facilities. The executive order also has provisions on the reforestation of at least 50,000 hectares by 2020, and the inclusion of bamboo in the National Greening Program. Memorandum Circular No. 30 of 2012 directed the full implementation of the Philippine Bamboo Industry Program.

The PhilFIDA prescribes the standards and oversees the development of the abaca industry. The agency has a clear mandate and maintains a laboratory specializing in the testing of abaca and its products. Although PhilFIDA has a monitoring mechanism, lack of inter-institutional coordination leads to overlapping and conflicting initiatives that may be detrimental to the industry. For example, the DOST's research arm introduced a fast-growing abaca seedling that produced substandard fibers, according to a PhilFIDA study. The spread of the seedling can also destroy native species that has gained prominence for the Philippines in the international market.

Among the standards frameworks and policies related to NTFPs are the following:

The **2003 Master Plan Forestry Development** (MPFD) has provisions for the development of non-wood forest-based industries such as rattan, bamboo and lesser-used species of NTFPs. It contains strategies and a proposed program to ensure sustainable supply of raw materials, improve harvesting and utilization, and the establish micro/cottage industries.

Executive Order No. 318, Promoting Sustainable Forest Management in the Philippines, approved in 2004, encourages the development of NTFPs in public forest lands, private lands, and home forest gardens to enhance economic and ecological benefits.

The Philippine Master Plan for a Climate Resilient Forestry Development of 2016 has provisions on the development of Forest Certification for the promotion of sustainable management of forests and competitiveness of forest-based products in the international market. The system will include criteria and indicators developed by the Forest Management Bureau (FMB), and the creation of a National Forest Certification Board. The plan also stipulated the need to standardize and streamline permitting processes in order to encourage investment in the forestry sector. This

means simplifying requirements and procedures, and decentralizing approvals for securing tenure instruments and harvesting permits. The Forestry Development Center (FDC) would be tapped to undertake studies and harmonize forestry policies.

The DTI and BPS created Technical Committee 78 on Forest and Forest Products (BPS/TC 78) to develop and adopt relevant standards for forest and forest products, including the **Philippine Forest Certification Systems** (PFCS). Standards may include a Chain of Custody system, which tracks the transport of material from forest to the final destination. It will help in the prevention of illegal logging and collection of NTFPs, resolve issues of security of tenure, promote sustainable use of resources, and help boost the local forest industry. The BPS/TC 78 started to draft a standard on CoC in 2017. The new Sustainable Forest Management policy could also address these challenges.

TABLE 9. POLICIES ON NTFPS IN THE PHILIPPINES

Policy	Title/Content
Forestry Administrative Order (FAO) No. 11 (1970)	Revised Forestry License Regulations Definition of NTFPs as ordinary and minor forest products, requirements for permitting, types of licenses
Presidential Decree 705	The Forestry Reform Code of the Philippines States that any utilization of forest products requires a permit
Department Administrative Order (DAO) No. 80 / December 28, 1987	Regulations Governing the Measurement, Assessment and Payment of Forest Charges on Timber and other Forest Products
DAO No. 7 / February 17, 1994	Revised Guidelines Governing the Issuance of Certificate of Origin for Logs, Timber, Lumber and NTFPs.
DAO No. 26 / September 10, 1996	Revised Guidelines Governing the Harvest and Transport of Planted Trees and Non-Timber Products within Social Forestry Areas

Awareness of NTFP standards among stakeholders

Most industry players and producers only become aware of NTFP standards if these are needed for specific products, or to comply with the needs of the market. For example, the Roadmap for Philippine Furniture Industry positions its products as “*Philippine furniture is made using the finest sustainably-sourced raw materials such as hard wood, buri, rattan, bamboo, metal, and other indigenous products.*” It highlights the need for a sustainable base of raw materials. Part of its product development strategy is to support capacity building in order to establish environment-friendly sources of raw materials. However, a study on rattan in 2012 determined that the DENR does not provide the furniture and handicrafts industries with information on legitimate sources of raw materials, and that NTFP Plantations are usually not registered with the DENR.

Smallholders have limited knowledge on standards, and their main source of information is mainly the buyers or NTFP-related projects. Producer groups and manufacturing enterprises are mostly small-scale. For example, there are only about 10 small companies producing engineered bamboo, usually on order basis. Because of the limited demand, producers are not keen on investing in new technology to raise the standards of products. Raw NTFPs are largely dependent on the classification of quality control of traders. If not for project support, NTFP collectors do not have other sources of information on product standards besides the traders. In the case of Almaciga collectors in Palawan, they have been working with NTFP-EP Philippines to understand the standards required by the international market.

Facilities, technology, and human resource development programs

Various institutions are able to provide research, testing, and services for different NTFPs.

The Philippine Textile Research Institute (PTRI) and PhilFIDA laboratories provide physical evaluation services for abaca and other fibers through regional offices of government agencies. Testing and calibration laboratories are compliant with ISO/IEC/7025 guidelines.

The DOST-FPRDI has been providing support to wood and NTFP sectors for over 61 years. The Physics and Mechanics Testing Laboratory looks at the physical and strength qualities of NTFPs such as bamboo, rattan, and vines. The materials are tested against the requirements provided by buyers, and according to testing methods of the International Organization for Standards, the American Society for Testing and Materials (ASTM), and the Philippine National Standards (PNS). The laboratory served 248 clients in 2017. The FPRDI also provides testing for finished products through its two Furniture Testing Centers: one in Los Baños, Laguna and one in Lahug, Cebu. The institute is also able to support companies in increasing productivity and standardizing products by developing appropriate technology. One example is the hot press machine for engineered bamboo, launched in 2018. The machine was expected to increase productivity of the small manufacturing companies. The institute also conducted research on the seedling production and plantation establishment for rattan (1995-1998) and bamboo (1987-1995) for *Kawayan tinik*, *Kawayan kiling*, Giant bamboo and Bolo.

Another DOST bureau that provides funding for research, development and extension programs on various NTFPs is the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development PCAARRD. Its Bamboo Industry Development Program aims to mainstream engineered-bamboo as the sector's flagship product. The program includes plantation establishment, distribution and marketing, engineering and processing, standards setting and quality control, model enterprise testing and development of information, communication and education materials. The program has published Manuals on nursery and plantation establishment, harvesting, processing, and policies on engineered bamboo.

The Department of Trade and Industry (DTI) supports producer groups through the Shared Service Facilities (SSF) Program. It provides training, technology transfer, access to raw materials, bamboo expositions, marketing assistance, research and development on bamboo, and financing in the form of loan assistance. This is part of DTI's cluster development approach that targets MSMEs. The facility's equipment and tools are meant to be shared by members of the cooperators, with the aim of improving quality, production output, and operations.

Among the DTI agencies that provide standards information and compliance support services are the Bureau of Export Trade Promotions, Foreign Trade Service Corps, and Board of Investments. Market information includes product features, prices, buyers and distributors, relevant standards and specifications, and related legal requirements and procedures.

The Philippine Trade Training Center is the export and MSME training arm of DTI. It provides capacity-building opportunities including seminars on international standards, post-training advisory and counseling services, and customized training for firms. However, the reach of the programs is limited geographically and in number of SMEs. To address this problem, the center is pushing for accreditation of a local pool of trainers to facilitate access to more participants nationwide. There was also a program to link SMEs with standards and technology development in universities, R&D labs and incubators.

NTFP Standards and Compliance

The following table below provides an overview of NTFP standards in the Philippines:

TABLE 10. STATUS OF NTFP STANDARDS IN THE PHILIPPINES

Products	Standards/Systems (3 rd party certification/PG, etc.) Used	Type of Standard	Results / Observation
1. Almaciga	Community and buyer co-developed grading standard	Quality	Developed through support of NGO and main buyer
	Techniques in Tapping almaciga (FPRDI)	Sustainability	Developed by FPRDI No monitoring whether it is applied or not
2. Manila Elemi	Improved Tapping Techniques in Canarium Species	Sustainability, quality	Developed by FPRDI No monitoring whether it is applied or not
	Physico-chemical properties of Industrial Technology Development Institute of DOST	Quality	
3. Rattan	DAO No. 4 series of 198 (Permitting, Management)	Legality	Potential for corruption, may be difficult for smallholders to comply
	Philippine National Standard 229-1999 (Grading of Rattan Poles and by-products)	Quality	Not applied / Depends on the acceptance of the stakeholders
	Seedling production and plantation establishment (FPRDI)	Production	No information gathered on application
4. Bamboo	Permitting Policies for collection and transport of NTFPs	Legality	Can be confusing, found to be not conducive to industry development; potential for corruption
	PNS 2090:2012 Philippine National Standard for engineered bamboo for school furniture	Quality	limited use due to small demand, small-scale production and low supply of bamboo
	DAO 59 series of 1993, Certificate of Verification (CoV)		Experts find it incompatible with properties of fast-growing bamboo, breeds bureaucracy.
	Seedling production and plantation establishment (FPRDI)	Production	No information gathered on application
5.a Salago	Salago TechnoGuide Edition 2016	Quality	
5.b. Abaca	Philippine National Standards Abaca Fiber – Grading and Classification PNS/BAFS 181:2016	Quality	Monitored by regional officers of PhilFIDA / Strict in enforcing quality for export products
	PNS/BAFS 180:2016 Grading and Classification of Hand-Stripped and Spindle/Machine – Stripped Abaca Fiber	Quality	
	PNS 266:2019 Non-food crops – Abaca – Code of Good Agricultural Practices	Processes, quality	

Resin: Almaciga and Elemi

There are currently no national standards for the quality of gums and resins. Standards followed are those usually set by buyers, mainly based on market requirements. Copals are graded by their hardness, color and size of the pieces as well as the state of cleanliness. Pale, clean pieces, with good solubility in alcohol, are the best quality. In practice, it is up to the trader to assess the condition of the pieces. This has put some suppliers at a disadvantage, as prices are dependent on quality. Without clear bases of standards, suppliers are at the mercy of the traders. In more recent years, through the support of an NGO, a community-based enterprise in Palawan trading *almaciga* co-developed a grading standard and system with their main buyer. Documented market-based grading standards for *almaciga* in two provinces are summarized here.

Prices of graded resin in Palawan and Samar (2003)		
Location	Classification	Price (Philippine Peso)
a. Palawan	Extra White	9.00/kg
	White Grade	7.00/kg
	Semi White	6.00/kg
	Assorted	5.00/kg
	“Bunga-bunga”	12.00/kg
b. Samar	White	7.00/kg
	Black/powdered	5.00/kg

Source: PCAARRD-DOST Website

For elemi, the quality is also based on the grading standard of buyers and physico-chemical evaluation provided by the Industrial Technology Development Institute of DOST. According to an exporter, the best grades of Manila Elemi Gum are soft, opaque, greenish or yellowish white sticky masses with fragrant resinous odor and burns with smoky flame.

