Report of the CITES Tree Species Programme Regional Meeting for Asia and the Second Asian Regional Workshop on the Management of Wild and Planted Agarwood Taxa

Yogyakarta, Indonesia
25–29 June 2018

Meeting participants inspect a processing facility for plantation-grown *Dalbergia* timber near Yogyakarta, Indonesia. Photo: Kanako Ishii/ITTO

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Acronyms

ASEAN	Association of South East Asian Nations
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoP	Conference of the Parties
CPF	Collaborative Partnership on Forests
CTSP	CITES Tree Species Programme
EU	European Union
EUR	euro(s)
FLEGT	Forest Law Enforcement, Governance and Trade
FRIM	Forest Research Institute Malaysia
ITTO	International Tropical Timber Organization
Lao PDR	Lao People's Democratic Republic
NDF	non-detriment finding
SFM	sustainable forest management
USD	United States dollar(s)

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Introduction

More than 900 tree species, many of which are highly valuable, are listed in the Appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This regional meeting, which was attended by 48 participants from eight countries in the region (see Annex 3 for a list of participants), provided an overview of the CITES Tree Species Programme (CTSP) and its work to date in the region; reviewed national project proposals; and made recommendations on various issues related to the implementation of CITES for tree species. A field trip provided participants with insights into Indonesia's *Dalbergia latifolia* (sonokeling) plantations and timber-processing programme and enabled them to continue discussions on issues raised during the first two working days.

The CTSP was launched in June 2017 with the aim of supporting the efforts of CITES Parties that export valuable parts and derivatives of CITES-listed tree species. It is continuing the work carried out for more than a decade by the ITTO–CITES Programme, which came to an end in 2016.

This meeting was organized by ITTO, the CITES Secretariat and the Indonesian government's Directorate-General of Nature Resources Conservation and Ecosystem.

Opening remarks

Dr Milena Sosa Schmidt (far left), Mr Charles-Michel Geurts, Ibu Indra Exploitasia and Dr Steven Johnson make opening remarks. Photo: CITES Managing Authority of Indonesia

Dr Milena Sosa Schmidt welcomed participants to the meeting. She thanked the Government of Indonesia for hosting the event, the European Union (EU) and the Government of the United States of America for their financial assistance, and the CITES Management Authority of Indonesia, especially Ms Ratna Kusuma Sari and her team, for the excellent preparations for the meeting. After providing a briefing on the progress made since July 2017 in the work of the CTSP, Dr Schmidt said the meeting would discuss the progress made by Parties to further develop project proposals for the CTSP. With the first call for proposals, the CITES Secretariat received 68 proposals amounting to more than USD 14 million. Given that only a few of these would be funded, the priority of the meeting was to make progress on the revisions needed by proposals to ensure their unquestionable quality and increase the likelihood of timely funding. More tree species could be listed in CITES at the upcoming 18th Conference of the Parties to CITES (CoP18); if this happens, the CITES Secretariat, with the support of the ITTO Secretariat and other partners, will assist Parties to facilitate their work on tree species and strengthen their capacities in the long term.

Dr Steven Johnson thanked the CITES Secretariat, the Government of Indonesia, the EU and the Government of the United States of America for making the meeting possible. ITTO and CITES have been working together for many years, he said. In its second phase, the ITTO–CITES Programme for Implementing CITES

Listings of Tropical Timber Species had implemented more than 40 activities in more than ten range States. In Asia, the programme had focused on ramin (*Gonystylus* spp.) and agarwood (*Aquilaria* spp.), and the CTSP would continue this work and extend support for CITES-listed tree species to more countries and species. Many countries continue to struggle with implementing CITES regulations for listed species, said Dr Johnson, including understanding basic species biology, implementing inventories and management plans, carrying out non-detriment findings (NDFs), and putting reliable tracking systems in place to ensure that wood and other products from listed species can be tracked back to areas covered by NDFs. ITTO has long-term experience in assisting its member countries to address all these aspects, and the Organization looks forward to continuing to collaborate with the CITES Secretariat and countries under the CTSP.

Mr Charles-Michel Geurts, Deputy Head of the EU Delegation, EU Delegation to Indonesia and Brunei Darussalam, conveyed the greetings and best wishes of EU headquarters, especially the European Commission's Directorate-General for Environment. He said that the addition of about 300 species of threatened tree species at CoP17 constitutes a landmark in the fight against illegal logging and related trade at a global level. This success needs to be translated now through implementation by all Parties, which can only be done through cooperation between all parties. Mr Geurts said that the EU had been the main supporter of the ITTO–CITES Programme since its inception, and the programme had proved a successful means for building capacities in producer countries and helping them in meeting CITES requirements for tree species. Building on this support, the EU had recently contributed EUR 7 million to the CTSP. The EU hopes, he said, that the programme will support producer countries in achieving a sustainable, legal and traceable trade in listed tree species, thereby contributing to the Sustainable Development Goals and supporting local producers and smallholders. The EU has a special responsibility because it is a key market for many listed tree species, and consumers are increasingly requesting that the EU acts as a responsible consumer.

Mr Geurts said that Indonesia is an excellent choice to host the workshop given its front-runner role in ensuring the certification of the legality of its timber markets and exports. Indonesia is the first country in the world to issue FLEGT licences, which it has done under the EU–Indonesia Voluntary Partnership Agreement, based on the country's robust certification and monitoring scheme, SVLK. Mr Geurts listed some of the EU-supported forest-related projects in Indonesia. He thanked the host government, as well as the seven other countries in the region for attending and for developing project proposals.

Ibu Indra Exploitasia, Deputy Director-General of Natural Resources and Ecosystem Conservation (Indonesia), welcomed participants. The workshop, she said, will help define ways to sustainably use tree species listed in CITES and to find a balance between conservation, economics and people's welfare. She expressed gratitude to the CITES and ITTO secretariats and to the EU for making the event happen. She extended the apologies of Mr Wiratno, Director-General of Natural Resources and Ecosystem Conservation, who was unable to attend. Ibu Indra recalled CITES Resolution Conf. 14.4, which provides a framework for cooperation between CITES and ITTO. With financial support from a number of countries, the European Commission and the private sector, projects have been developed with the aim of helping participating Parties increase their capacity to make NDFs, enhance national laws and enforcement, and ensure the effective implementation of CITES. This workshop will help achieve some of those goals, she said. The meeting will involve discussions on ways to ensure that the use of CITES-listed tree species is consistent with their conservation and sustainability. CoP17 had added many more tree species, especially *Dalbergia* species, to the CITES Appendices.

Ibu Indra said that several developing countries have developed systems for tracing and ensuring the legality of the timber trade. Indonesia, for example, has developed its timber legality and log-tracking system as part of the Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement with the EU. It is important, therefore, not to "reinvent the wheel". The existing Indonesia–EU system, which encompasses all timber species, can be used as the reference system and enlarged to other CITES Parties and strengthened to ensure the traceability of all CITES-listed tree species. Other countries have developed similar systems, said Ibu Indra, and she expressed hope that all such systems can be harmonized to obtain a single, agreed system for ensuring compliance with CITES. She said continued support from the international community is crucial, and she hoped that the outcomes of the meeting would encourage further networking and cooperation among Parties, especially in the areas of law enforcement, information exchange, technology transfer, and capacity.

Tree species in CITES and overview of the CITES Tree Species Programme in Asia

Chair: Dr Steven Johnson

Overview of recent CITES developments on listed tree species

Dr Milena Sosa Schmidt

Dr Schmidt outlined some of the differences in the treatment of plants in CITES compared with animals, including in the definition of species and "artificially propagated", the treatment of hybrids, the use of phytosanitary certificates, permits for timber species, and exemptions for seedlings and tissue cultures. Given the CITES definition of "species", plants can be included in CITES at the level of species, subspecies and geographically separate populations. For plant species in Appendix I, any readily recognizable part or derivative is subject to CITES control; for plant species in Appendix II, any *specified* readily recognizable part or derivative is included. Annotations to the listings for plants in Appendix II and Appendix III determine which parts and derivatives are included. Such annotations constitute one of the biggest challenges for tree species. For *Dalbergia* species, for example, CITES regulations apply to all parts and derivatives except leaves, flowers, pollen, fruits, seeds, and non-commercial exports—so the annotations can be convoluted, and Parties often find them difficult to interpret and implement. The next CoP will revise some of the annotations because of the problems they sometimes create.

Dr Schmidt described the various CITES permits available for plant species, such as export and import permits, re-export certificates, certificates of origin, pre-Convention certificates, artificial propagation certificates, and phytosanitary certificates. She outlined the history of tree species' listings in CITES. When the convention came into force in 1975, 18 tree species had been included in the Appendices. Today, the number was more than 900, at least 600 of which were high-value timber species. She clarified that these figures keep changing due to changes in taxonomy and to what is considered a "tree" botanically and for the general public understanding. In any case, the number of tree species included in CITES continues to increase.

The ITTO–CITES Programme had a very positive message, with Parties realizing that support is available to help implement CITES for listed tree species. Many new species were listed at CoP17, including 204 *Dalbergia* species (the rosewoods, although not all are tree species). Dr Schmidt described some of the tree taxa now listed in the CITES Appendices, as well as recent additions and amendments to annotations. Some Parties, she said, are trying to implement new

regulatory systems for timber species, which are often highly complex. They may also face strong initial opposition from the private sector, especially if they include temporary export bans. Other issues with listings of tree species include institutional weakness; a lack of a designated CITES Scientific Authority for tree species; poor communication between CITES Management Authorities and CITES Scientific Authorities; and a lack of scientific information to aid the development of effective management plans for listed species.

Dr Schmidt listed some of the tools available for strengthening the control and monitoring of CITES-listed tree species, such as quotas, yield rates, the use of conversion factors, and the maintenance of national registers. The new listings of tree species will have a great impact on the joint work of CITES, ITTO and other partners. The CITES Secretariat has recently become a member of the Collaborative Partnership on Forests (CPF), which will help CITES in cooperating more strongly with the 14 existing CPF members (of which ITTO is one).

Dr Schmidt said that the listing of mahogany (*Swietenia macrophylla*) in Appendix II had required the production of NDFs and assurance of the legal origin of the timber, and it had fostered considerable international cooperation. She informed participants that at least 45 decisions on tree species had been adopted at CoP17. The key question is, how can implementation best be strengthened? What are countries' priorities and target species? She invited participants to use the meeting as an opportunity to share experiences, notably on the management of the CTSP, and to network with others in the region.