Two DOST Bureaus, FPRDI and PCAARRD, have provided processing guidelines to improve the quality of elemi and *almaciga*. The guide, *Techniques in Tapping almaciga (Agathis philippinensis Warb.) for sustained Productivity of the Tree: The Philippine Experience* was published by FPRDI in 1992. It covers the biological considerations in *almaciga* tapping to promote sustained resin production and provides improved techniques. With support from the ITTO, the FPRDI also developed a guide on Improved Tapping Techniques in Canarium Species (2009). The proper tapping techniques are meant to help prolong the life of the tree and increase production of quality resin, which translates to increased income of tappers. The proper technique includes the process, tools, and materials for improved tapping. Meanwhile, the publication “The Philippine Recommends for Pili,” PCAARRD Philippines Recommend Series No. 81, 1997 provides guidelines on the latest technology, production, harvesting, utilization and marketing of Pili, a type of gum. It includes topics such as plant production, pest management, fertilizers, and post-harvest handling.

Rattan and bamboo

The Department of Environment and Natural Resources (DENR) issued Department Administrative Order (DAO) No. 4 in 1989 governing the management of rattan resources. It prescribes where rattan can be harvested and planted, who may qualify to obtain rattan-cutting permits, procedures for awarding of the permit, the maximum area that can be granted to certain types of permit holders, the privileges and obligations of the permit holders, rattan processing and utilization. The department order also covers the establishment and development of rattan plantations including

requirements, procedures for accessing lands, and contributions to a trust fund that can be used for the re-planting of rattan. Rattan cutting-permit holders are required to plant rattan seedlings for every lineal meter of rattan pole cut, and to submit an annual cutting and replanting plan.

In 1999, the government approved a **national standard (PNS 229-1999) for rattan poles** and its by-products.

Unlike rattan, there are no guidelines in the collection and harvesting of bamboo in public forestlands. The MPFD 2003 recommended the development of a set of guidelines, similar to DAO No. 4 for rattan, for bamboo collection and utilization. Policies that apply to other NTFPs are the bases for bamboo harvest and utilization. Various DAOs designate areas for the plantations of bamboo and other NTFPs:

- DAO 1991-42 allows for the production of bamboo in industrial forest plantations
- DAO 1997-04 requires the planting of bamboo and other NTFPs in lands under the Industrial Forest Management Programs for the purpose of supporting processing and manufacturing facilities
- DAO 1999-53 designates lands specifically identified for enrichment planting or for use as plantations of rattan and bamboo, including both sides of major rivers and streams
- DAO 1991-31 stipulates that areas where slopes are greater than 50%, provided they are suitable for development as production forest, can be planted with bamboo through enrichment planting; forestlands under a Socialized Integrated Forest Management Agreement (SIFMA) are also eligible for planting bamboo in no less than 60% of the area, with the added incentive of allowing SIFMA holders to own the products

The DENR's Administrative Order 59 of 1993 prescribes the Certificate of Verification (CoV) or Certificate of Non-Timber Forest Products Origin (CNFPO) as a legal document to be used by traders and shippers for the movement of bamboo from point of origin to destination. It serves as a proof of the legality of source. As a control mechanism against the unauthorized movement and disposition of illegal bamboo products, however, the use of CoV is inconsistent with the bamboo plant's persistence and ability to grow and expand wherever it is planted. The ecological nature of bamboo as a grass is that it grows more as it is cut. In a study commissioned by the DOST's PCAARRD, researchers found that the CoV does not provide the desired protection of plant resources, nor does it facilitate trade of the bamboo products. Instead, the requirement of CoV for harvesters of bamboo "*dampens private-sector investment, discourages planting of bamboo and breeds bureaucracy.*" The study further reveals that the government does not have enough basis and lacks coordination in implementing bamboo policies, particularly the issuance of CoV. There are inconsistencies in the implementation of application procedures and fees. The study found that where the CoV is strictly implemented, some respondents report that authorities take advantage by collecting higher fees as payment for the release of CoV. In some cases, bamboo traders who had CoV certificates still had to provide token amounts at checkpoints to avoid delays in their shipments.

The government's EO 879 led to the development of **PNS 2090:2012, which specifies the requirements for engineered bamboo for school furniture** and covers materials, construction, finish, strength, durability, safety, and stability. School furniture includes tablet chairs, tables and desks. The bamboo standard also requires the following information to be marked on the furniture: Registered trade name, date of manufacture, complete name and address of manufacturer, distributor or importer and the words, "Made in the Philippines" or country of origin if imported. The committee that developed the standard includes representatives from the Chamber of Furniture Industry of the Philippines, Private Sector, Procurement Service/DBM, Product Development and Design Center of the Philippines, Department of Education, FPRDI, Cottage Industry Training Center and the BPS.

The BPS formed a technical committee, BPS TC 76, to develop standards for bamboo and rattan and products derived from them. The Technical Committee has developed the standards for engineered bamboo to serve as guide for domestic manufacturers to make them competitive with imported products, mostly from China. It also represents the Philippines in the ISO TC 296 (Bamboo and Rattan that covers the standardization of these products and derived materials including terminology, classification, specification, test methods, and quality requirements. Standards currently under development are WD 21625 – Terminology of Bamboo Products, WD 21626 – Bamboo Charcoal, and WD 21629 – Bamboo Floorings. The Philippines is one of the 18 country members in the committee.

Fibers: Salago and Abaca

The PhilFIDA developed a Salago TechnoGuide Edition 2016 that contains information on Botanical Description, Cultural Management, Insect Pests and Diseases, Grading and Classification, Fiber Utilization, Maturity and Harvesting and Methods of Fiber Extraction. The guide is easily downloadable from the internet.

Abaca fibers are the most developed among NTFPs, with three National Standards (see table). Abaca is almost unique to the Philippines, which is the main supplier in the international market. PhilFIDA has been working to keep that market edge through the development of standards and production guidelines. It has developed the Abaca Sustainability Manual, PhilFIDA Farmer's Manual on Abaca Production, Abaca Techno guide, and other relevant national and private standards intended for the production and post-harvest handling of abaca fiber. Other process standards and certifications applied to abaca are stipulated in the FIDA Revised Administrative Order No. 1 of 1999 or the Revised Rules and Regulations to Govern Licensing, Baling, Tagging, Marking, Inspection, Certification and Shipment of Philippine Commercial Fibers. Monitoring of compliance is done through regional personnel who check products before they are exported.

TABLE 11. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN THE PHILIPPINES

GAP	OPPORTUNITY
Human resource	
<ul style="list-style-type: none"> - There is the problem of ageing experts, and while there is interest among younger academics, there are not enough employment opportunities. - Accessibility of experts from different parts of the archipelago is also challenging due to budget constraints, limiting the experts to those just who are geographically near the BPS. 	
Legal/ Policies	
<ul style="list-style-type: none"> • Standards development is project-based, and the dissemination, implementation, and monitoring of compliance is unclear once the project or program ends. • There is no defined institution to monitor compliance, except for abaca. FPRDI and PTRI have mandates for research, but do not have regulatory powers. 	<ul style="list-style-type: none"> • Policies that clearly promote the development of the NTFP sector provide an opportunity to the sector stakeholders. There just needs to be a concerted effort to develop NTFP standards for different products and industries. • Technical support is available from institutions such as FPRDI,

	PCAARRD, DOST, PTRI, PhilFIDA
Infrastructure/ Technology	
<ul style="list-style-type: none"> - As NTFPs fall under different sectors, it is hard to identify one main institution that oversees the development of standards and monitor compliance. Each bureau develops their own standards, and there is lack of coordination with the BPS. - There seems to be overlapping responsibilities and fragmented efforts to promote and develop NTFPs. There are also cases of conflicting initiatives e.g. PhilFIDA and DOST - NTFP sectors face weak and uncoordinated development. In the case of bamboo, there is a lack of supply of bamboo poles as raw materials for finished product due to lack of coordinated action. In 2015, annual deficit was at 20 million poles. There is a lack of high-tech facilities and machineries in processing, and lack of market information. The quality of products is also considered as substandard because of poor quality of raw materials, lack of appropriate machinery, lack of highly skilled technicians, and poor product designs. 	<ul style="list-style-type: none"> - Business development support from DTI and initiatives to support MSMEs development can be tapped to strengthen product quality and production standards in the NTFP Sector - Shared Service Facilities that provide machinery, equipment, tools, systems, accessories and other auxiliary items skills and knowledge can become the base of NTFP standards dissemination and monitoring
Information and Knowledge Management	
<ul style="list-style-type: none"> - Research has not been applied to industry development. In the case of bamboo, over 93 R&D projects have been completed over the years. 	<ul style="list-style-type: none"> - Encourage adoption of guides including identification manuals, processing properties (i.e. pulping, veneering, drying, preservation, lamination, bleaching, dyeing, finishing), and product development (pulp and paper, resin-bonded bamboo mat board, cement-bonded board, design and fabrication of equipment like charcoal kiln, bamboo kiln dryer)
Funding	
Limited budget to hire enough personnel	

VIETNAM

The most important Vietnamese NTFPs are rattan, bamboo, resin, essential oils, medicines, spices, mushrooms, and honey, according to the Food and Agriculture Organization. The NTFP Research Center divides the top NTFPs into six groups:

- (1) Rattan and Bamboo
- (2) Food Products including mushrooms, fruits, vegetables, leaves
- (3) Resin and Oil with cinnamon, cardamom, star anise as the key products
- (4) Medicinal Plants
- (5) Products of animal origin (shellac, honey, others)
- (6) Plants such as bonsai, orchids, leaves, etc.

Spices and oils derived from them are considered to be the most commercially important products, followed by rattan and bamboo for crafts and construction, and honey. The following is a summary of NTFP trade in Vietnam:

NTFP	Value of Trade
1. Spices/Oil	USD 190 Million
Cinnamon	(USD 80 Million)
Star Anise	(USD 60 Million)
Cardamom	(USD 50 Million)
2 Rattan and Bamboo Handicrafts	USD 150 Million
3 Pine Resin	USD 100 Million
4 Medicinal Plants	USD 100 Million (Domestic Trade as of Dec 2016) *
5 Honey	55,000 MT – USD 65 Million (exports)**

Source: NTFP Research Center (Interview March 2019)

*ITC Website Dec 2016

**worldexports.com

Vietnam has become one of the top exporters of spices from 2011 to 2015, along with India and China, mainly due to pepper. Other traded products were anise or badian, caraway, cardamoms, ginger and cumin, altogether making up 63% of global spices trade during that period. The northern mountainous region is the main spice-producing area, with various products cultivated and collected from forests contributing to the livelihoods of over 80,000 households. Twenty export companies, 100 traders, and 500 small collectors are also engaged in the spice trade. Main challenges in trade include “high competition, limited end-markets, and undifferentiated demand regarding quality of production and processing,” which led to unsustainable agricultural practices to intensify production. Producers sold harvest at low and volatile prices to a few buyers, despite demand from higher value markets. For example, China purchases 95% of Vietnam’s Cassia essential oil. For star anise, limitations in selling high-quality oils include poor drying and chemical contamination, usually at the production or collector levels of the value chain.

Bamboo and rattan are mainly exported in the form of handicrafts and furniture. The production of handicrafts has been considered to potentially play an important role in poverty alleviation and pro-poor growth, particularly in rural and remote regions where there is relative abundance of raw materials. Vietnam has over 1,000 bamboo and rattan handicraft trade villages, producing 5.8% of global exports. The bamboo sector is said to employ around 10 million people, producing a range of finished products from paper and pulp to bamboo shoots. Annual bamboo production was estimated at 250,000 tonnes. Pure natural bamboo forests extend almost 300,000 hectares while mixed tree and bamboo natural forests cover 1.1 million hectares. Bamboo plantations cover 70,000 hectares. However, producers and exporters of furniture and handicrafts face the threat of shortage of bamboo and rattan. There is a serious need to preserve and cultivate the sources. Prices increase by the year and Vietnam already imports bamboo and rattan from China, Laos, and Indonesia. This has led to the approval of the strategy for development of NTFP up to 2015, in which bamboo and rattan are key components.

Medicinal plants are supplied to the domestic market, with up to 30% of patients receiving both traditional and modern medicine as part of the national healthcare system. About 3,800 medicinal plants are used as medicine. Thousands of tons of raw medicinal materials are collected from wild plants. Around 2016, however, Vietnam was reported to be importing over 80% of the raw materials it uses for medicine. Illegal trade of medicinal plants collected from the wild, mainly to China, is still a problem and is considered as the main reason for species over-exploitation. Various international NGO-supported projects have worked to expand the trade of natural ingredients into

international markets, promoting Biotrade practices, or the trade of natural ingredients in the country, whether harvested from the wild or cultivated. The projects promoted the international recognition of Vietnam as a key supplier of biodiversity-derived natural ingredient products, sourced, processed and traded in compliance with CBD Objectives and BioTrade Principles and Criteria. BioTrade in Vietnam focuses on the value chains for collection, cultivation, processing and commercialization of medicinal and aromatic plants. These are composed of herbal medicines and dietary supplements related to medicinal and aromatic plant formulations, functional food and derived products, with most of the sales mainly in the domestic market, which have registered an annual 30% growth rate. Medicinal plants used in traditional medicine or oriental medicine contributes significantly to livelihood options for Vietnamese in the urban and rural areas.

Honey is commercially important to Vietnam, which is one of the top exporters in Southeast Asia. In 2018, Vietnam ranked 6th in the world in terms of volume at 42,778 tons, but only 12th in terms of value at USD 67.6 Million of honey exports. The main destination of Vietnamese honey is the US, with 89% of export value in 2017, and up to 90-95% of export value in the last five years. Vietnam is one of the Southeast Asian countries that exports honey to the EU, which approved Vietnam's residue control measures on fresh animal products in 2013. Vietnamese honey is mainly exported in bulk and are therefore sold at low prices. Some entrepreneurs have made efforts to differentiate their products through branding, or through the use of Geographical Indication marks.

Overview of Standards and Quality Infrastructure

The Law on Standards and Technical Regulations is the main policy for standardization in Vietnam. Law No. 68/2006/QH11, promulgated on June 29, 2006, provides for the formulation, announcement and application of standards and technical regulations, as well as the assessment of conformity. A standard is defined as regulation on technical characteristics and management requirements used for classifying and appraising products, goods, services, processes, the environment and other objects in socio-economic activities with a view to improving the quality and effectiveness of these objects. A standard shall be published in written form by an organization for voluntary application. On the other hand, technical regulation refers to the limits of characteristics and management requirements which products, goods, services, processes, the environment and other objects in socio-economic activities must comply with in order to ensure safety, hygiene and human health, to protect animals, plants and the environment, to safeguard national interests and security, consumer interests, and other essential requirements. A technical regulation shall be promulgated in written form by a competent state agency for mandatory application.

Standards and technical regulations were simplified to two levels:

- national standards (TCVNs) and organizational standards (TCCSs)
- national technical regulations (QCVNs) and local technical regulations (QCDPs)

The Ministry of Science and Technology (MOST) is the agency responsible for issuing and managing national standards, while line ministries are responsible for developing national technical standards. Decision No. 28/2012/QD-BKHCN, dated 12 December 2012 issued by MOST provides guidance on declaration and assessment system of conformity to standards and technical regulations.

The MOST's Directorate for Standards, Metrology, and Quality (STAMEQ) is the country's national standards body. It is the focal point under WTO Agreement on Technical Barriers to Trade. STAMEQ is responsible for advising the government on issues in the fields of standardization, metrology, and quality management, as well as representing Vietnam in international and regional organizations. The main activities of the agency are as follows:

- Prepare rules and regulations on standardization, metrology and quality management and submit them to the appropriate authorities for approval.
- Conduct studies on standardization, metrology, and quality management.
- Organize the supervision and implementation of approved rules and regulations.
- Establish an organizational system on standardization, metrology, and quality management and then to provide methodological guidance for these activities.
- Organize the formulation of national standards and maintain national metrology standards.
- Develop policies and management documents on conformance activities: accreditation; certification, testing, and inspection.
- Provide product quality and system certifications.
- Implement state supervision on quality of goods and measurements.
- Carry out training and information activities related to standardization, metrology, and quality management.

The Vietnam Standards and Quality Institute (VSQI) is the subsidiary of STAMEQ and is responsible for organizing national technical committee (TCVN/TC) activities - developing, publishing, and issuing national standards and providing other related services. It coordinates with relevant domestic ministries/agencies, as well as international and foreign national standardization organizations.

Standards Frameworks and Policies related to NTFPs

The Law on Forestry 2019 has provisions on standards development of national standards and technical regulation on forestry:

- Chapter X. Science and Technology and International Cooperation in Forestry, Article 96. Science and Technology in Forestry, Clause 6 mandates the development and completion of national standards and technical regulation on forestry.
- Chapter XI State Management of Forestry and Forest Rangers, Section 1, State Management of Forestry Article 101 states the management responsibilities for forestry of Government, ministries and ministerial authorities; clause 2, the Ministry of Agriculture and Rural Development is designated to act as the focal point to assist the Government in state management of forestry and to carry out activities in relation to standards development including:
 - develop national standards and issue national technical regulations or economic-technical norms for forestry;
 - direct, instruct and inspect implementation of forest management regulations, policies on management and protection of species of endangered/rare forest plants and animals
 - manage issuance of certificates of sustainable forest management and forest valuation;
 - manage forest products processing and trade in accordance with regulations of law;
 - conduct scientific research and apply high, state of the art and new technology in forestry;
 - provide training and refresher courses for forest personnel.

Decree 38 on Sustainable Forest Management dated 14 September 2016 also contains regulations for NTFPs. The Vietnam Administration for Forest (VNFOREST) conducted a review of the decree as part of the process of developing a national standard. The review assessed compliance with the existing regulation and identified challenges and opportunities for sustainable forest management. This resulted in a new “circular on sustainable forest management” that replaced Decree 38 in January 2019. The new circular included changes in the regulatory environment, which are expected to contribute to the successful implementation of Vietnam’s national forest certification

standard. The new circular includes detailed guidance on management plans for distinct forest types, including for households, communes, or individuals managing multiple forest types.

The Vietnam Forestry Strategy 2006-2020 includes provisions for the conservation and development of NTFPs. The designated executing agency is MARD, in collaboration with the Ministry of Science and Technology (MOST), Ministry of Health, PPCs. The total cultivated area of NTFPs is 379,000 hectares, mainly in the North Central Region, Central Highlands and North East Region. The strategy proposed the following stipulations in relation to standards and certification:

- ... Efforts will be made to get forest certification of 30% of the production forest areas. (Those areas will be assessed and issued certification for meeting sustainable forest management standards.)
- Establish national standards for sustainable forest management and Chain of Custody (CoC);
- Develop national standards for wood and NTFP products, to meet requirements of main export markets.

Law 1288/QĐ-TTg Ha Noi promulgated on 01 October 2018 and entitles The Approval for Sustainable Forest Management and Forest Certification is the legal framework that promotes Forest certification in Vietnam. The law's main purpose is to meet the requirements of domestic and international markets for legal timber origin. It stipulates the task of the development of legal documents and guidelines for sustainable forest management including a circular guiding the contents and procedures for developing, appraising, and approving sustainable forest management plans and forest certification. Vietnam's standards are in line with the standards of the world forest certification organizations. The law also has provisions on the capacity building, promotion and inspection and assessments of forest owners, development of data sets and maps on SFM and forest certification. It also stipulates the establishment of the national forest certification system including agencies and units: National Forest Certification Bureau/Body (NGB); consultancy organisations on forest certification and assessment (CB), and a number of relevant agencies to ensure that the implementation of sustainable forest certification practices in Vietnam align with the international forest certification system's regulations and practices. In line with this, the Vietnamese government is developing a more economical, speedy, and domestic forest management certification.

The Ministry of Agriculture and Rural Development is the focal point for sustainable forest management and the national forest certification. It oversees coordination and cooperation with other relevant ministries, such as:

- the Ministry of Science and Technology that shall promulgate standards for forest certification and assessment organizations in accordance with current national and international regulations
- the Ministry of Natural Resources and Environment that shall organize activities to raise awareness and build capacity for biodiversity conservation in developing a sustainable forest management plan.
- the People's Committee of Provinces that shall coordinate the formulation of sustainable forest management projects in their respective localities.

Decision No. 1976/QĐ-TTg is the master plan on medicinal plant development through 2020. The law stipulates the development of concentrated medicinal plant cultivation zones suitable to each ecological region and with a scale that meets market demand of up to 60 species by 2020, and 120 by 2030, according to principles and standards of good agricultural and collection practices for medicinal plants of the World Health Organization (GACP-WHO). The policy aims for the increase of standardized raw materials (medicinal plant extract, essential oil and powder) in medicinal

factories and development of high-quality products with attention to environmental protection, application of GACP-WHO technical processes, and non-polluting technologies. It also stipulates the upgrading and comprehensive renovation of the infrastructure, technology and equipment of medicinal plant processing and preservation center, with the aim of at least one in each region.

Awareness of NTFP standards among stakeholders

In the government sector, there is already some awareness on the need for NTFP standards. This is reflected in the efforts to develop standards for key NTFPs by the Ministry of Science and Technology and the NTFP Research Center. However, there is still a long way to go and gaps to fill. For example, government agencies that have direct mandate regarding BioTrade value chain activities were found to have insufficient awareness of the concept.

Standards implementation for some NTFPs and the FSC for bamboo are still in the nascent stage. There is still a need to disseminate information on seedlings standards that were just completed, and bamboo stakeholders are still undergoing training and capacity building as part of the ongoing project on FSC Bamboo Certification.

Unlike state-owned or big companies, knowledge of product or industry standards is limited for small companies and farmer groups. There is limited information dissemination on standards. Also, companies need to purchase copies of standards for their use. Awareness on standard requirements is based on the demand of buyers. Companies focus mainly on meeting buyers' requirements.

Facilities, technology, human resource development programs

The NTFP Research Center is the main institution working on standards for NTFP. The center and its two field offices have been working on the development of standards for several NTFPs on seedling propagation, cultivation, harvesting and processing and products quality. Standards development can take one to two years, with a budget of 10,000 to 15,000 USD. The center provides ISO-certified laboratory testing for essential oils for star anise for export companies.

There are testing laboratories for honey, but international recognition of certificates is limited. Honey exporters prefer to have their testing done in Europe, where tests are up-to-date and also due to the preference of buyers. There are both local and foreign-owned testing laboratories in the country; however, some certificates are not accepted by some buyers. Testing in foreign-owned companies increases costs for exporters.