Introduction to the CITES Tree Species Programme

Dr Milena Sosa Schmidt

Dr Schmidt said that the CTSP was one of two components of an EU project, *Supporting Sustainable Management of Tree Species and Conservation of African Elephant,* which began in July 2017. It follows on from the ITTO–CITES Programme, which began in 2006 and ended in 2016. The overall objective of that programme had been to ensure that international trade in CITES-listed tree species was consistent with their sustainable management and conservation. Thirty-seven projects had been funded in Phase I of the programme and 42 in Phase II, and the main species in Asia had been *Gonystylus* spp., *Aquilaria* spp. and *Gyrinops* spp. The programme's main focus across the three tropical regions—as determined by the range States—had been the preparation of NDFs.

The main challenge when tree species are listed, said Dr Schmidt, is to assess the sustainability of the harvest through the formulation of NDFs. Parties rarely have up-to-date inventories, so data need to be generated. Other priorities in the

ITTO–CITES Programme had been timber identification; enforcement and compliance; and trade and market transparency. Much had been achieved over the course of the programme: for example, several Parties had developed NDFs; improved timber identification; put in place better controls for chains of custody; increased the capacity of CITES enforcement officials; improved knowledge of target taxa; improved harvesting techniques; and generated market studies that had assisted export agencies. In several cases, import suspensions and zero export quotas had been lifted.

Launched in June 2017, the CTSP will span four years to June 2021, with funding by the EU through the European Commission of EUR 7 million. The programme's focus is on assisting Parties to strengthen capacity for implementing CITES for listed tree species. Its four specific objectives are to:

1) *ensure the sustainable management of rare and valuable tree species and their products through improved technical and technological capacity;*

2) *contribute to legal and traceable trade in products from these tree species, including technological advances in identification;*

3) *help improve and strengthen forest governance, policies for forest management, and enforcement capacity and ensure benefit from long-term support for forest management in areas with CITES species; and*

4) *promote rural development in often remote areas, sustainable economic growth at the country level, a healthy private sector, and long-term poverty alleviation.*

Dr Schmidt showed a diagram of the programme's structure and priority species. The CITES Secretariat reports frequently to the EU in Brussels and also to the CITES Plants Committee, the CITES CoP, and the International Tropical Timber Council.

The CTSP has an advisory committee comprising three Party representatives from each of the three target CITES regions (Africa, Asia, and Central and South America and the Caribbean), donor representatives, two scientists, the CTSP Coordinator and Assistant, three Regional Coordinators, and the ITTO Secretariat. The Regional Coordinators work closely with the CITES Scientific and Management Authorities in the participating countries. Only one physical meeting has been held to date (at CoP17), and there has also been a one-week electronic meeting via email. The programme's main focus is NDFs; advanced techniques for tree product identification; advanced techniques for tree products

identification; marking and traceability; and capacity building and regional and national working groups (for knowledge-sharing).

Dr Schmidt outlined the selection criteria for projects, with priority given to species listed in Appendix II. The maximum amount of funding for any single project is USD 250 000. All submitted proposals need to be endorsed by the Party's CITES Management Authority and accompanied by an official letter from that institution.

Sixty-eight proposals were received from 41 Parties in the first call for proposals in August 2017. In the Asian region, invitation letters were sent to the CITES Management Authorities in 38 Parties in mid-August 2017, and 14 proposed project resumes had been received from six Parties (Cambodia, India, Indonesia, Malaysia, Thailand and Viet Nam) by mid-October 2017. Three regional workshops will be convened in 2018, of which this is the first. Four "roadmaps" have been developed, comprising an overall roadmap for the programme and one roadmap for each of the three regions. These roadmaps were developed based on the proposals received, selected and prioritized, and they will be revised over time according to need and the ongoing work. Mr Thang Hooi Chiew, the Regional Coordinator for Asia, has prepared the roadmap for the Asian region, and he is assisting Parties to prepare full project proposals. A website is being prepared for the CTSP.

Overview of the CITES Tree Species Programme in Asia

Thang Hooi Chiew

Mr Thang said that, although 17 proposals had been received in response to the invitation letter, three had not been evaluated because they had not been accompanied by official letters from the Party's CITES Management Authority. The 14 proposals amounted to a total value of USD 5.4 million, of which the CITES component was USD 2.91 million. After evaluation, the Advisory Committee approved five of the proposed projects, and their proponents (in Cambodia, Indonesia, Malaysia, Thailand and Viet Nam) had been invited to prepare full project proposals for approval and funding. Two independent scientists evaluated the five full proposals, and these evaluations were presented to the Advisory Committee via email in mid-March 2018. The project proponents were requested to revise their proposals, taking into account the comments and suggestions of the two evaluators as well as those of the ITTO and CITES secretariats and the EU. To date, said Mr Thang, only two revised proposals have been submitted to the CITES Secretariat. These are:

1) *Integrating the development of guidelines and incentives for piloting the establishment of small-scale private* Dalbergia *plantations with the determination of a non-detriment findings report in Preah Vihear Province in Cambodia.*

2) *Reducing harvesting pressure on the* Aquilaria malaccensis *natural populations in Peninsular Malaysia through the establishment of arboreta.*

Mr Thang outlined some of the future work in his role as Regional Coordinator, including continuing to assist Parties to revise their full project proposals; assisting Parties in executing the approved projects, including monitoring and reporting on their progress; revising the two-year roadmap for Asia; and assisting in a mid-term review of the CTSP in August 2019.

Mr Thang mentioned that the EU FLEGT focal points in relevant countries were interested in interacting with projects at the local level, and he said he will provide a list of contact persons to facilitate information exchange and knowledge sharing.

Launching implementation of projects in Asia under the CITES Tree Species Programme

Milena Sosa Schmidt and Thang Hooi Chiew

Dr Schmidt said that 21 steps were involved in processing a single transfer of funds from the CTSP to a project. Such transfers use a convoluted system called UMOJA, and a financial transfer involves a large number of staff in three duty stations (Geneva, Nairobi and New York). The entire procedure is supposed to take one month but can take longer, so project coordinators need to be patient because there will be a time lag between the initiation of a transfer and the actual deposit in the bank account. The Programme also has to carry out due diligence on legal and technical matters, and projects can facilitate the finalization of contracts by responding expeditiously to those inquiries.

Dr Schmidt addressed the issue of focal points: each project should have two, comprising the project leader or the CITES Management Authority. The CITES Management Authority must provide an official communication indicating who will be the first and second focal points for funded projects. Arrangements for focal points should be discussed internally and then communicated to the CTSP before the contract is processed.

Mr Thang said it is usually best if the two focal points are from the same organization; therefore, if the first focal point is not present, inquiries can be directed immediately to the second focal point. He said that some Parties have

difficulties in meeting CITES requirements for bank accounts. Administrative rules in Cambodia and Indonesia only allow bank accounts to be provided after contracts are signed, but CITES requires the account number to be submitted beforehand. So this is an issue that needs to be addressed. There may also be an issue for a project initiated by Thailand, which intends to establish a database of genetic materials from three Parties. The project will need to subcontract the collection of specimens, etc., and the project leader has asked whether, under the contract, monies can be sent directly to the other Parties. This is another matter that needs to be discussed.

Questions from the floor

A participant poses a question to panellists during the CITES Tree Species Programme Regional Meeting for Asia

Question: Could you please elaborate on the project proposal involving Association of South East Asian Nations (ASEAN) member countries – *Development of DNA markers to identify the origin of* Dalbergia cochinchinensis *wood in selected ASEAN member states*?

Mr Thang: This is a Thai project to improve the genetic database for this species in three Parties—Thailand, Cambodia and the Lao People's Democratic Republic (Lao PDR)—as reference points to improve tracking and monitoring.

Question: You mentioned hybrids in your first presentation: this is a complicated issue, and how can we deal with it? You also mentioned that the CTSP will run for four years. Is it possible to extend the programme to allow other important

projects to be implemented? Meeting all the due-diligence requirements seems very time-consuming. How long will it take to complete? How can we make the process implementation-friendly?

Dr Schmidt: The due-diligence requirements shouldn't take very long. There are relatively few questions, and answers can be short. Project leaders can prepare the responses, which must, however, be sent with an official note from the CITES Management Authority. To make it faster, therefore, project leaders should prepare all the responses. Regarding hybrids, plant hybrids are dealt with in CITES in quite a convoluted way. For example, Parties should specify the scientific names of the parents of hybrids, but this may be very difficult for plants. In Peru, this has been a problem for *Cedrela* because the forest is full of hybrids: Peru is considering listing all the *Cedrela* species in Appendix II—that's a possible solution to the issue of hybrids.

Mr Thang: You can't identify *Gonystylus* to species because there are so many species and they are difficult to identify. So even from the genus to the species level, it is often difficult. Regarding due diligence: it's very simple and shouldn't take more than two hours.

Dr Schmidt: many regulations in CITES are designed for animals. In the case of hybrids, it's easier to deal with for animals because usually captive breeding is involved, and hybrids therefore have a clear lineage, but this is much more difficult for plants.

Regarding the extension of the CTSP, ideally it will become a permanent programme with funding from a trust to assist Parties, but this has to be proposed to the CoP and the CoP has to agree. If that doesn't happen, the other possibility is to ask our colleague from the EU if the programme might be extended. But Parties may propose to the CoP to make this programme permanent.

Dr Johnson: Much will depend on how the programme is implemented and the success of the projects, so to some extent it's up to the Parties because donors will look at the efficiency of project delivery and the use of the funds. ITTO has had a long-running activity in its biennial work programme to assist member countries in implementing CITES, and this is how we continue to engage in the CTSP. It's important to distinguish between the duration of the contract with the EU and the overall existence of the programme.

Question: To what extent have synergies been achieved between CITES and the Convention on Biological Diversity (CBD)? There has been much integration between CITES and FLEGT, but synergy between CITES and the CBD is less

obvious. There is potential for dissonance. To Mr Thang, what is the position of the Government of Malaysia on submitting species to be listed in CITES? There are many *Shorea* species not listed as critically endangered, and illegal logging is rampant. Is there any interest within the Government of Malaysia to list *Shorea* species in CITES?