Vietnamese authorities have a counterfeit combating programme, with samples getting tested at the laboratories of the Institute of Drug Quality Control (IDQC). The agency is also responsible for testing of raw materials of herbal medicine against control profiles. Its personnel make unannounced visits to dispensaries of traditional herbalists to check the quality of herbal ingredients prescribed to patients, especially the presence of pesticide or heavy metal contamination. One out of four quality control laboratories are specifically dedicated to herbal medicines.

NTFP Standards and Compliance

The Interim GFA Certification GmbH—a 3rd party certifying company—Standards for Non-Timber Forest Products Assessments in Forest Management in Vietnam Version 1.0 was published in July 2018. The GFA certification is the first FSC-accredited certification body that developed a standard for NTFPs in Vietnam. This allows forestry companies to include products such as latex,

bamboo, rattan, honey and other by-products within the scope of their FSC certificate for the first time. The standard document applies to the assessment of management systems of forest management organizations (FMO) that require NTFP certification, to be used together with the most recent version of the FSC Standard. The version shall be replaced by an approved National Forest Stewardship Standard (NFSS) including NTFP, or a new version of the standards based on the NFSS a few months later. The document includes certification requirements and indicators, and NTFP generalities are included in each FSC Principle.

TABLE 12. STATUS OF NTFP STANDARDS IN VIETNAM

Products	Standards / Systems (3 rd party cert/PGS, etc) Used	Type of Standard	Results/ Observations
NTFP in General	GFA - FSC	Sustainability	no identified application
1 Bamboo	FSC Bamboo	Sustainability	Under development, Farmers have difficulty in following requirements
2 Rattan	Rattan Seedlings Standards	Quality	Newly develop, need to be disseminated
3 Bamboo and rattan-based finished products	CSR, Fair Trade	Industry practice	For finished products such as furniture and crafts
	Phytosanitary certificate, fumigation certificates	Quality Standard, market requirement	Required by buyers, companies are able to secure certificates
4 Spices	Seedling Propagation Standard (star Anise, and two species of cardamom.)	Quality	Newly develop, need to be disseminated
	Long San Geographical Indication Star Anise (Vietnam)	Quality	Main market is China, no value for GI
	Good agricultural and collection practices for aromatic plants of the World Health Organization	Quality and Process	
5 Medicinal Plants	GMP	Quality, Process	Stipulated in Decision No 5/2008/QD-BYT
	FairWild	Social Impact	Project initiated / No information on current status
	Good agricultural and collection practices for medicinal plants of the World Health Organization	Quality, environmental	Monitoring is not always implemented
	Ethical BioTrade Standards / Access Benefits Sharing (ABS) Regulations	Legality	
6 Honey	Vietnam Standard TCVN 5267:1990 – Natural Honey Technical Requirements Meo Vac (Mint Honey) Geographical Indication		Exporters follow the requirement of buyers

With its export-oriented development strategies, the Vietnamese government has been working towards compliance with the legal requirements of key importers such as the EU, USA, and Japan on legal and sustainable timber and forest products. To counter illegal timber and to guarantee the supply of legal timber, the movement for obtaining the certification of forest management,

processing, and circulation is expanding in Vietnam, where the first FSC certification was obtained in 2006. From 2012 to 2017, both the growth rate of the area and the number of CoCs in Southeast Asia were the highest. Vietnam showed the highest growth rate at 554 per cent. In addition to timber, certification has been extended to bamboo and rattan products, as well as NTFPs in general.

Bamboo and rattan

The NTFP Research Center is currently working with Oxfam and the Vietnamese Chamber of Commerce (VCCI) on Bamboo FSC Certification. The 4-year project, “Sustainable and inclusive development of bamboo value chains in Vietnam” (2018-2022) aims for poverty reduction through facilitation of the adoption and practice of sustainable standards of bamboo producers and processors, improve access to market and finance, production efficiency, empowerment of small-scale producers and engaging public and private alliances for good value chain governance. One challenge is the inconsistent quality of bamboo products. Most actors lack knowledge and do not apply certification systems and quality standards. There is also lack of planning in input materials, outmoded equipment and technologies. Smallholders also have difficulties in complying with the requirements of FSC.

The NTFP Research Center has completed the standards for seedling production for rattan. This is part of the initiative of the center to develop standards of four key NTFPs from seedling to finished product.

In 2013, a project supported by UNIDO worked on cleaner and sustainable production of bamboo and rattan handicrafts. The project highlighted lack of regulation, information, and training on sustainable collection of raw materials which led to the declining resources of bamboo. Under the project, 23 SMEs were assessed for cleaner production and development of guidelines. Project implementers gave introductory training to 690 grassroots producers on cleaner production and provided product design support to 17 SMEs. The project also provided improved tools and equipment and worked on the development of natural linseed-based preservation process for rattan and bamboo.

Spices/Essential oils

Spices are included in the 12 food groups that are subject to compulsory State examination on food quality and safety, according to the Ministry of Health’s Decision 818/QDBYT. Food quality and safety control examinations for goods using Harmonized System code are based on Vietnamese Standards (TCVN) and Technical Standards. In case there is no Vietnamese reference, CODEX standards are applied.

The NTFP Research Center has just completed the development of the seedling propagation standards for Star Anise and two varieties of Cardamom. This is part of a multi-year project that aims to develop standards from seedling propagation to finished products for various NTFPs. The standards still need to be disseminated.

Geographical Indication Mark is also used for Star Anise Oil, which has its own set of standards. The Lang Son Star Anise has been registered at the Vietnam Bureau of Intellectual Property. The GI is specific to the oil product, not fresh or dried spice. It requires a minimum content of trans-athenol of 90 per cent. The management of GI includes quality control activities to be carried out by STAMEQ at the provincial level. However, these activities are not always implemented. Furthermore, the mark is only registered in Vietnam and it appears that there is not much current

use for it as it is only exported to China, limiting the potential for promotion and marketing domestically in export markets.

Medicinal plants/ Genetic resources

Regulating herbal products has been an integral part of the Vietnamese government's programme to promote traditional medicine since 1955. This is done by making traditional medicine a compulsory component of medical education and practice, and the development of a licensing system for practitioners. The Vietnamese Pharmacopoeia consists of two codex: modern medicine published initially by the MoH in 1971, and the traditional herbal medicines published for the first time in 1976.

Under current Vietnamese legislation (Circular 14/2009/TT-BYT) pharmaceutical companies, manufacturers, and wild plant processors are obliged to follow the World Health Organization's (WHO) Good Agricultural and Collection Practices (GACP) guidelines. Decision No 5/2008/QD-BYT on Good Manufacturing Practice Standards requires makers of traditional herbal medicine to declare the origins of their raw materials and processing methods, or to have approved manufacturing facilities. However, the authorities recognize that it will be difficult for traditional medicine makers in both the capital and the rest of the country to meet the standards, as most are small-scale or family businesses.

Foreign-supported projects to promote and develop BioTrade have worked with national authorities. The 2012-2014 project established the verification system for Ethical BioTrade standard in Vietnam, with QUACERT appointed as auditor. The project also certified compliance of BioTrade value chains. Circular 14/2009/TT-BYT relating to GACP implementation in phyto-pharmaceutical sectors was disseminated. Participants were also trained on Good Agricultural and Wild Collection Practices of Medicinal and Aromatic (Culinary) plants of World Health Organization (GACP – WHO). Among the government agencies involved were the Ministry of Health, Ministry of Industry and Trade, Ministry of Natural Resources and Environment, and the Ministry of Agriculture and Rural Development. The project also resulted in the publication in 2014 of a manual for guiding Access and Benefit Sharing (ABS) implementation, in recognition of the importance of BAS in BioTrade. The more recent project provided trainings on ABS mechanisms for all value chain actors. A Swiss government-supported project until 2020 is the “Development of BioTrade activities within the Natural ingredient sector in Viet Nam.”

Medicinal plants and Genetic Resources (GR) require a certificate of compliance and licenses in order to be traded internationally. These provisions aim to ensure access and fair and equitable benefit sharing, according to the Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT), are met. This is a requirement for all signatories to the Nagoya Protocol. The Biodiversity Law of 2008 provides the set of general principles on access and benefits sharing regimes. In addition, the Vietnamese authority needs to ensure that its access licenses include the different elements provided for in Article 17.4 of the Protocol, that is different from the stipulations of the BL 2008. The content required by the Protocol for the access license is appropriate and ensures compliance with PIC and MAT.

Honey

Vietnam has a national natural honey standard, which is mainly focused on the product quality and processing of honey. This standard is based on the Codex Standard and does not differentiate between forest or beekeeping honey. However, exporters follow the required standard of the

international buyer. With an approved residue monitoring plan, Vietnam has become one of the few Southeast Asian countries in the list of 3rd countries that are allowed to export honey to the European Union.

TABLE 13. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN VIETNAM

GAP	OPPORTUNITY
Human resource	
<ul style="list-style-type: none"> • Ageing specialists and inadequate number of personnel; currently each laboratory has 5 staff, while the ideal number is 7 	<ul style="list-style-type: none"> • Many of the personnel have international training • There is enough interest or potential from younger generations
Legal / Policies	
<ul style="list-style-type: none"> • Policies on sustainable forest management and certification are still focused on timber products to meet market demands for sustainable timber, and based on policies of importing countries • Support for standards development is usually project-based and therefore the reach is limited 	<ul style="list-style-type: none"> • The three most important export markets for Vietnam (US, EU Japan) showed a rapid increase in demands for products that meet environmental and socially responsible requirements • Both FSC and PEFC allow for group certification, that takes into consideration needs of smallholders FSC bamboo certification could be starting point for other NTFPs
Infrastructure / Technology	
<ul style="list-style-type: none"> • Unclear what institution has the authority or responsibility to develop standards • There is no government institution officially appointed as focal point for BioTrade • Most of the laboratories recognized by international markets are foreign-owned or affiliated, not government ones 	<ul style="list-style-type: none"> • Ministry of Science and Technology and the NTFP Research Center have clear strategy and plan for key NTFP standards development • The new SME Law includes provisions on support for access to training for implementation of procedures on quality and measurement standards
Information and Knowledge Management	
<ul style="list-style-type: none"> • Awareness on standards development is fragmented • Weak information dissemination and lack of accessibility of standards; companies that are aware of Vietnamese national standards have to purchase them for one-time use (it cannot be copied or shared) 	<ul style="list-style-type: none"> • Innovation strategies increase demand for NTFPs used in handicrafts e.g. mixing of different natural materials such as water hyacinth and rattan with other types of material such as metal is a strategy to create special products with high value addition
Funding	
<ul style="list-style-type: none"> • Limited budgets hamper hiring of ideal number of staff per laboratory • Cost of acquiring certification (voluntary) is not affordable for NTFP companies that are often small and medium-sized, leading to slow pace of FSC CoC development in Vietnam compared to other countries like China, Thailand, and Malaysia 	<ul style="list-style-type: none"> • Small levels of support have been provided to enterprises to obtain certification by initiatives such as the World Wildlife Funds' Global Forest and Trade Network (GFTN), The Forest Trust (TFT) and GI • Also, development of standards funded by Swiss government, EU, Oxfam • Government of Vietnam allocates fund for standards development; there are also other opportunities such as the SME Development

	Fund, which aims to enhance competitiveness and increase income and employment
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NON-TARGET COUNTRIES: BRUNEI, MALAYSIA, SINGAPORE, AND THAILAND

For the non-target countries in this study, a survey was done with their forestry officials to find out their market requirements and standards for NTFPs.

For Brunei, NTFPs are important for community livelihoods, contribution to local as well as the national economy, and forestry development. The three most important NTFPs are handicraft, herbal products, and honey. The National Forest Policy of Brunei Darussalam, under Policy Implementation Plan 4.5, includes NTFP development.

In Malaysia, NTFPs are important for the livelihood of communities and their contribution to the local economy. The main NTFPs are medicinal plants, honey, bamboo, rattan and handicrafts. The National Policy on Biological Diversity 2016-2025 and various local laws allow for the development of NTFPs.

Thailand also recognizes the importance of NTFPs for community livelihoods and the local economy. Its most important NTFPs are natural honey, beeswax and other insects' waxes, and sandalwood. Policies covering NTFPs are included in the One Tambon One Product (OTOP) initiative of the government.

Singapore has a negligible domestic NTFP industry. The trade of NTFPs in 2018 was S\$1.8 billion, which only accounted for 0.17% of Singapore's total trade. The top NTFP product categories and their contribution are meat and edible meat offal (46.31%); edible fruits and nuts (18.31%); and raw materials for medicine, perfumery and aromatic products (12.26%). Singapore does not extract any NTFP from its forests and has no policies, standards, and guidelines to promote NTFP development.

OVERVIEW OF STANDARDS

Brunei's standards body is the National Standards Centre, which was created through His Majesty's command (HMPO 33/2005). There are no private sector-led or voluntary standards and certification systems for NTFPs, although this is necessary for product quality, resource management, and processing. The only exception is the 1 Village 1 Product Guideline implemented by the Ministry of Home Affairs.

In Malaysia, the Department of Standard Malaysia (DSM) is established to enhance the quality of Malaysian products and services for both the nation as well as the world. Now, there are focusing on bamboo as a raw material. A Malaysian standard (MS) has been developed for laminated bamboo and will be published in 2020. For international level, TC 296 (Technical Committee for Bamboo and Rattan) under International Standard Organization (ISO) was established in 2016 to develop international standards for bamboo and rattan. The standards include the quality, grading or classification of rattan for international market. However, apart from bamboo and rattan, there are no private sector-led or voluntary standards and certification systems for other NTFPs. This is seen as necessary for the whole production and marketing system.

In Thailand, the national standards body is the Thai Industrial Standards Institute (TISI), created through Industrial Product Standards Act B.E. 2511. The agency releases official product standards including those for natural honey, lacquer, and bamboo. Implementation of quality standards for these three products is sufficient, but the government faces the challenge of community access to NTFP standards. There are no private sector-led or voluntary standards and certification systems for NTFPs, but these are deemed necessary for NTFP product quality and can be developed in coordination with the Thai Industrial Standards Institute. Products with relevant standards or guidelines for harvesting and sustainable management are natural honey, bamboo, bat droppings, and bird's nest:

Anyone wishing to gather forest products that are not restricted forest products under the law on forestry, may apply within the national reserve, request a worker's manual or contractor's manual and a substitute for the license holder. An interested party may request a license renewal, request a replacement license or request a license transfer. The process is that a request is submitted to the competent official of the district or sub-district where the forest is located, according to the form specified in the Ministerial Regulation No. 1,107 (2528 B.E.) issued under the National Forest Act. Then the interested party will proceed in accordance with the rules of the Department of Forestry on forestry storage permission within the National Forest Reserve 1986.

NTFP STANDARDS DEVELOPMENT AND MONITORING

In Brunei, new project proposals for developing standards will have to be requested at the National Standards Centre, which will assess the significance and provide recommendations to National Standards Council for approval. Upon approval, if there is no existing Technical Committee suitable for the scope of the new request, NSC will coordinate the formation of new Technical Committee or TECO. The committee will deliberate on the draft and open it for public comment, which will be managed and announced by NSC through websites. The Standards Committee will review and approve the draft standard submitted by the technical body. The NSC will verify the final draft of the new standard before submitting for approval by the Respective Minister. All approved standards will be centralized at NSC, which will be responsible for the promotion and announcement of new Standards. There is a flow chart for this process, which involves several committees, such as the Technical Committee on Timber. The basis used is Global Standard 1 (GS1) for familiarization on the agreed international and regional commitment across the government and private sector by means of coordination, facilitation, publications and promotion. The length of time for standards to be developed and implemented is three years, and this is done by phases. Human resources are available to develop standards. The National Standards Council is responsible for monitoring and evaluation of standards.

Malaysia's process and flow chart for developing NTFP standards involves a committee or experts' review, using the ISO as basis. Common activities include getting all stakeholders together, doing group discussions, and making sure that results support the objectives. The length of time for standards to be developed and implemented at the national level is predicted around two to four years depending on the working group decisions, plus another two years at the regional level.

In Thailand, the process for developing NTFP standards involves drawing out the most potential of the non-wood sector by increasing and improving products from the community so there is value addition. Experts may need to use international standard bodies to set standards, such as ISO or BAM. Human resources are available for setting standards.

For the level of awareness among stakeholders on NTFP standards, only two countries submitted responses, summarized here:

Product/Sector	Stakeholder	Awareness Level
Brunei		
Handicraft	Local community	Low
Herbal	Local community	Low
Honey	Local community and private companies	Medium
Malaysia		
Rattan	Local community	Medium
Cloth	Handicraft shops	High
Wood	Related Government agencies	Medium
Bamboo	Local Community	Medium

Meanwhile, only Malaysia responded to the question on the level of effectiveness of capacity- building with regards to NTFP standards:

Product/Sector	Institution that Provided Training	Effectiveness
Malaysia		
Rattan	Malaysian Handicraft Centre	Medium
Cloth	KPD (Rural Development Cooperative)	Medium
Wood	None	Low

In Brunei, human resource capacity needs to be improved. For Malaysia, there is continuous demand for capacity building in production and marketing. In Thailand, systematic standardization of non-wood management needs to be improved and the government is still in the process of studying the mechanism for further use. So far, none of these countries have the existing facilities, technology, or sufficient human resource capacity to test if NTFP products comply with standards.

Gaps, opportunities, and recommendations on NTFP standards

Only two countries gave responses for this section, as summarized here:

TABLE 14. GAPS AND OPPORTUNITIES FOR NTFP STANDARDS IN MALAYSIA AND THAILAND

Aspect	Gaps	Opportunities	Recommendations
MALAYSIA			
<input type="checkbox"/> Human resource/ capacity	Most NTFP producers are old and NTFP knowledge dies with them	NTFP/ handicraft drives for the youth	Train youngsters properly in various NTFP skills & knowledge
<input type="checkbox"/> Legal/ policies	Restriction to get NTFP from forest reserve	Communities living adjacent to forest reserves given consent through SOP to tap NTFP from nearby forest	To allow certain zoned area in forest reserves for NTFP production/ restoration
THAILAND			
<input type="checkbox"/> Human resource/ capacity	Personnel with ability to match the assignment	Personnel have knowledge and expertise	Recruit personnel with specific expertise

☐ Legal/policies	Weak law and unclear penalties	Relevant laws to uphold and comply exist (Forest Act B.E 2484, 1941 and National Reserved Forest Act, B.E.2507, 1964)	Put clear penalties in laws or regulations
☐ Infrastructure/technology	Practicality (technology cannot be applied)	GIS technology is used in the current data	Innovate new technology that can be appropriately adapted
☐ Knowledge/information	Lack of knowledge of data used for management	Database information for management exists	Educate and get new research data and ideas from experts
☐ Financial	Lack of operating budget	There are funding sources from the government	Increase budget allocation from the government and private sector, both domestically and internationally

VI. ASEAN Standards for NTFPs

The ASEAN Coordinating Committee on Standards and Quality was formed during the ASEAN Economic Ministers Meeting (AEM) in 1992. It aims to provide support for the reduction of Technical Barriers to Trade, in order to realize the ASEAN Free Trade Area (AFTA). These barriers include duplicative testing procedures arising from different systems of conformity assessment in various countries.

The ASEAN Consultative Committee on Standards and Quality (ACCSQ) has endeavored to harmonize national standards with international standards and implement mutual recognition arrangements on conformity assessment to achieve its end-goal of “One Standard, One Test, Accepted Everywhere.” It has several working groups, as follows:

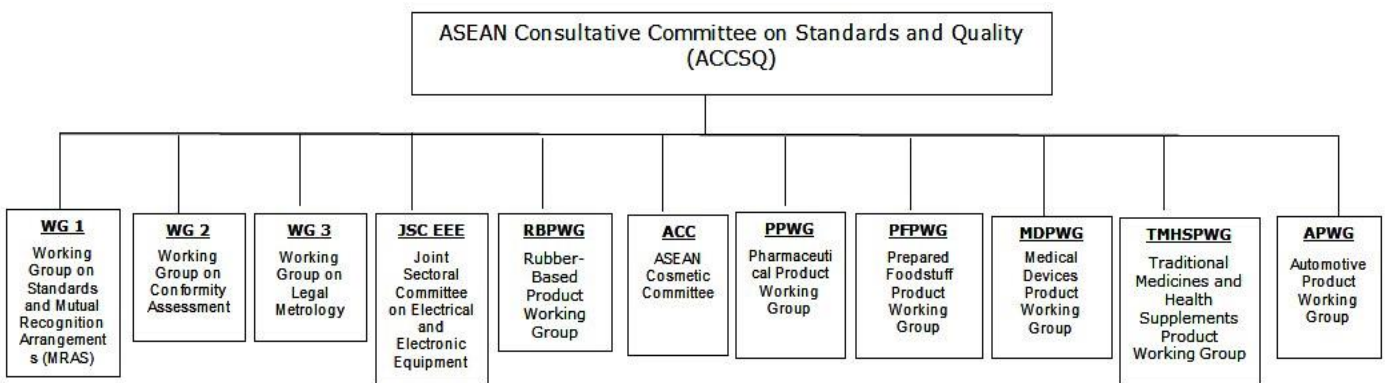


FIGURE 3. THE ASEAN CONSULTATIVE COMMITTEE ON STANDARDS AND QUALITY

Under Working Group 1, the Task Force on Wood-based Products (TFWBP) includes bamboo and rattan. Wood-based products have been identified as a Priority Integration Sector under the ASEAN Community building efforts, to support the realization of the ASEAN single market and production base.

The Working Group on Traditional Medicine and Health Supplements (TMHS) is in the process of harmonizing nine technical requirements including stability, efficacy, GMP, and food safety. A Mutual Recognition Arrangement (MRA) is targeted for 2020, with the framework still in process. Once there is a signed agreement, it will be compulsory for member-states to follow ASEAN requirements. Regional standards align with international standards such as World Health Organization (WHO) requirements and British and American government requirements.