Dr Schmidt: There is potential for the CBD to constitute a barrier to trade through the Nagoya Protocol. In the ITTO–CITES Programme we wanted to develop a pilot project involving three Parties in three regions—Guatemala, Switzerland and Madagascar—on timber identification, but we immediately came up against the problem of exchange of samples. Under the Nagoya Protocol, the procedure is very time-consuming and not always implementable. The CBD Secretariat indicated at the time that there were no clear procedures to guide Parties on how to implement the Protocol. Guatemala left the project because it felt unable to participate and still uphold the Nagoya Protocol. Madagascar, on the other hand, which is also a signatory to the Protocol, continued in the project and, because it was unclear how to implement the Protocol, they sent the samples anyway. The CBD Secretariat is a member of the CPF, and hopefully we can work closely with it on tree species and to address the matter of implementing the Nagoya Protocol in a way that allows CITES to do necessary work.

Dr Johnson: All these secretariats are small—the CBD Secretariat has one person working part time on forests. Regarding research specimens, there is language in CITES on sharing research samples. It's good that the provisions allow for this, but what makes a difference is how the countries choose to interpret the relevant provisions. If the bureaucracy fears it might be criticized by a non-governmental organization for an export, this might limit its willingness to participate. So it is an education process.

Mr Thang: I can't speak on behalf of the Government of Malaysia, but, like any other country, it doesn't want to see species go extinct. Malaysia is part of ASEAN, which has a working group on CITES. Such listings can be pushed in that forum.

Dr Johnson: In terms of listing species, a listing proposal can come from any Party to CITES. Regarding *Shorea*, there are many species in the meranti group and it's traded in different groups. As soon as you start talking about high-value, high-volume species, the discussion becomes complicated. Another approach to potential listing could be through IUCN's Red List, which is often a starting point for CITES listings.

Question: Perhaps this regional meeting, and the meetings in other regions, can make a strong recommendation to consider a second phase of this programme and to make it a permanent programme of CITES.

Mr Geurts: EU funding for this is development cooperation funding, which is long-term funding, so I don't see this type of funding suddenly being scrapped for an internal project. It has some limitations; not all countries have access to it. But it is impossible to say anything at this stage about the future EU budget for this work. There is a seven-year cycle, and the European Commission has just made overall proposals for 2021–2028, so we are just at the beginning of the process.

Question: ITTO's financial system for project management was very efficient, but the system under CITES is much more difficult. Can CITES use a similar approach to ITTO?

Dr Johnson: ITTO has been collaborating closely as CITES has entered into its agreement with the EU, but many of the requirements for project agreements, bank account confirmation, etc., under the new programme are UN requirements. The secretariats will continue to consider ways to streamline things going forward. For the first round of proposals under the new programme, CITES needs to follow existing UN rules.

Trade of products from listed tree species in the Asian region

Chair: Thang Hooi Chiew

Dr Steven Johnson

Dr Johnson said that ITTO is carrying out regional trade studies on products from CITES-listed tree species as part of the CTSP. A consultant has been recruited, and the main part of the work will be completed by the end of the year. The aim of the studies is to analyse the availability of trade statistics, both through international reporting systems such as Comtrade and the CITES trade database, and to look at relevant trade that might be happening outside the annotations. This latter aim is less relevant to species in Asia because the annotations cover almost everything.

Overall, international data at the species level are limited. It is difficult to break down trade data by species; species' groupings might be available in individual country customs data but it is difficult to drill down to species at the international level. The CITES trade database is based on export and import permits, and that of course does have data at the species level. It also has limitations, however, mainly to do with data reliability. Past analyses have found that many product categories are poorly defined, and there are problems with varying or undefined

units of trade reported. Part of the work under the trade studies being undertaken by ITTO is to look at the data that are available and to recommend how the system could be strengthened.

Dr Johnson summarized Asian trade statistics for tropical logs, tropical sawnwood, tropical plywood, furniture, mouldings and plant extracts. Four countries in Asia and the Pacific—China, India, Indonesia and Viet Nam—are responsible for 95% of global imports of tropical logs, with four countries in the region—Malaysia, Myanmar, Papua New Guinea and the Solomon Islands—accounting for a significant proportion of global exports of tropical logs. The region is also responsible for a substantial share of global imports and exports of tropical sawnwood and plywood.

Volumetric trade data are unavailable for furniture and mouldings. Asia accounts for roughly USD 10.7 billion of the global imports of wooden furniture (worth USD 68 billion) and more than half of export value. The main issue with wooden furniture is that there is no way of knowing, from customs data, which species are being traded. The only way to obtain such information is from detailed country-level market studies or to estimate it by looking at the log mix going into the furniture sector of a country.

Some people think that a lot of CITES-listed species are being traded in the form of mouldings, but minimal data are available in the CITES trade database to confirm this. Comtrade provides data on some plant extracts for perfumery and pharmacy, including extracts from agarwood. According to these data, total world imports of such products are worth USD 2.4 billion, of which the region accounts for USD 0.9 billion; the region's exports in this category are worth an estimated USD 1.3 billion.

Dr Johnson provided a general overview of trade data for products from CITES-listed tree species obtained from the CITES trade database. The main exporters of *Gonystylus* spp. (ramin) are Indonesia and Malaysia; the data show a significant drop in sawnwood and plywood exports after 2012, but the group was listed in CITES Appendix II in 2001 and therefore the listing was not a factor in the sudden declines. A decline in exports of carvings made of ramin occurred in 2015, but the reporting unit for such products was given as cubic metres by many countries, and it is unclear how this would have been calculated. The trade studies will look at these and other anomalies in the data in more detail.

Most data on the export of tree products in the CITES trade database in Asia is for *Aquilaria malaccensis*. Log exports reached as high as 50 000 m^3 in 2015, mainly reported from Indonesia.

About 120 000 m^3 of *A. malaccensis* sawnwood exports were reported in 2012, mainly by Indonesia but also by Malaysia, Singapore (re-exports) and other countries. The main importers are China and China (Hong Kong SAR).

Woodchips are another major category of exports of *A. malaccensis*, with quantities usually reported in kilograms. In total, about 750 tonnes of chips were reported shipped in 2013, with Indonesia the largest exporter. The volume has declined in recent years. The main importers are the United Arab Emirates, China, Singapore and Japan.

Data on *A. malaccensis* carvings are in kilograms, which seems to make more sense than cubic metres. According to the data, Bangladesh exported almost 3 tonnes of carvings in 2012 but almost zero in 2013; data also indicate that total exports of carvings, including from Malaysia, which has been a substantial exporter, declined to almost zero in 2015 and 2016.

Thailand is the biggest exporter of *A. malaccensis* oil products in the region, followed by Singapore and Malaysia. There is an increasing trend in trade, mainly to South Africa, France and Singapore. Malaysia and Indonesia were the main exporters of *A. malaccensis* powder, but exports had declined apparently to almost zero by 2016.

Exports of *Gyrinops* spp. sawnwood decreased in the region in 2012 and then recovered; almost all exports are from Papua New Guinea, according to the CITES trade database. The main importers in 2012 were Macau and Singapore.

Exports of *Gyrinops* spp. chips show a declining trend. The main exporter is Papua New Guinea, and there were significant re-exports from Singapore in 2013. The data do not show any exports of *Gyrinops* spp. logs, so it's unclear how Singapore is generating its re-exported chips (which are greater than reported imports), unless it is chipping imported sawnwood.

The data indicate a decline in exports of *Dalbergia cochinchinensis* logs since 2013, to almost zero in 2016. This may be a consequence of the recent listing, but it's hard to be sure. Sawnwood exports of this species showed a spike in 2014, when almost 80 000 m^3 of this species was exported, mainly by Lao PDR and Viet Nam. Sawnwood exports were very low in 2015 and 2016.

Overall, trade in the products of CITES-listed tree species is tiny compared with total trade of these products; this should be borne in mind in efforts to strengthen customs oversight. It might not always be easy to separate out CITES-listed species from others, and people on the front line in charge of enforcing CITES need more resources. More resources are also needed to improve trade

data for CITES-listed species. Politically, it might be good to put many species in the CITES Appendices, but the question for those of us charged with enforcement is whether we are achieving what we are setting out to achieve. Customs classification systems don't allow the adequate implementation of CITES because they rarely provide data to the species level. To collect data on individual species, therefore, a special effort is required. ITTO's regular work programme is working to support countries to strengthen their general forest statistical capacity and to help resolve some of the issues referred to here.

Questions from the floor

Question: You mentioned that Indonesia exports quite large volumes of agarwood logs. We have done detailed studies, but we don't have data on agarwood logs, only chips and powder. Ensuring data reliability is very difficult; we have produced a report in Bahasa.

Dr Johnson: In carrying out these trade studies we may contact some of the Parties with questions about information in the CITES trade database. For example, we may ask whether Indonesia really did export this quantity of agarwood logs or whether it is a mistake: it is quite possible that the units reported in the CITES database were reported or entered incorrectly.

Question: What is the reason for the large decline in exports of *Dalbergia cochinchinensis* from Viet Nam and Cambodia to China?

Dr Johnson: I don't know the reason, or even if the data are correct. It looks unusual—but it could be that there was a big spike in demand in response to the listing.

Dr Schmidt: It could be that stockpiles of the species existed, pending decisions on their trade in relation to the listing, and that, in 2014, the authorities released the stockpiles for export.

Dr Thang: The ASEAN Taskforce on CITES Enforcement has been tasked with looking at these species. The work is ongoing, and we will see more about this in coming years.