The working group on TMHS has trainings only for member-states; industry partners, producers, and other stakeholders need to pay for the training, which is held only at the regional level. National level training depends on national priorities and agenda of each member. AMS can request for training for bilateral support for trainings, for e.g. from international donor partners of ASEAN, but this process is under national discretion.

Most of the discussion on the harmonized technical requirements for TMHS have involved regulators from various government agencies in various AMS countries that regulate medicines, for example the Ministries of Health, Food and Drug, etc. Some private sector representatives and association representatives have participated at their own cost, but local producers have not been involved intensively and regularly. There is a national consultation process ahead of time to discuss this. It appears that some standards use organoleptic criteria at some stages which makes possible a phased approach for farmers and TM producers.

The ASEAN Food, Agriculture and Forestry Division (FAFD) has working groups on Good Agricultural Practices (GAP) for fresh fruit and vegetables incorporating measures on food safety, health and workers safety, quality, and environmental, but Food Safety is largest priority. Under the ASEAN Organic Standards approved in 2014, Participatory Guarantee Systems (PGS) will be considered in the MRA.

For cosmetics, the Agreement on ASEAN Harmonized Cosmetic Regulatory Scheme was signed by the ASEAN Economic Ministers on 2 September 2003 in Phnom Penh. The first part of the Agreement is a Mutual Recognition Arrangement (MRA) that requires signatories to recognize the product registration approval of any signatory, in accordance with agreed rules and procedures. The second part is the ASEAN Cosmetic Directive, which lays down the requirements for cosmetic products to comply with all signatory countries.

The ASEAN Economic Ministers signed the Agreement on the ASEAN Harmonized Cosmetic Regulatory Scheme at the 35th ASEAN Economic Ministers Meeting in Cambodia in September 2003. This Scheme is the culmination of four years of work by the ASEAN Consultative Committee on Standards and Quality (ACCSQ) Cosmetic Product Working Group (CPWG), formed in 1998 in response to a request from the ASEAN Cosmetics Association (ACA) to harmonise regulations across the region to reduce technical barriers to trade.

The Scheme, which has been co-developed with the cosmetic industry, comprises the signed Agreement and its two Schedules as follows:

- A. Schedule A (Phase 1): ASEAN Mutual Recognition Arrangement (MRA) of Product Registration Approvals for Cosmetics; and
- B. Schedule B (Phase 2): The ASEAN Cosmetic Directive (ACD)

Phase 1 is an interim voluntary phase while Phase 2 must be implemented by all member countries by January 2008. Member countries can choose to proceed directly to Phase 2 without going through Phase 1.

The common technical requirements under the ASEAN Harmonized Cosmetic Regulatory Scheme provide for a common definition for cosmetics and detail the ingredients that cannot be used in cosmetics as well as listings of permitted preservatives, UV absorbers, and colourants.

All enterprises engaged in the cosmetics business (producers, distributors of cosmetics products and raw materials, as well as all importers of cosmetics products, raw and packaging materials) in the ASEAN region are represented by every cosmetic associate in each ASEAN country. Six ASEAN countries participated in developing the ASEAN Cosmetics Association. Four ASEAN countries — Laos, Cambodia, Brunei Darussalam, and Myanmar— have no cosmetics association because they have no cosmetics producers, only distributors and importers.

At its core, the ACD borrows many features from the EU's regulatory framework, most notably the various ingredient lists of the Cosmetic Products Regulation (CPR). ASEAN cosmetics standards are in line with regulation and cosmetics standards in the European Union countries and are perhaps more complete than standards in the USA, Japan, Australia and Korea. Thus, it may be easier for cosmetic products produced in the ASEAN region to enter these markets.

However, unlike the CPR, the ACD is not directly applicable in the member states. Although all member states agree to implement changes in the ACD, the time-lag in implementation may create an uneven regulatory framework and enforcement across different jurisdictions.

The ASEAN Cosmetic Good Manufacturing Practice is also in line with ISO standard 22716 for GMP Cosmetics.

All cosmetic standards should be evaluated and proposed by the ACSB. Each ASEAN country and ACA will send 2 – 3 scientific committees, consisting of the combination of the related cosmetics authority, the academic body, and the representative of cosmetics company. These members of ACSB will conduct regular meetings twice each year, and the output will be proposed to the ASEAN Cosmetics Committee (ACC). All standards should be approved by the ACC.

The output of the ASEAN Cosmetics Standards and Regulations will be transposed by each related regulatory body into the country standards and regulations, before these are communicated to all cosmetics companies (cosmetics producers, distributors, importers, as well as related cosmetics outlet) through workshops, meetings, and desk consultations conducted by the government bodies and the local cosmetics association.

Government agencies, local cosmetics associations, and ACA also provide several booklets and training to increase the awareness and knowledge of cosmetics businesses. For small companies, the government provides dedicated in-house training facilitation. In Indonesia, these facilitation and awareness programs and workshops can be given by the Indonesian Drug and Food Control, the Health Ministry, the Industrial Ministry and the Trade Ministry, where mostly they will collaborate with the local cosmetics association, such as PERKOSMI.

If certain countries are unable to guide the local cosmetics enterprises, or have limitations in giving awareness workshops or training, ACA will provide capacity building programs in these countries, such as Laos, Cambodia, Brunei and Myanmar.

The usage of natural materials, including NTFPs, is more emphasized on safety factors and the guarantee of quality standards, while the source of raw materials is fully handed over to producers. It means non-timber forest materials can be used as far as their quality is guaranteed and safe and are not included in the list of prohibited materials.

The standard of each NTFPs material must be provided before it can be used as cosmetic ingredient. If it is used as a coloring agent, preservative agent, and as sunscreen material, it must be already included in the positive list.

Each ASEAN country will have their own strategy to support the local industries. For natural ingredients (including NTFPs) that are used in cosmetics products, the Indonesia Health Ministry and the Indonesia Drug and Food Control have published:

- Kodeks Kosmetika Indonesia
- Material Medika Indonesia
- Farmakope Herbal Indonesia
- Material Kosmetika Bahan Alam Indonesia

These books can guide small enterprises to get the needed standard of their natural ingredients. Currently still in progress, the Indonesia Health Ministry is going to publish:

- The standard of essential oils for cosmetics
- The quality standard of marine ingredients.

There is room to absorb more NTFPs in the cosmetic industry if sustainable supply and quality and safety can be ensured and there are no CITES issues.

VII. International Standards for Non-Timber Forest Products

Various groups have developed standards for NTFP-based products. These include intergovernmental organizations such as the International Standards Organization (ISO) or CODEX, and NGOs such as World Wildlife Fund and FairWild. Some sector-based groups have also developed their own standards for product quality, environmental and ethical practices, and traceability of sources. Compliance with majority of NTFP standards is voluntary. However, products used in the construction industry such as bamboo panels and flooring are required to meet certain standards for market and government certification.

Most of the standards and certifications relevant to NTFPs are provided in the table below.

TABLE 15. SUMMARY OF INTERNATIONAL STANDARDS RELEVANT TO NTFPS

NTFP	Government	NGO	Others
Rattan	ISO TC 296: Standardization of bamboo and rattan, and derived materials ISO WD	FSC PEFC	PGS Rattan (Community-developed)

Medicinal Plants	<p>World Health Organization Guidelines and EC directive on traceability of herbal raw material</p> <p>WHO: Guidelines on Good Agricultural and Collection Practices for Medicinal Plants (2003)</p> <p>WHO/IUCN/WWF: Guidelines on the Conservation of Medicinal Plants (1993)</p> <p>ISO 17351 (2014)</p> <p>ISO 15378 (2011)</p> <p>ISO TC 249 – Traditional Chinese Medicine</p> <p>CITES</p>	<p>FairWild</p> <p>Union for Ethical BioTrade: add details</p> <p>Organic</p>	<p>International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)</p>
Honey	Codex: Honey Standard		Asian Apiculture Association: Tropical Honey Standards (2018)
Natural Dyes		Global Organic Textile Standards (GOTS)	
Spices	<p>ISO/TC 34/SC 7 - Spices, culinary herbs and condiments</p> <p>ISO 882-1:1993 – Cardamom</p> <p>ISO 11178:1995 - Star Anise</p>	<p>Fair Trade</p> <p>Organic</p>	IDH: Sustainable Spices Initiative
Bamboo	<p>5 ISO Standards</p> <p>5 ISO Standards under Development (for bamboo structures)</p> <p>EUTR Legality (except plaited or woven bamboo, pulp and paper made from bamboo, and chairs, sofas etc made from bamboo – Under Discussion</p> <p>EN 17009-2019 Flooring of Lignified materials other than wood (European Standard) adopted by different European countries</p>	<p>FSC certification</p> <p>FSC and Fair Trade dual certification</p>	
Fiber / Textiles	<p>ISO 59.060.10 Natural Fibers</p> <p>ISO 6938:2012 Textiles – Natural Fibers - Generic Names and Definitions</p>	<p>Global Organic Textile Standards (GOTS)</p> <p>Sustainable Fiber Program</p>	

VIII. Recommendations for NTFP Standards Development in Southeast Asia

With the wide variation in NTFP standards among member-states, and given the prevailing ASEAN and global standards for NTFPs, the following actions are recommended:

1. Strengthen and activate NTFP standards development within the working groups of the ACCSQ

The presence of clearly defined institutions that will develop and regulate the standards for NTFPs in general and specific products would avoid overlapping responsibilities or lack of action. Multi-stakeholder mechanisms in this regard are recommended. There has to be an agreement on products considered as NTFPs, with priorities placed on both high-market demand as well as potential threats to supply. Some products are already cultivated or fall under different sectors, and therefore coordination on standards development need to be clarified.

One specific action is to form a Bamboo and Rattan sub-committee under TFWBP. In Myanmar, the rattan industry is currently the most developed NTFP-based industry. Building the capacity of rattan product exporters to meet standards needed by the market, while streamlining legality process will help increase their market competitiveness and reach. Many of the ASEAN Member states are also members of ISO committees on bamboo and rattan so the formation of this sub-committee could enhance inputs at the international level as well to institutions such as ISO.

It is also important for relevant social forestry stakeholders, especially community enterprises, to be involved in the standards development of NTFP sectors such as the working groups on Good Agricultural Practices (GAP) (particularly on organic agriculture), Traditional Medicine, and Prepared Foodstuff.

2. Develop a multi-stakeholder and phased program in the ASEAN to assist member-states with NTFP standards development, especially for countries in need of financing and technical support

Public and private partnerships should be tapped to further update and strengthen NTFP standards. Regional cooperation, in the form of exchange and division of work, is needed to develop standards for a wide variety of NTFPs. One of the nuances of the NTFP sector is that there is such a wide range of products, and with limited budget and human resources, it is difficult, and possibly unnecessary, for one country to develop standards for all. Through cooperation and division of work among interested AMS, standards and protocols can be developed for more NTFPs. GMP needs to be established from cultivation/collection to final product.

Standards development can serve either as a trade booster or a barrier. Without supportive measures, additional standard requirements will only be a burden to the exporters. Initiatives for standards development in the NTFP sector should involve all sectors, particularly small producers, so as to be able to consider the practical implications of the concrete application of such standards.