Expected projects in Asia under the CITES Tree Species Programme: organizing ongoing work and next steps

Chair: Ms Ratna Kusuma Sari

Strengthening the management and conservation of Dalbergia cochinchinensis *and other rosewood species in Viet Nam*

Mr Nguyen Manh Ha

The project is focused on the two most traded *Dalbergia* species, *D. cochinchinensis* and *D. oliveri*. The project implementing agency is the Center for Nature Conservation and Development, and there is also a focal point in the CITES Management Authority. Four *Dalbergia* species are confirmed to occur naturally in Viet Nam—*D. annamensis*, *D. cochinchinensis*, *D. oliveri* and *D. tonkinensis*. The Government of Viet Nam lists rosewoods as endangered and their harvest in the wild is prohibited; harvesting and trading need to be properly documented, but this doesn't always happen. The harvesting of rosewood has a long history in Viet Nam, and the wood has been used since ancient times. Traditionally, there has been a strong timber trade between Viet Nam and China, and rosewood is one of the highest-value components of it. Rosewood species are now found in Viet Nam only in protected areas, and logs and sawnwood are traded illegally, with Viet Nam also used to launder timber from other countries. The illegal trade is highly valuable, so it is difficult to stop. Two of the four rosewood species in Viet Nam are endemic, but virtually no conservation measures are in place. This project will be one of the first to look specifically at rosewood, and hopefully it will pave the way for follow-up action for this group of species. The project has five objectives:

1. To implement NDFs and support implementation for *D. cochinchinensis* and *D. oliveri* in Viet Nam.

2. To develop a long-term conservation plan for *D. cochinchinensis* and other rosewood species in Viet Nam.

3. To ensure sustainable harvesting and trade by improving the recording and reporting mechanism.

4. To improve the capacity of forest rangers in Viet Nam to effectively manage, control and record the harvesting and trade of rosewood species.

5. To develop a rosewood identification manual and improve the existing national timber record system that supports the identification, tracking and management of rosewood harvesting and trade.

The target beneficiaries include management and enforcement agencies; local communities; and policymakers.

Challenges include the difficulty of collecting good data on illegal practices. Local livelihoods are linked to the trade, so it's a challenge to combat destructive practices while also ensuring that people can earn a living. Another risk is that the project will not result in strong follow-up actions by government to ensure that the project's achievements are maintained.

Questions from the floor

Question: Who owns the rosewood plantations?

Response: Wild rosewood populations in Viet Nam are only in natural areas and protected areas, which are managed by the government. The private sector and smallholders may own plantations, and they have the right to cut the trees whenever they want as long as they have the necessary registration and certification.

Question: Does your proposal cover only the remaining rosewood populations, or does it cover the entire country?

Response: It applies to the whole country. We will likely have two pilot sites, but the system will apply nationwide.

Question: Will you train people in wood anatomy, because it's difficult without training.

Response: We will provide training on how to use the rosewood identification manual. The Forestry Administration has an ongoing training programme, and we would want to include this training as part of the regular curriculum.

Reducing harvesting pressure on the Aquilaria malaccensis *natural populations in Peninsular Malaysia through the establishment of arboreta*

Dr Lau Kah Hoo

The executing agency for this project is the Ministry of Natural Resources and Environment, and the implementing agency is the Forest Research Institute Malaysia (FRIM). FRIM carried out three research studies on *Aquilaria*

malaccensis between 2007 and 2015, which provided strong baseline data for the current proposal. An important output of the third project was a conservation action plan for agarwood in Peninsular Malaysia. The current project is based on this action plan—which features the establishment of an agarwood arboretum to support gene-bank establishment. The project objective is to reduce harvesting pressure on natural populations of *A. malaccensis* through the establishment of arboreta. The arboreta will be useful for forest managers and operators, who will use them as seed sources and to test planting regimes; for researchers, who will be able to conduct research on various aspects; as a basis for tree breeding programmes; to promote collaboration among agencies to ensure the sustainability of the species in Peninsular Malaysia; and to contribute to the development of NDFs.

The establishment of arboreta is expected to reduce harvesting pressure on natural populations in the long term, when sufficient research and development becomes available on trees able to produce high-quality agarwood yields. Hence, these repositories will act as seed provenances to reduce dependency on natural populations and subsequently contribute to healthy regeneration in the long term. The project will have three outputs supported by nine activities to be carried out throughout the duration of the project. A risk for the project is the low availability of seedlings due to insufficient flowering during project implementation. It seems that *A. malaccensis* is now fruiting in various parts of Malaysia, so this would seem to be a low risk. Another question is whether there are still sufficient adult trees in the wild, given that agarwood is a popular species and poachers may have felled many trees. If this is the case, more sites will need to be visited to increase the chances of finding fruiting trees.

Questions from the floor

Question: Arboreta are for pooling genetic materials in one place, so it's unclear how the aim, as given in the title, of reducing harvesting pressure will be achieved.

Dr Lau: We gave the question of harvesting pressure deep thought before proposing the project to CITES. In Peninsular Malaysia, poachers have been going into forests to collect seeds and other propagative materials and, when they do, they cut down entire trees. We want to set up arboreta as a way of providing a supply of good-quality propagative materials. So this is an early step in making such materials available to reduce the incentive for poachers to harvest in the wild.

Question: Are pest outbreaks a problem?

Dr Lau: We are aware of pests and diseases, and we will work with our entomologist colleagues in FRIM if this becomes an issue.

Question: What sort of indicators will you use to ensure that the genetic material you collect is good quality?

Response: We have molecular studies. There are two clusters of populations, and we will set up the arboreta according to these. We will use the arboreta to sustain and preserve genetic diversity based on molecular evidence.

Development of DNA markers to identify the original of Dalbergia cochinchinensis *wood in selected ASEAN member states*

Suchitra Changtragoon

Dalbergia cochinchinensis, which is listed in CITES Appendix II, is native to a number of ASEAN member states—Cambodia, Lao PDR, Thailand and Viet Nam. It faces high levels of illegal logging, primarily due to strong demand in the Chinese market. There is a lack of technology to identify the origin of wood from this species, giving rise to this project to develop and validate molecular markers that can be used to identify the geographic origin of wood samples of this species. The project goal is to develop a marker of origin, which would be used in the verification of confiscated logs, wood and wood products. The project has two objectives: to develop phylogeographic chloroplast DNA markers for Cambodia, Lao PDR, Thailand and Viet Nam; and to test the efficiency of the markers in the identification of the origin of *D. cochinchinensis* wood. By project completion, a protocol should be available to improve law enforcement, and training will be conducted in each country. Sustainability will be ensured by training provided to officials in the four countries in the identification of *Dalbergia* species and the origin or *D. cochinchinensis* wood. Risks include difficulties in communicating with partners on sampling; the quality of DNA in existing samples; and lower-than-expected predictive power of markers; however, a previous study on the Thai populations showed the existence of a marker that could be used to identify populations.

Questions from the floor

Question: You will use only chloroplast markers, which might be inadequate for identifying populations. Have you considered using nuclear DNA markers?

Response: We considered using nuclear DNA, but this would be too costly for the available funds, and it's difficult to standardize the process across the region. Chloroplasts are easier to work with regionally.

Question: Thailand has very successful agarwood plantations. Are you able to share some secrets?

Response: I am aware that companies in Thailand have achieved good infection rates for agarwood, but I don't think the methodology and practices are secret.

Question: Will the identification tool be practical? Who will be the users? Identification using anatomical features may be more practical for users such as customs officials, inspection officials and the CITES Management Authority.

Response: Yes, identification to species is simple using wood anatomy. But to identify the origin of samples, we need to use DNA markers. We will provide training for those with laboratory knowledge on the specific techniques involved; it's important to get the right people for that.

Dr Johnson: There is an outfit called the Global Timber Tracking Network, which is seeking to establish a global database. They asked us to make sure that countries pay attention to protocols and make data available globally in the future, so please bear that in mind.

Sustainable management of Dalbergia latifolia *in Indonesia*

Yulita Kusu

Dalbergia has about 250 species, including subspecies. Twenty-two *Dalbergia* species occur in Indonesia, of which three produce valuable timber. There are three main centres of *D. latifolia* (known as sonokeling) in Indonesia—Central Java, East Java and West Nusa Teggara. As of early 2017, exports of sonokeling should comply with CITES requirements. The Ministry of Environment and Forestry has been collecting data on the species in West Nusa Teggara and Java since mid-2017. About 24 smallholders and community-based forest management units have sustainable forest management (SFM) certificates that include sonokeling. There are no pure sonokeling plantations in Indonesia, although the species has been planted in home gardens, etc., and an NDF is needed for export.

NDF assessment is complementary to the trade of *D. latifolia* products under the Indonesia–EU FLEGT Voluntary Partnership Agreement. NDFs require comprehensive information on, among other things, biological characteristics, national distribution of populations, harvesting, management, control and monitoring. The project involves a series of activities designed to generate this information. The literature review is underway now, and field surveys are planned. Permanent 1-hectare sample plots will be established in the three main distribution areas; this is important because there is a lack of good data on

growth and yield. Other activities include a spatial analysis and a review of current harvesting control and monitoring. The species has been naturalized in Indonesia, but it is not native to Indonesia. All this information will be used to prepare an NDF, and the findings will be disseminated through a workshop. The second main output will be baseline information for DNA fingerprinting and barcoding. DNA reference materials will be collected to enable the clear identification of the species, and a protocol will be developed for obtaining DNA samples. Target genes will be obtained from chloroplasts and nuclear DNA. A DNA database will be created as part of a national database on the Indonesian biodiversity initiative.

Target beneficiaries of the project are local communities; the Ministry of Environment and Forestry and local and central governments; academics; non-governmental organizations; and the private sector. This will be the first study on sonokeling in Indonesia: challenges include a lack of adequate data; high market demand versus small-scale operations; and the lack of a policy on harvesting. Risks include a failure to obtain sufficient data for understanding the status and distribution of *D. latifolia* in Indonesia and a lack of support from government agencies.

Questions from the floor

Question: Why are there no plantations of this species?

Response: There are no plantations inclusively of sonokeling, but people do plant it in their gardens. In Central Java, some sonokeling has been planted with mahogany and teakwood.

Question: You said that some smallholder forest management units have been SFM-certified. Can you elaborate?

Response: Twenty-four smallholders have SFM certificates. Most of these are community forestry; the forests are not pure sonokeling—they include teak and mahogany.

Question: The communities should know the species they have planted. Is fingerprinting necessary?

Response: Our literature review indicates that there are two species—*D. sissoo* and *D. latifolia*. We want to clarify the identity of sonokeling in the areas we are going to sample. We have to make sure it's not *D. sissoo*, and that is why it's important to do the species identification. The community may know what

they've planted, but, as scientists, we need to clarify; we don't want to take the risk of giving the wrong identification.