In the case of Brunei, private sector-led standards have to be developed in collaboration with the National Standards Centre. Harmonization of standards within ASEAN is seen to enhance the country's NTFP market locally and internationally. Challenges foreseen include human resource capacity and expertise in developing such standards.

3. Develop or endorse ASEAN Guidelines for sustainable harvest and resource management protocols for important NTFPs/NTFP categories to capture sustainable sourcing preference of the market

Quality and standard products in the different NTFP sectors start from quality and traceable raw materials, so supply and quality need to be enhanced through proper resource management and sustainable harvesting. Harvesting standards will benefit smallholders, who can be assured of fair pay for their products. It will also provide producers with clear guidelines.

Having a regional strategy will position and strengthen the capacity of ASEAN members as sources of quality and traceable natural-based products. There should be efforts to establish proper standards or grading systems of raw materials, as the quality of final products substantially relies on the quality of raw materials. Quality standards managed by different ministries cause great challenges for the development of standards. This will require coordination among the different sectors and departments that have responsibility over the different stages of the value chain as well as capacity-building of sector actors.

4. Develop a knowledge, technology and research sharing program within the region

There is a need for basic research on NTFP classification or grading, as well as on cultivation, propagation, and harvesting of NTFPs. It is also essential to invest in equipment, technology design, and metrology. Research on chemical analysis to identify components of NTFPs is also necessary for further value addition (e.g. cinnamon, star anise oil).

More opportunities or platforms for exchange of expertise and knowledge on NTFP products and standards are needed, especially in building the capacity of community stakeholders. This can be done at the bilateral or multi-lateral level, between member-states with more capacity and know-how and those with less capacity and expertise.

However, the sharing program has to ensure that each country maintains a competitive edge for products that are economically important for them. Many ASEAN countries have similar NTFP industries and can therefore be considered as competitors. Knowledge of market-based standards is considered as a competitive edge and therefore kept as a trade secret, whether nationally or internationally; this is the concern of PhilFIDA for abaca in the Philippines, for example.

5. Allocate investments and forge partnerships with interested financiers for laboratory and testing facilities for Mekong countries with high potential but low capacity for competitiveness for CFEs

The experience and expertise of the different AMS in standards development and monitoring in the NTFP sector can be a ready resource to support countries such as Myanmar and Laos where sharing of protocols for sustainable harvesting of NTFPs and standards development is very much needed. Digitalization of standards catalogue will require IT infrastructure and tools. In Myanmar, standards are currently provided in hard copy format. There is also a need to upgrade laboratories, including the technical capacity of the personnel.

In other countries, there is a common need for technical assistance, technology transfer, capacity building, information accessibility through digitalization, and training in the different industries on standards development and regulation.

6. Expand information campaign so consumers, market, and greater public are aware of NTFP standards development

The SME development program at the ASEAN can provide a platform to increase awareness on NTFP standards and NTFP SMEs in general. Meetings on SMEs at the ASEAN level through the ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) are held two times a year but there is minimal time provided for the NTFP sector. A back-to-back training and policy dialogue focused on NTFPs would be helpful. Linking up the NTFP sector to the green SME program of the OECD in the region could also be explored. Furthermore, the information available on the web can also be maximized to develop webinars and other effective digital based information tools to aid the campaign.

7. Engage the marketing and private sector in standards and capacity-building program

Concrete business partnerships with maximum added value of the standard development processes can be broached in regional exhibitions, trade fairs, and trade missions. Local companies using NTFPs in their products should also be stimulated as ASEAN “tigers” in the industry, and thus being the trail blazers for other SMEs in the field.

Support in characterization, standards, and sustainable harvesting protocols development of potentially high-value and unique products in the region can promote trade and export. One example is Burmese lacquer that can potentially be exported to Japan and Vietnam, where lacquer crafts are also made. There are also orchids widely in demand for use in Chinese Traditional Medicine. Safeguards need to be installed, however, to make sure fair trade partnerships are established, adequate benefit sharing mechanisms are in place and that international agreements on the trade of plants and other forest resources are upheld.

8. Encourage and accept the development of other sustainability and ethical standards

Market players and civil society groups are developing Participatory Guarantee System (PGS), ethical trade standards, and certification systems that ASEAN can adopt for relevant NTFPs in the region. The PGS system for one is already being tested for NTFPs in Laos, Philippines, Cambodia and Indonesia and can be further expanded if provided human resource, institutional and financial support. Such mechanisms also reduce cost and recognize the local knowledge and skills behind NTFP product development.

9. Encourage minimal NTFP standards in order to safeguard priority local products from imported products that do not meet quality points

In Laos, there are already observations, for example where imported honey products on supermarket shelves do not meet international standards for honey but there is no regulation and thus no enforcement to protect local honey products. Thus, good quality Laos honey products must compete with poor quality honey imported from other countries. In some countries, there are some concern that strict standardization may impact to the prices for NTFP products since additional cost may necessary to comply with a certain standard. This would however mean the possibility for internalizing costs for NTFP production which, up to now, are mostly unfairly borne by the NTFP harvester/producer.

10. Streamline permitting and exporting processes to make NTFP trade less costly and cumbersome, and more attractive

In developing and managing NTFP standards, authorities need to address how to relax or revise existing limiting policies and prevent new policies or standards from becoming hindrances instead of facilitating the growth of the sector. Information dissemination, capacity building and technical support to upgrade capacity to meet standards need to be provided along with standards development.

There is also a need to exchange practices on permitting and monitoring of trade and export of forest products, towards a more participatory cost-effective and efficient monitoring framework that supports and facilitates trade instead of becoming barriers to trade.

REFERENCES

Cambodia

Andaya, E. 2013, Exploring Certification for Cambodian Wild Honey Standard towards enhanced rural Livelihoods and Sustainable Forest Management, NTFP-EP and WWF

Sim Soumeng, Officer, Department of Forest Industry and International Cooperation of the Forestry Administration, Ministry of Agriculture, Fisheries and Forestry, Personal communication, June 4th, 2019

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Interviews

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FAO, 2007. World Bamboo Resources. A thematic study prepared in the framework of the Global Forest Resource Assessment, 2005, NWFP Vol 18 <http://www.fao.org/3/a1243e/a1243e04.pdf>

Hirschenberger, P. 2011, Global Rattan Trade: Pressure on Forest Resources Analysis and Challenges, WWF Austria, Vienna, Austria

INBAR, 2012, International Trade of Bamboo and Rattan 2012. <http://www.aha-kh.com/wp-content/uploads/2017/01/5-inbar-international-trade-of-bamboo-and-rattan-2012.pdf>

INBAR. 1998. Assessment of socio-economic issues and constraints in the bamboo and rattan sectors. Unpublished report. Beijing, China.

JMHI, 2006, Protocols for Sustainable harvest, processing and storage of forest honey, Pontianak, Indonesia

JMHI, 2019, personal communication, June 4. 2019

Lim, Amanda, 2019 Cosmetics Design Asia, May 13, 2019, Natural and Organic Beauty, One of the Key Drivers of Indonesia's Personal Care Market, <https://www.cosmeticsdesign->

asia.com/Article/2019/05/13/Natural-and-organic-beauty-one-of-the-key-drivers-of-Indonesia-s-personal-care-market

Ministry of Industry 2012. <https://kemenperin.go.id/artikel/6274/ekspor-rotan-melonjak-71-persen>

Ministry of Industry 2013, Berita Industri, <https://kemenperin.go.id/artikel/6481/Menteri-&-Gubernur-Disuruh-Gunakan-Furnitur-Dari-Rotan>

Ministry of Trade (Kemedag), 2019, Economic Profile Indonesia, Indonesia Export Growth of Non Oil and Gas Export Sectoral (Bahasa Indonesia), <https://www.kemendag.go.id/id/economic-profile/indonesia-export-import/growth-of-non-oil-and-gas-export-sectoral>

Ministry of Trade (Kemendag, 2019, Economic Profile Indonesia, Indonesia Export Growth of Non Oil and Gas Export Sectoral (English) <https://www.kemendag.go.id/en/economic-profile/indonesia-export-import/growth-of-non-oil-and-gas-export-commodity>

Mirjam, Ros-Tonen, Wiersum 2003

NTFP-EP Asia, 2019. Unpublished report on NTFP policies in ASEAN countries.

Soedarto, K. 1999. The state of bamboo and rattan development in Indonesia. Unpublished report. Beijing, China, INBAR

Trend Economy, Annual International Trade Statistics, 2019
<https://trendeconomy.com/data/h2/Indonesia/0409>

UN COMTRADE Database

WWF, 2017, Damar Mata Kucing, Keberhasilan Pengelolaan Hutan Berkelanjutan Berbasis Masyarakat, <https://www.wwf.or.id/?61142/Damar-Mata-Kucing-Keberhasilan-Pengelolaan-Hutan-Berkelanjutan-Berbasis-Masyarakat>

Interviews

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Laos

Andaya, E. 2017. Lao Forest Honey Market Study. The Agrobiodiversity Initiative (TABI): 2017

<https://www.phakhaolao.la/en/kb/0000060/0000004>

LAO PDR, 1981. Party General Assembly Meeting IV 5-year strategy II, 1981-2000.

LAO PDR, 2005. Strategy for Laos Forest 2005-2020

Khamhoung, A. and Dirk Van Gansberghe, 2016. Sixteen Lao agrobiodiversity products with high potential for food security and income generation. SDC, Vientiane, Laos.

MAF-SUFFORD. 2010. Technical Report, Assessment of the Values of NTFPs in LAO PDR, NAFRI, Joost Foppes. Vientiane.

Ministry of Health. 2007. (No.202/MOH) Order on the Implementation Decree of the Prime Minister regarding medicinal plant resources No. 155/PM September 30, 2003. Vientiane Capital, June 26, 2007.

OXFAM, 2006. Mekong Bamboo Sector Feasibility Study Final Report

Party General Assembly Meeting IV 5-year strategy II, 1981-2000

Phao Khao Lao, S, Vongkhamho & M.L, Ingalls. 2018

S, Vongkhamho & M.L, Ingalls. 2018, Lao Benzoin. Pha Khao lao

Pongkhao, S. 2016. Vientiane Times. Cardamom brings great changes for Laos farmers, 4 April 2016
Available: <http://www.asianews.eu/content/cardamom-brings-great-changes-lao-farmers-13482>

SNV, 2007. Non-timber Forest Products in Lao PDR. A manual of 100 commercial and traditional products.
Available: <https://www.worldcat.org/title/non-timber-forest-products-in-the-lao-pdr-a-manual-of-100-commercial-and-traditional-products/oclc/208121523?referer=di&ht=edition>

Tridge, 2018. Overview of Global Cardamom Market, Laos,
<https://www.tridge.com/intelligences/cardamom/LA>

WWF, 2010. Laos Rattan Industry Attracts Regional Business. WWF News
http://wwf.panda.org/wwf_news/?194005/Laos-rattan-industry-attracts-regional-business

Interviews

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Khamsone Sisaouyout, MOFA, 2016, personal interview, Vientiane Times

Sonboun craft 2019, April 2019. Personal interview. Vientiane

Phoxay rattan shop, April 2019. Personal interview. Vientiane

Khamfung, April 2019, personal communication, Luang Prabang

Sichan, April 2019, personal communication, Luang Prabang

Ban keun canning plant, April 2019, personal communication, Vientiane Province

Myanmar

Andaya, E. (2018) Product Scoping in the Tiger Landscapes in Myanmar. WWF Myanmar. Unpublished Report.