Integrating the development of guidelines and incentives for piloting the establishment of small-scale private Dalbergia *plantations with the determination of a non-detriment findings report in Preah Vihear Province in Cambodia*

Chheang Dany

The project site is in the border area with Lao PDR and Thailand. There has been a dramatic decline in biodiversity in the area since 1970. The project will have two important outputs—guidelines and incentives to encourage the establishment of private plantations of *Dalbergia cochinchinensis* and *D. oliveri*; and the development of NDFs for these two species in the Choam Ksant management district in Preah Vihear Province. Given that *Dalbergia* spp. are listed in the IUCN Red List and CITES Appendix II, it is important to provide the private sector and smallholders with incentives to invest in plantations and government assurance that it will be possible to trade the species. Without public participation and investment, the species will disappear. The species is so valuable that, if protection is the only strategy, all remaining trees will be taken illegally and there is no way the species will survive. We need to create an environment in which people feel ownership and that managing the species sustainably is good for business.

Working-group reports

Members of one of the four working groups discuss an issue on Day 1 of the meeting. Photo: CITES Managing Authority of Indonesia

Four working groups convened on Tuesday to discuss four key topics: NDFs; marking and traceability; tree species' product identification; and capacity building and governance. The chair of each working group reported the results of their discussions to the plenary session on Thursday morning.

Working group 1: Non-detriment findings

Working group 1 identified gaps and lessons learned (see Annex 1). A question raised in discussions was whether listing a species in a CITES Appendix could harm the species by leading to price increases and thereby increasing the risk of illegal harvesting. Therefore, it might be better to focus efforts on already-listed species for the time being rather than looking to list more target species. Another issue was the adequacy of national laws in supporting CITES resolutions. The working group made two main recommendations:

1) Parties should consider preparing NDFs in two stages: a preliminary evaluation, followed later by a more comprehensive assessment (which require substantial budgets and human resources).

2) Intergovernmental bodies, including the CTSP, should provide training workshops to help build capacity in the preparation of NDFs.

Questions from the floor

Question: Regarding the point of not focusing on new target species: if there is no work on species facing illegal trade, we will suddenly wake up when they are listed in Appendix II, by when it will be too late. Isn't it better to begin the work early?

Question: What aspects of existing national laws are not helping the conservation of populations of species? When you say it's lacking, in what respect? It's more likely that the legislation is in place but there is a deficiency in implementation.

Mr Thang: All Parties that have submitted projects to the CTSP have adequate laws to protect species and their own laws to support CITES. The main problem in the region is enforcement because the capacity is not there. Moreover, interagency cooperation is often very poor.

NDFs are basically an inventory of what is in the forest for a given species. In this sense, they are not new. It may not be a matter of simplifying NDFs but to start with a basic inventory to find out what is there. Don't worry about the term NDF; it's a new word for what we've always been doing.

Dr Schmidt: CITES has no binding guideline for NDFs; Parties do what they can according to their resources and national laws and capacity. Often, Parties make NDFs in phases or for certain production areas. This might be enough to lift suspensions or voluntary bans, and NDFs for other production areas can then be formulated progressively.

Working group 2: Marking and traceability

Working group 2 identified gaps and lessons learned (see Annex 1). It noted that, although it is important to correctly identify species, sometimes it is not known how to do this best. In Thailand, identification of *Dalbergia* spp. by wood anatomy is effective in the field, but DNA markers might be required for some suspect species. DNA markers are also very useful for forensic investigation, and the development of a regional DNA database is important. The working group discussed the use of the DART-TOFMS method that can identify species and populations by analyzing proteins. Different ASEAN countries have different capacities to use identification technologies. Moreover, the costs of some of the new methodologies are limiting. The group made the following four recommendations to address specific gaps:

1. Improve national regulations to use scientific verification, if needed.

2. Develop a scientific database through scientific research for long-term CITES support.

3. Enhance networking and capacity in the use of scientific tools such as DNA markers (Cambodia, Lao PDR and Myanmar), stable isotopes (all Parties), and chemical-based techniques (e.g. DART-TOFMS for all Parties) through, for example, training courses, laboratory establishment, methodology standardization and scientific exchange and visit.

4. Consider the following new target species for marking and traceability efforts: *Dalbergia oliveri* and *D. cultrata*.

Questions and comments from the floor

Dr Schmidt shared information on the potential acquisition of a DART-TOFMS machine in Indonesia. She suggested that Parties in the region jointly explore the utility of the technology for identifying CITES-listed species and whether a regional facility could be established. It would be ideal to have one DART-TOFMS in each one of the six CITES regions. Dr Schmidt had discussed and asked for a list of the CITES tree species that could be identified with this method, which apparently works better for hardwoods than for softwoods.

Question: Although such state-of-the-art technologies will undoubtedly be helpful, we should ask what is required by customs inspectors and enforcement agencies to identify species in the ports, etc.? It might be useful to conduct research on developing handheld devices for use by customs inspectors.

Mr Thang reported that the ASEAN Task Force on CITES Enforcement could explore the utility of the DART-TOFMS device and in which country it could be hosted.

Dr Johnson informed participants that an ITTO–CITES Programme project in Brazil had tested handheld devices using near infrared spectrometry. The devices have been tested in the field and have been shown to distinguish between species reliably and even within species to show provenance. The results have been published in scientific journals, a proposal has been submitted to the CTSP for a follow-up project, and Brazil is working with Guatemala to transfer the technology. The handheld scanners are relatively inexpensive, but more sophisticated equipment is needed in the lab to calibrate them. The technologies are evolving quickly, and the costs are declining. It's going to get easier to do this work, and the main challenge will be in deciding which technology makes sense in each country. An ITTO–CITES Programme project in Switzerland had aimed to assemble a global database on *Dalbergia* species, but it didn't become global because Guatemala was ultimately unable to export samples to Switzerland. Nevertheless, that work establishes a template for what might be done. The Thai project is taking a regional approach, and it should link up with the Global Timber

Tracking Network to increase joint learning and, in the longer term, have access to data.

Comment: One of the issues is the level of expertise available at the customs gate. An expert in wood anatomy in Thailand can identify the species of a wood sample in 30 seconds using a hand lens, but such expertise is uncommon. The starting point is to compile a database.

Working group 3: Tree species product identification

Working group 3 identified gaps and lessons learned (see Annex 1), noting that wood-anatomy approaches are only possible for solid wood products, whereas in most finished products the wood component has been modified and is therefore difficult to identify. The working group made two sets of recommendations, one for the short term and one for the long term. In the short term, for example, it recommended the development of a product identification manual for commonly traded CITES-listed species. In the long term it recommended the development of a global database on wood anatomy and DNA markers for CITES-listed species.

Questions from the floor

Question: In the long-term recommendations, what do you mean by "practical expert system"?

Response: We learned of the situation in Viet Nam, which has made a list of wood-identification experts available to customs to call on when they have queries on identification. Se we mean the creation of registers of experts that customs officers can use to assist them in identifying suspect species.

Comment: It might be helpful to develop an international wood-identification licence or standard so that customs officers across the region have comparable capacities.

Mr Thang: ASEAN has done work on this, and it might be useful to take up the idea of a register in the relevant ASEAN forum.

Working group 4: Capacity building and governance

Working group 4 listed a set of nine technical and governance challenges related to capacity. For each of these challenges, the group identified needs and actions for meeting these (Annex 1). Activities included training workshops; hands-on training; exchange visits; information dissemination; expert consultations; training of trainers; field visits; and awareness raising. Specifically, the working group proposed the institutionalization of the CTSP within the CITES Secretariat

to ensure the ongoing exchange of information and knowledge among CITES Parties.

Comment from the floor

Dr Johnson: In addition to the CTSP, countries may wish to submit capacity-building projects to other institutions, including ITTO.

Identification of priority areas

Chair: Steven Johnson

The chair invited comments from the floor on the recommendations the workshop should make to strengthen the implementation of CITES tree species' listings in the region. The following recommendations arose from the ensuing discussion involving all participants. Participants were also given the opportunity to comment on a later draft of the recommendations, and their comments are incorporated below to the extent possible.

1) CITES and other international organizations should consider making funding available for workshops and other forms of training in the region aimed at improving the capacity of range States to identify the species and origin of wood products and to develop NDFs for Appendix II-listed tree species in line with CITES requirements. To increase cost-effectiveness, regional training workshops could be held in conjunction with other regional and international meetings, such as training workshops on the ITTO criteria and indicators for SFM.

2) The CITES Secretariat should establish dedicated forums as part of its CTSP website to facilitate networking and the exchange of information, knowledge and expertise on species identification (including anatomy and DNA barcoding and markers); product marking and traceability for species and the origin of genetic resources through DNA markers, stable isotopes and chemical products; the development of NDFs; and other aspects involved in implementing CITES listings of tree species. A roster of experts could be created to assist in moderating these forums. One such forum should be dedicated to the sharing of information and knowledge on raising high-quality planting stock, best practices in plantation management, and methodologies for the use of inoculants.

3) Countries in the region, learning from similar initiatives in Brazil and elsewhere, should consider developing easy-to-use methods, including handheld devices, for the rapid identification by enforcement staff of samples and products in the field, airports, seaports and customs checkpoints of the products of CITES-listed tree species in international trade as a means of preventing illegal trade and tracing product origin.

4) The CTSP should advise on the use of common comparable formats for reporting and recording of the products of CITES-listed tree species in trade,

especially the reporting units and product names used on CITES export permits.

5) The CTSP should be extended beyond 2020 as a permanent collaborative programme of the CITES Secretariat and ITTO so it can continue as a platform to enable range States to voluntarily share knowledge, information and concerns on the conservation of their listed species, and also to continue as a focal point for capacity building in conducting NDFs.

6) The CITES Secretariat should consider the preparation of a "Wood Atlas of the World", subject to the availability of funds, to facilitate the identification of products and formulations of listed tree species. Information on DNA databases, as appropriate, could be included in the atlas.

7) The following proposal to amend Resolution conf. 9.24 (Rev.CoP17)* on *Criteria for amendment of Appendices I and II* should be considered during the 24th Meeting of Plant Committee and CoP18.

   To insert the paragraph below in Annex 3:

   Parties should provide information on the wood anatomy of any new tree species they propose for inclusion in the CITES Appendices.

Closure of meeting

Mr Agung Nugroho, representing Indonesia's CITES Management Authority, said that, during the meeting, range States had shared their project proposals for the CTSP and discussed ways of managing CITES-listed tree species consistent with their sustainability. He hoped that the recommendations made would be followed up as the next steps in the effective implementation of CITES. He thanked the CITES Secretariat, ITTO, the EU, the session and working-group chairs, the organizing committee and all participants for making the meeting possible. He then closed the meeting.

Participants in the ITES Tree Species Programme Regional Meeting for Asia. Photo: CITES Managing Authority of Indonesia

Report of the Second Asian Regional Workshop on the Management of Wild and Planted Agarwood Taxa

Yogyakarta, Indonesia
28–29 June 2018

Opening remarks

Participants in the Second Regional Workshop on the Management of Wild and Planted Agarwood Taxa. Photo: CITES Managing Authority of Indonesia

In his opening remarks, Dr Witjaksono, Head of the Research Center for Biology, Indonesia Science Institute, Indonesian CITES Management Authority, said the aim of the meeting was to strengthen cooperation among range States on the stocks, management, technologies, harvesting and trade of agarwood-producing species in both the wild and plantations. Indonesia, he said, is one of the world's biggest exporters of agarwood products. Agarwood is highly valuable: 1 kg of agarwood may be worth as much as USD 3000. There is much still to be learned about agarwood management, and this meeting will help increase knowledge. Dr Witjaksono declared the meeting open.

Session 1: Implementing Decision 17.19—Agarwood

Session 1 speakers and chair (second from left) at the Second Regional Workshop on the Management of Wild and Planted Agarwood Taxa. Photo: CITES Managing Authority of Indonesia

Chair: Joeni Rahajoe

Decision 17.197 and NDFs for agarwood-producing species—setting the basis for the workshop's programme of work

Dr Milena Sosa Schmidt

Dr Schmidt said that the workshop arose out of Decision 17.197 of the CITES CoP, which directed the CITES Secretariat to organize a workshop to bring together range States to discuss how to balance the management of natural forests with the management of planted forests. The discussion began in a workshop held in Assam, India, in 2015, at which participants felt there had been insufficient time to make recommendations and had requested a follow-up meeting. Holding the workshop back-to-back with the CITES Tree Species Programme Regional Meeting for Asia is a cost-effective measure, with new colleagues able to attend the workshop alongside most of those who participated in the meeting held earlier in the week.

Overview on agarwood trade trends and regional trade flows for agarwood products: how plantations can balance the harvest in natural forests

Kanako Ishii

Ms Ishii presented charts showing export data obtained from the CITES trade database for a range of agarwood products over the five-year period from 2012 to 2016. For example, no trade in agarwood carvings was reported in 2015 and 2016, despite significant trade in the previous three years, especially 2012 and 2014. Over the five-year period, the major importers had been China (Hong Kong SAR), Kuwait and Viet Nam. Ms Ishii noted that some data had been reported in the database without indicating the units and were therefore excluded from the charts. Exports of agarwood chips had declined in 2014–2016, the major importers of chips being Kuwait, the United Arab Emirates, Japan, Singapore and Taiwan Province of China, and log exports had also declined in 2014–2016 after a spike in 2013. Singapore's imports of agarwood oil had increased after 2013, with dramatic jumps in Singapore and to some extent in the United Arab Emirates and South Africa.

Exports of agarwood sawnwood and powder had both decreased in the period 2012–2016.

Ms Ishii presented the results of research she had undertaken on major Japanese importers of agarwood products. Japan has been fascinated with agarwood for more than 1500 years, when Buddhism became widespread in the country. It is of great cultural importance, with Buddhist rituals requiring the burning of agarwood incense as a purifying agent. The agarwood trade is long established, previously involving reliable merchants in Southeast Asia who were able to evaluate the quality of natural agarwood using techniques that were handed down from generation to generation. In recent years, however, market changes have led to a loss of knowledge among exporters. This, combined with the increase in plantation-grown agarwood, has resulted in an increasing trend in agarwood oil exports; nevertheless, the Japanese market still places great value on high-quality agarwood, despite its increasing scarcity. There is a lack of reliable data on Japanese imports for agarwood, at least partly because, since 1999, agarwood has been aggregated with other non-timber forest products in customs data.

Ms Ishii said it was important for the Japanese agarwood industry (comprising importers, manufacturers and retailers) to engage more in international forums to build trust-based relationships with exporters, voice their views and better understand changes in the sector in key exporting countries. Japan's agarwood industry should also be encouraged to share information with consumers on the need to ensure the sustainability of Japan's use of this natural resource.

For the time being, said Ms Ishii, there was relatively little concern in the Japanese market about dwindling supply because sufficient agarwood stocks exist within the country to meet demand for some years.

Questions from the floor

A participant poses a question to panellists during the Second Regional Workshop on the Management of Wild and Planted Agarwood Taxa. Photo: CITES Managing Authority of Indonesia

Question: Can you explain more about the trust-based relationships needed between importers/exporters?

Ms Ishii: Importers and exporters need to better understand the situation in each other's countries. The demand for good agarwood is escalating, but importers seem uninformed about the dwindling supply. More contact in international forums will enable an increase in understanding, and greater trust will ensure better information flow and greater insight into the Japanese market.

Question: Exports declined in 2012–2016 for all agarwood products except oil, in a period in which the production and export of plantation-grown products have emerged. This implies that plantation-grown agarwood works well for oil production but less well for other products. How do plantations help in the supply of non-oil products?

Ms Ishii: The data are not completely reliable because many exports and imports are reported without units, so we could not use those data in our analysis. The

increase in oil to 2015 might be artefact of the data. Nevertheless, the market is certainly changing.

Overview on agarwood trade trends and regional trade flows for agarwood products

Tadjudin Edy Komar

Mr Tadjudin said that world demand for agarwood is predicted to increase to 30 000 tonnes by 2022. Indonesia's exports of wild-grown agarwood (in the form of powder and chips) increased from 519 tonnes in 2008 to 1660 tonnes in 2013, while exports of artificially propagated agarwood increased from 69 tonnes to 166 tonnes. Nevertheless, there is a big gap between the sustainable supply and global demand. The wild resource is subject to destructive felling and, in any case, agarwood is slow to form in nature. Therefore, the only way to fill the gap is through artificial propagation. Of three species that produce agarwood in Indonesia (*Aquilaria malaccensis*, *A. filaria* and *Gyrinops* spp.), *A. filaria* has the highest harvest quota and export volume. The five biggest importers of Indonesian agarwood are Saudi Arabia, Taiwan Province of China, Singapore, the United Arab Emirates and China.

Can plantations fill the supply gap created by the increasing shortage of wild-grown agarwood? Yes. Many countries are accelerating efforts to produce agarwood in plantations, including Cambodia, China, India, Indonesia, Malaysia and Viet Nam.

Nevertheless, efforts are needed to improve the production of artificially propagated agarwood, including the following:

- Conduct research and development to improve product quality and quantity and manage pests and diseases.
- Explore the range of microorganisms to stimulate agarwood formation.
- Increase networking and collaboration among laboratories to develop best-fit inoculants.
- Facilitate interest among communities in agarwood production—in Indonesia, for example, there is a new policy to allow communities and small enterprises to use state forests to plant agarwood and other species, and the CITES Management Authority has carried out capacity-building activities to encourage local communities and others to plant agarwood.
- Explore other potential species for agarwood production.
- Improve harvesting and processing technology to ensure high quality and increase efficiency.

- Ensure that local farmers and small enterprises benefit from planting agarwood, including by promoting market and trade access for their products.
- Remove disincentives related to trade, legal requirements, price and permits.

Mr Tadjudin introduced the concept of model clusters designed to integrate potential resources to ensure sustainable production and species conservation. Components of clusters include conservation and genetic improvement; the production of planting materials and of best-fit inoculants; pest and disease control; capacity building and extension; harvesting and processing technology; and promotion and marketing. Key stakeholders in the cluster are, among others, forestry offices, research and development institutions, growers, traders and processors, and industry offices.

A model cluster was established in eastern Indonesia under the ITTO–CITES Programme. The provincial government has been very welcoming, and the cluster is now in place.

In summary, said Mr Tadjudin, artificial propagation can replace wild agarwood as long as sustainable plantation production operations are put in place, including pest and disease management, and the remaining wild plant genetic resources are conserved.

Question from the floor

Question: Singapore does not have natural material but they are agarwood exporters. Why doesn't Indonesia export directly instead of via Singapore?

Tadjudin: My understanding is that Singapore traders have very good links in Indonesia, and they have invested in local collectives to buy agarwood in the past, but this might not apply now. It's hard to answer the question. Singapore works more to collect raw materials from other countries because they don't have the resources themselves.

Session 2: How range States can cooperate to ensure the long-term survival of agarwood-producing species in the wild through agarwood plantation programmes that integrate forest recovery programmes

Chair: Joeni Rahajoe

Bangladesh

Rezaul Sikder

Overexploitation of natural agarwood has put the species under threat. Bangladesh imposed a harvesting moratorium on trees in the wild in 1989, and no natural wood is now harvested in the wild. Given its high value, people started cultivating agarwood in their homegardens, and the Bangladesh Forest Department started planting agarwood in 1994. There are now nearly 6000 hectares of planted agarwood in monocultures; in addition, there are many trees in homegardens, over which the government has no control. Iron nailing is commonly used to inoculate agarwood trees (at age 8–10 years) because it is low-cost. Nails are hammered into the whole tree (as high as 10 cm diameter) at a spacing of 2.5–3.5 cm. About 100–150 kg of iron rod is required for a medium-sized agarwood tree. The trees are ready for harvesting 3–5 years after nailing. The NDF is easily dealt with because all products are from artificially propagated trees. To increase plantation area, the government should lease land to agarwood industry owners.

Cambodia

Suon Phalla

Cambodia wants to assess the status of *Aquilaria crassna*, develop a national conservation strategy for developing *A. crassna*, and increase the involvement of the private sector in *A. crassna* protection and development.

Agarwood is used in Cambodia for many purposes, and commercial networks exist between Cambodia and neighbouring countries. The species has been devastated in the wild in Cambodia, and there is no commercial collection of it in the wild, although some people still search for it. All agarwood habitat is in protected forest, but there is no specific conservation strategy, nor an official restoration and plantation mechanism. There are many mostly private-sector and family-scale efforts to establish agarwood plantations in areas where wild agarwood used to occur, and Thai and Cambodian firms are looking to invest in agarwood plantations in the country.