Aye Mon Win (2018) Current Status on Science Technology and Innovation in Myanmar. Presentation in the Regional Consultation on Achieving Sustainable Development Goals through Science, Technology and Innovation. Myanmar Ministry of Education. Bangkok, Thailand.

FAO (2002) NON-WOOD FOREST PRODUCTS IN 15 COUNTRIES OF TROPICAL ASIA AN OVERVIEW. FAO, Thailand. <http://www.fao.org/3/AB598E/AB598E19.htm>

Foppes, J. (2011) Market Research and Enterprise Development for Community Forestry (CF) in Myanmar. Pyoe Pin. Myanmar.

Forest Department (2017) Myanmar CITES Biennial Report found on <https://www.cites.org/sites/default/files/reports/17Myanmar.pdf>

Kyaw Zeya (1 July 2019) “There is Potential for growth in the rattan production industry. However, we still cannot meet the demand and quality standards: Rattan wares producers” in The Global New Light of Myanmar found in https://issuu.com/myanmarnewspaper/docs/1_july_19_gnlm

Mcqueen, D. (5 December 2017) “Forest rights create new livelihoods in Myanmar,” found on <https://www.iied.org/forest-rights-create-new-livelihoods-myanmar>

MFCC (2018) Policy: Standard Setting. MFCC, Myanmar.

MOALI/MAFF (March 2017) Food Value Chain Road Map (2016-2020) in Myanmar. Myanmar.

MoC/ITC (no date) National Export Strategy: Quality Management Cross Sector Strategy 2015-2019. MoC/ITC, Nay Pyi Taw, Myanmar.

MoC/ITC (no date) National Export Strategy: Quality Management Cross Sector Strategy 2015-2019. MoC/ITC, Nay Pyi Taw, Myanmar.

Myanmar-EU Trade Helpdesk/MoC (2018) Myanmar Product Profile: Honey. MoC. Yangon, Myanmar.

Myanmar News Agency (March 16, 2019) “Vice President U Myint We attends first stakeholders’ Symposium of National Export Strategy (2020-2025)” in The Global New Light of Myanmar, found in <http://www.globalnewlightofmyanmar.com/vice-president-u-myint-swe-attends-first-stakeholders-symposium-of-national-export-strategy-2020-2025/>

Shwe Phue San (2016) SPS Support Measures in Agriculture, Fisheries and Food, Presentation in Conference on Food Safety and Responsible Food Sourcing of Food and Agricultural Products in Myanmar, 8 November 2016, Nay Pyi Taw, Myanmar. Trade Development Programme.

U Win Naing (2018 October) Standardization of Wood-based Products in Myanmar, Presentation on World Standards Day by Myanmar Timber Enterprise found in <https://myanmarstandards.org.mm/wp-content/uploads/2018/10/U-Win-Naing.pdf>

UNCTAD (2017) Applicability of Traceability Systems For CITES-Listed Medicinal Plants (Appendices II and III) – Greater Mekong Preliminary Assessment. UNCTAD. Geneva, Switzerland.

UNIDO (2018) Strengthening Myanmar’s Quality Infrastructure for Trade: 2014-2018 The Achievements. UNIDO.

US Embassy in Myanmar. (11/29/2018) Burma – Standard for Trade found on <https://www.export.gov/article?id=Burma-standards-for-trade>

WHO (2001) Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A Worldwide Review found on <http://apps.who.int/medicinedocs/en/d/Jh2943e/8.6.html>

WHO (2005) National Policy on Traditional Medicine and Regulation of Herbal Medicines – Report of a WHO Global Survey found on <http://apps.who.int/medicinedocs/en/d/Js7916e/9.5.html>

Websites

Medicinal Plants

<http://apps.who.int/medicinedocs/en/d/Jh2943e/8.6.html>

Interviews

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Philippines

2017 Philippine Forestry Statistics, FMB, DENR

Aldaba and Aldaba (2014) Toward Competitive and Innovative ASEAN SMEs: Philippine SME Policy Index 2012. PIDS, Philippines.

Aparente, M./ERDB (2015) Policies in Support to Bamboo Sector Development: The Philippine Experience, presentation at the International Workshop on the Roles of Small and Medium Enterprises in Bamboo Industry Development, Beijing, April 10, 2015 found on https://www.slideshare.net/inbar_sm/policies-in-support-to-bamboo-sector-development-the-philippine-experience

Daño-Luna, Maribel, Tristan Canare, and Jamil Paolo Francisco (2018). “Drivers of Philippine SME Competitiveness: Results of the 2018 SME Survey.” AIM Rizalino S. Navarro Policy Center for Competitiveness Working Paper Series 2018-003.

Ella, A. and E. Domingo (November 2009) Improved Tapping Techniques in Canarium Species. Pamphlet 2. FPRDI /ITTO

FMB. (2003) Revised Master Plan for Forestry Development. Philippines.

FMB. (2016) Philippine Master Plan for Climate Resilient Forestry Development. Philippines.

Goloubinoff (no date) Market Study: Leveling the Playing Field: Fair Partnership for Local Development to Improve the Forest Sustainability in Southeast Asia

Razal, R.A., Dolom, P.C., Villanueva, M.M. B., Camacho, S.F. and E.O Peralta. (2004) Charting the Direction of Non-timber Forest Products (NTFP) Research and Development in the Philippines: The Role of Forest Policies and Regulations. UPLB Integrated Research and Development Program on NTFFPs.

Razal, R. and C. Guerrero. (2013) Scoping Study on Cutting Edge Technology and Strategic Knowledge on NTFFPs for Green Economy. Terminal Report. NTFFP-EP Asia.

Razal, R., Dolom, P.C., Palacpac, A.B., Villanueva, M.M. B., Camacho, S.F., Alipon, M.B., Bantayan, R.B., and S.C. Malab. (2012) Mainstreaming Engineered Bamboo Products for Construction and Furniture. College of Forestry and Natural Resources UPLB / PCCARD. Los Banos, Laguna.

Siani, A. C., Moraes, R., & Veiga Junior, V. F. (2017). To- ward Establishing the Productive Chain for Triterpene-Based Amazonian Oleoresins as Valuable Non-Timber Forest Products. *Open Journal of Forestry*, 7, 188-208. <https://doi.org/10.4236/ojf.2017.72012>

Ronda, R.A. (February 22, 2018) “DOST develops hot press machine for engineered bamboo” on the Philippine Star found on <https://www.philstar.com/business/science-and-environment/2018/02/22/1790032/dost-develops-hot-press-machine-engineered-bamboo>

Interviews

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Vietnam

Government of Vietnam (2017) Law on Forestry No. 16/2017/QH14

VIET NAM FORESTRY DEVELOPMENT STRATEGY

2006 - 2020 (Promulgated and enclosed with the Decision No. 18/2007/Q□-TTg, dated 5 February 2007, by the Prime Minister) Unofficial Translation

APPROVAL FOR SUSTAINABLE FOREST MANAGEMENT AND FOREST CERTIFICATION

Decision No. 1288/QD-TTg, dated, 01 October 2018, Ha Noi, by the Prime Minister

CBI (2017) Exporting value-added bamboo products to Europe. CBI, Netherlands.

East Asia Trade and Competitiveness Global Practice (2017) Vietnam: Enhancing Enterprise Competitiveness and SME Linkages, Lessons from international and national experience. World Bank Group, USA.

EU FLEGT Facility, BASELINE STUDY 3, Vietnam: Overview of Forest Law Enforcement, Governance and Trade, April 2011

Iwanaga, S., Duong, D.T., Ha, H.T. and Minh, N.V. (2019) The Tendency of Expanding Forest Certification in Vietnam: Case Analysis of Certification Holder in Quang Tri Province. *JARQ* 53 (1), 69-80. www.jircas.go.jp

Jabor, A., Toth, A.T. and D., Koroshegyi (2018) Competitiveness in the trade of spices: a global evidence. Paper presented at the 30th International Conference of Agricultural Economists on July 28 – August 2, 2018, Vancouver.

Lewin et al (2019) Forest Certification: More Than a Market-Based Tool, Experiences from the Asia Pacific Region. *Sustainability*. www.mdpi.com/journal/sustainability

Nguyen Bao Thoa and Khong Sin Tan (2013), An Empirical Study on Craft Design in Vietnam. *IBIMA Business Review*, DOI: 10.5171/2013.284227.

Nguyen Thi Thu Huong (2016) State Policy on the Environment in Vietnamese Handicraft Villages. *Chinese Business Review*, June 2016, Vol. 15, No. 6, 290-295

NTFP Research Center Vietnam, 2019

Pick, B., Marie-Vivien, D., & Kim, D. (2017). The Use of Geographical Indications in Vietnam: A Promising Tool for Socioeconomic Development? In I. Calboli & W. Ng-Loy (Eds.), *Geographical Indications at the Crossroads of Trade, Development, and Culture: Focus on Asia-Pacific* (pp. 305-332). Cambridge: Cambridge University Press. doi:10.1017/9781316711002.014

UNCTAD (2016) The interface between Access and Benefit Sharing Rules and BioTrade in Vietnam. UNCTAD/BCA/BIG Viet Nam. Vietnam.

UNIDO/MDG Fund (2013) Greening Value Chains for Sustainable Handicrafts Production in Vietnam. UNIDO, Austria.

USDA Agricultural Services (2008) Vietnam FAIRS Country Report. Hanoi, Vietnam

VIETRADE/ITC (no date) National Sector Export Strategy Wooden Furniture Industry in Vietnam. Vietnam.

Websites

<https://www.slideshare.net/mrlgregion/vietnams-forestry-forest-certification-scheme-vfcs>
<http://vietnamlawmagazine.vn/local-crafts-need-better-standardization-system-5822.html>
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Additional citations

Forest Department Regulations on Forest Product Authorization - 1986 B.E.

http://www.customs.go.th/statistic_report.php

<http://www.dnp.go.th/wildlifednp/เอกสาร/กฎหมาย/prb2.pdf>

<http://www.forest.go.th/economy/th/พระราชบัญญัติป่าไม้>

<http://www.forestry.gov.bn/SitePages/National%20Forest%20Policy.aspx>

<http://www.thaitambon.com/en/>

[https://www.forest.go.th/goods/wp-](https://www.forest.go.th/goods/wp-content/uploads/sites/13/2018/01/ระเบียบกรมป่าไม้ว่าด้วยการอนุญาตเก็บหาของป่า-พ.ศ.2529.pdf)

[content/uploads/sites/13/2018/01/ระเบียบกรมป่าไม้ว่าด้วยการอนุญาตเก็บหาของป่า-พ.ศ.2529.pdf](https://www.forest.go.th/goods/wp-content/uploads/sites/13/2018/01/ระเบียบกรมป่าไม้ว่าด้วยการอนุญาตเก็บหาของป่า-พ.ศ.2529.pdf)

<https://www.tisi.go.th/tisiinbrief>

Industrial Crops Statistic 2018, Malaysian Agriculture Department

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