A participant presents a country report during the Second Regional Workshop on the Management of Wild and Planted Agarwood Taxa. Photo: CITES Managing Authority of Indonesia

India

Jagdish Kishwan

India does not allow the harvest of agarwood in government forests, but there are populations in community forests. The export of agarwood wood and agarwood wood products is prohibited in raw form (including powder, flakes, dust and charcoal), but the export of agarwood oil and live plants is permitted.

No NDF has been developed for wild agarwood, which may not be exported. The estimated population of agarwood in non-forest areas, mostly in northern India, is 9–10 million trees, plus 1.5 million trees in Assam; 65% of the population has a diameter of less than 15 cm. The area of cultivation is increasing and interest in trade is high.

Indonesia

Tadjudin

Indonesia's export quota for *Aquilaria filaria* was 515 800 kg between 2013 and 2017, and actual exports were close to this level. The export quota for *A. malaccensis* was 178 500 kg from 2012 to 2017, and actual exports were significantly below this from 2014. The quota for *Gyrinops verstegii* is 5000 kg, and actual exports were at this level to 2017. In 2018, the quotas for the three

species decreased to 490 000 kg for *A. filaria*, 150 000 kg for *A. malaccensis*, and 4500 kg for *G. verstegii*.

The Ministry of Environment and Forestry has been promoting agarwood plantations in various regions, and inoculants are being developed for injection into host trees. There are 3.12 million planted agarwood trees in 18 provinces in Indonesia, with the largest number in Central Kalimantan, followed by North Sumatra.

A key to long-term sustainable use is to increase the value obtained by agarwood growers, creating high-quality agarwood, ensuring legal trade, and strengthening research and development.

Malaysia

Lau Kah Hoo

Malaysia used the *proposed guidance for making non-detriment findings for agarwood-producing species* (CoP 16 Inf. 11) issued by CITES CoP16. Two assessments were conducted to provide a preliminary NDF for wild agarwood populations in Malaysia—an assessment of the resilience of *Aquilaria malaccensis* to harvesting; and an assessment of factors affecting the management of *A. malaccensis*. Malaysia has also published the *Conservation Action Plan for Threatened Agarwood Species in Peninsular Malaysia* as an output of the ITTO–CITES Programme. There is a need for a detailed inventory of the resource at the state level. Malaysia has an inventory of timber resources, but this is inadequate for agarwood. There is also a need to review harvesting data, promote the use of agarwood in enrichment planting, encourage agarwood cultivation with financial incentives, improve enabling conditions for plantations, and obtain commitment from stakeholders through dialogue.

Question from the floor

Question: You indicated that an NDF has been done for agarwood—but you also say an inventory is needed. Could you explain that?

Mr Lau: The current NDF uses data derived from forestry inventories, which are done for a different purpose using different sampling methods. That's why we use the term "preliminary" NDF. Now we are recommending a specific inventory of agarwood.

Myanmar

Robert Walsh

Myanmar has no NDF covering agarwood. The Myanmar Forestry Department has not collected data to provide the basis for developing NDFs for any agarwood species. Myanmar probably has the most northern natural populations of *Aquilaria*. The most common species are *A. crassna* and *A. malaccensis*, but there are also unclassified species in North Kachin state. There was a massive boom in agarwood production in Myanmar in 1970s, which led to the near-extinction of wild material. In the early 2000s the government encouraged the establishment of tree plantations, including of *Aquilaria*; the most successful plantations are those of smallholders. Myanmar's implementing regulations are based on Thai laws; even today, township-level officers responsible for certification and enforcement do not understand these well, so education is needed. The Myanmar customs bureau is well informed regarding illegal exports, but enforcement for agarwood is inconsistent. It is illegal to export wild agarwood or agarwood that cannot be accounted for, but much is going through India, China and Thailand. Not one piece of agarwood has been exported legally from Myanmar; all has been illegal. CITES implementation is not a priority for the Myanmar Forestry Department. Planters have to push the government, but there is corruption at each administrative level. The industry is developing its own best practices, but it has no laboratory support.

Nepal

Navin Giri

Agarwood has become a priority in private plantations in Nepal in the last five years, and about 500 000 seedlings have been planted. Inoculation has not yet commenced. The Department of Forests has started an official programme by distributing 50 000 seedlings to communities and individuals in 2018. An NDF for agarwood has not been prepared, and there are no international agarwood exports.

China

Liu Yangyang

China has two agarwood species: *Aquilaria sinensis* and *A. yunnanesis*, and there are only 130 000 trees in the wild. On the other hand, agarwood been planted in several provinces and there are now 73 million planted trees. Of the two species, *A. sinensis* is the most commonly planted. The wild resources are strictly protected and collection is prohibited. Agarwood plantation technology has matured in China and there are now tens of millions of agarwood trees, with the number of trees still increasing by 1 million per year. A highly efficient technology called Agar-Wit has also been developed for inducing the development of agarwood, and large quantities of agarwood are being produced. The patented

Agar-Wit technology has been demonstrated and adopted in Guangdong Province and Hainan Province and tested in Bangladesh, Cambodia, Indonesia, India, Malaysia, Myanmar, Thailand and Viet Nam.

Question from the floor

Question: Other countries mostly use *A. malaccensis*. Does Agar-Wit work for this species?

Mr Liu: We have tested many species and it has been successful.

Viet Nam

Nguyen Manh Ha

There are four agarwood species in Viet Nam, but there is no legal collection in the wild and all exports (since 2006) have been from plantations. Therefore, there is no NDF for the export of agarwood from Viet Nam.

The main species in Viet Nam is *A. crassna*, which is now very rare in the wild. The plantation area has doubled since 2006. *A. crassna* is the most commonly used species in plantations—it is fast-growing, native, and produces the best-quality agarwood. In 2009 there were about 12 000 hectares; by 2018 this had grown to almost 30 000 hectares, almost all established by communities or the private sector, plus about 1 million trees in home gardens. Growers have been provided with free seedlings and they can plant them wherever they want, and many people have planted them in homegardens and along roads. Viet Nam needs to comply with CITES, so whenever anyone wants to develop plantations for future export they need to register their plantations from the beginning. The challenge is what to do with individual trees; it is very difficult to verify and certify whether a specimen is from the wild or a homegarden. Many smallholders do not know the procedure and don't have proper registration.

Question from the floor

Question: Can you elaborate on the registration and verification process?

Mr Nguyen: We have simplified procedures. Local authorities do the verification, so it doesn't need to be done centrally. This works in Viet Nam, but it may not work in other countries.

Working-group reports

Members of one of the four working groups discuss an issue during the workshop. Photo: CITES Managing Authority of Indonesia

Two working groups convened on Thursday afternoon and Friday morning to discuss agarwood NDFs for natural forests and plantations, respectively. The chair of each working group reported the results of their discussions to the plenary session on Friday afternoon. Participants were also given the opportunity to comment on a later draft of the recommendations, and their comments are incorporated below to the extent possible.

Working group 1

The full report of working group 1 is available in Appendix 2. The working group proposed recommendations, including region-wide recommendations that were discussed and amended in the plenary as follows.

Regional recommendations

- Enhance law enforcement, management and supervision for producing and importing countries to prevent the smuggling of agarwood.
- Encourage the establishment of an exchange platform/mechanism for sharing information on technology and knowledge among range States.
- Encourage range States to rationalize national laws to promote tree cultivation, felling and processing by traders and local communities.
- Encourage range States, as appropriate, to adopt and implement measures to create a national agarwood species fund that would collect fees paid by users of agarwood-producing populations. Such funds could assist in strengthening the implementation of national strategies to ensure the conservation, sustainable management and international trade of agarwood products.

- Establish a forum, potentially hosted on the CTSP website, to enable stakeholders to share information and knowledge on agarwood, including inoculation methodologies, as appropriate.
- Encourage the engagement of the private sector and agarwood industries in the effective implementation of sustainable agarwood resource management.
- Invite the private sector to contribute financially to the organization of a follow-up meeting to discuss management strategies that balance the use of planted and natural forests for agarwood production.
- Protect, restore and sustainably use wild populations of agarwood in range States, as needed and appropriate.

Working group 2

The full report of working group 2 is available in Appendix 2. The working group proposed recommendations, including region-wide recommendations that were discussed and amended in the plenary as follows.

- The CTSP, in collaboration with ITTO, should produce a report to cover:
  - An up-to-date global overview on the status of conservation of agarwood-producing species.
  - An up-to-date global compilation of:
    - ✓ technologies for producing agarwood products
    - ✓ current inoculation methods
    - ✓ case studies on best practices
    - ✓ terminology for agarwood products.
  - Recommendations on how best to balance management of natural and planted agarwood-producing forests.
- The proposed contents of the above-mentioned report will be circulated to participating Parties before they are finalized and the substantive work on the report begins.
- The CTSP, in collaboration with ITTO, will organize a validation workshop before publishing the report to receive and take into account the views of stakeholders and range States concerned.
- Countries should consider safeguards to avoid the conversion of natural forests to agarwood plantations.
- Where appropriate, growers and managers should consider mixing agarwood-producing species with other species in agroforestry and other mixed plantations to reduce production risks.

- The planting programme of agarwood species should consider genetic diversity within species and should not move seeds or planting material outside the distribution range into the area of natural distribution. This would not apply when planting outside the natural range of the species.
- Tree improvement programmes can be taken up in the agarwood species to improve the growth, productivity, agarwood production and quality of agarwood/ oil, in which variability exists.
- Range States should adopt agarwood export policies in which quotas may be imposed on the collection and processing of agarwood from natural forests to ensure the sustainability of the genetic resource.
- Range States should maintain proper records of the origin of seeds and planting materials, and plantation management, to help ensure environmental safety.
- Range States should consider adopting registration and verification systems for agarwood plantations.
- Range States should consider providing an enabling policy and legal framework for agarwood production, including monetary and fiscal incentives, to promote the cultivation and trade of agarwood.

At the end of this session, Dr Schmidt asked participants whether they considered that Decision 15.95 (Rev. CoP16) had been implemented. The consensus view was that the decision had indeed been implemented and could be considered completed. Nevertheless, there was a consensus view that support should be continued for the implementation of activities that would contribute to further achieving the aims of the Decision.

Closure of meeting

Dr Schmidt thanked the EU for its generous funding of the CTSP, which had made it possible to convene these two very productive and focused meetings. As an outcome of the regional meeting, Dr Schmidt said she looked forward to receiving final project proposals from Parties by 31 July. For the agarwood meeting, it is clear, she said, that a first priority for range States is to adopt measures to ensure that agarwood plantations help with recovery programmes for natural agarwood forests because genetic diversity can only be ensured if natural forests continue to exist. Plantations need to "give back" to the natural forests. Dr Schmidt said she had also heard that Parties want to accelerate production, but she said that, in doing so, it was important to treat trees with respect as living beings and avoid inoculating them hundreds of times. She thanked the ITTO and Indonesian teams for their hard work in preparing for and convening the meetings.

Ms Ishii said she was excited to see the progress made at the agarwood meeting, efficiently producing recommendations in just one and a half days. She thanked the CITES Secretariat for working with ITTO to organize the workshop, Ratna and her team at the Directorate-General of Natural Resources and Ecosystem Conservation for hosting the two meetings, the EU for funding the CTSP and the United States of America for its support. ITTO looked forward, she said, to continuing the work to make sure that the projects implemented by countries will achieve their objectives and contribute to the success of the overall programme.

Dr Tandya Tjahjana, speaking on behalf of the Director-General of Natural Resources and Ecosystem Conservation and the organizing committee, said it had been his pleasure to observe the agarwood range States sharing ideas and experiences on their challenges, gaps, technological advances and management. He hoped that the meeting would be the start of establishing and improving agarwood plantations and forest recovery programmes in all countries to ensure the long-term survival of agarwood-producing species in the wild. He thanked the CITES and ITTO secretariats, the EU, the organizing committee, and the chairs of sessions and working groups. He then closed the workshop.

Annex 1

Unedited reports of working groups convened as part of the CITES Tree Species Programme Regional Meeting for Asia

Working Group 1: Non-detriment Findings (NDF): Identification of gaps and lessons learned and recommendations of follow-up activities, including new target species and work lines. Towards the formulation of a NDF at the end of your CITES tree species project

Gaps

Limited baseline data (stock inventory, species distribution). Not all countries can conduct a National Forest Inventory due to insufficient funds and manpower.

Difficulties in identification. Taxonomic status for complex species is yet to be ascertained. The identification of a species is the very crucial first step before the implementation of any project.

Source of the products have to be identified. Requirements from importing parties have to be fulfilled.

Knowledge on preparing NDF is needed (training tools from the website should made compulsory to new staff).

National legislation has to improve (national law whether it is enough to support CITES regulation).

Data mining skill is required to validate any acquired data. Doubtful data should not be used.

Lessons learned

Complication in generating large data (biological and managerial aspects) is common in research projects.

Trading is a challenging task due to unforeseen circumstances (economic issues, species conservation, international laws).

New target species

Listing a species in Appendix may do more harm than good. Price of this commodity has increased, thus threatening its survival in the forest as more people are going after this species, e.g. *Dalbergia* in Indonesia and Cambodia.

Best to focus on existing species for the time being.

Recommendation

Simplified NDF is preferable (preliminary evaluation followed by comprehensive evaluation), as extensive NDF will require a huge budget as well as manpower.

Capacity building in preparing NDF at national level is important. This is to provide a smooth work delegation along the process.

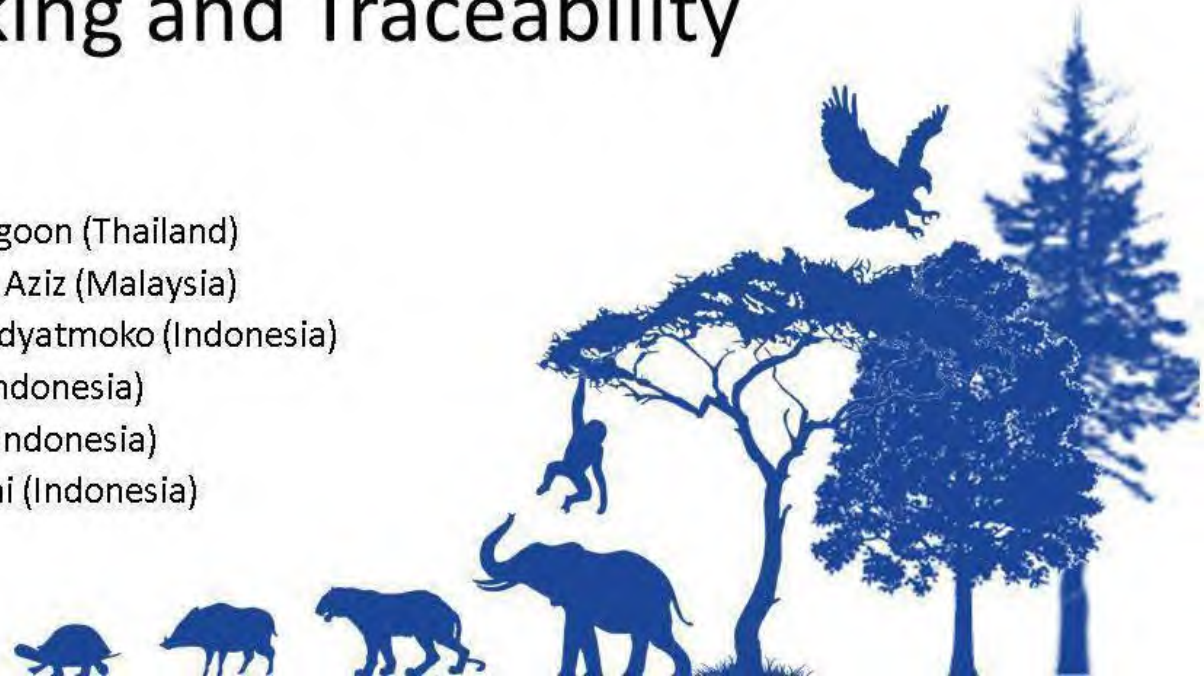
Work lines

To have CTSP organize more workshops to discuss on the writing of NDF in a more direct and practical manner.

Working Group 2

Marking and Traceability

1. Dr. Suchitra Changtragoon (Thailand)
2. Abdul Rahman Abdul Aziz (Malaysia)
3. Dr. Antonius YPBC Widyatmoko (Indonesia)
4. Yulita Kusumadewi (Indonesia)
5. Daniwari Widiyanto (Indonesia)
6. Niken Wuri Handayani (Indonesia)
7. Alfian (Indonesia)



Identification of Gaps and facts

- The important of correct species identification
- Identification technique : wood anatomy and DNA
- For the *Dalbergia spp. and protected species* in Thailand, wood anatomy and DNA markers can be used to identify at the species level for forensic investigation and law enforcement.
- The important of the species reference database for CITES traded species.
- Another alternative technique using protein based machine called " DART-TOFMS machine" that can identified species from the protein data.
- ASEAN countries has difference methodology to identification the species.
- The cost for sophisticated machine to identify species is still too expensive in terms of maintenance and running cost, so we still have to select the most practical technique for species identification.
- Research base for data base is really important, costly and time consumed.
- The important of domestic marking

Identification	Methodology	Current capacity	Gaps	Recommendation
Population	• DNA markers: • Stable isotope,	1. Paper-based CITES Permits 2. Research base for data base is really important, costly and time consumed 3. Some country in the region (Indonesia, Malaysia, Thailand and Vietnam have DNA laboratories) has capacity to use scientific tool for some methodology to verify species ,individual, and origin for national law enforcement	1. No regulation in place to use scientific base to verify on CITES permit documents 2. Lack of information on scientific data base (species, origin and specimens) 3. The methodology used to verify is not in place in all countries in the region	1. Improve national regulation to use scientific verification, if needed 2. Develop scientific database through scientific research for long term CITES support 3. Enhance networking and capacity on scientific tools such as DNA markers (Cambodia, Lao PDR, and Myanmar), stable isotope (all countries), chemical-based (e.g. DART-TOFMS for all countries) should be in place in all countries in the region such as training course, laboratory establishment, methodology standardization and scientific exchange and visit. 4. New target species (taxa): - *Dalbergia oliveri* - *D. cultrata*
Species	• Morphology (only for certain Taxa) • Wood Anatomy (only for certain Taxa) • Chemical-based (e.g. DART-TOFMS/ Direct Analysis in Real Time-(Time of Flight) Mass Spectrometry) • DNA Markers			
Individual	• DNA Markers			


WORKING GROUP 3
TREE SPECIES PRODUCT
IDENTIFICATION

GAPS

- Wood anatomy is only possible for solid wood products while most finished product containing wood element has already been modified and it is difficult to identify
- Incomplete references/information
- Lack of tools to conduct quick/ rapid TSPI (Timber Species Product Identification)
- Some countries has faced with administrative problems due to the long procedures of custom checking
- Lack of capacity to perform quick assessment on the ground
- **Spectrometry (**wavelenghts**)** is cheaper and easier than wood anatomy or DNA. Unfortunately, still lacking of reference databases.

LESSON LEARNED

- Challenge in implementing chemical, molecular, and anatomical (macroscopic) method to identify timber species product
- Providing list of expert contacts to identify the species
- Traditional identification using wood anatomy (microscopic techniques) is more frequently and practically practiced but still need to improve the capacity for the custom officer, yet reference imagery remains limited. This technique requires extensive time commitments from highly trained wood anatomists. Only good for solid wood.
- DNA analysis is more reliable but still need complete DNA reference / information

RECOMMENDATION

Short-term:

- Produce identification manual for common traded species which is also listed under CITES (App II and III)
- Provide training for timber species product identification, especially for custom officers
- Developing low cost high-tech of timber and NTFP species identification, or providing non destructive technology to identify timber species from finished product (i.e. chemical test kits, other practical tools, etc)
- Collect reference through existing work line (IAWA)
- Provide practical and accessible manual for non expert to identify Tree Species Products

RECOMMENDATION

Long-term:

- Produced Comprehensive World's Wood Atlas containing information on commercial /traded timber species which is listed under CITES (wood anatomy data base available from other sources : Indonesian Wood ATLAS, IAWA work line (International Association of Wood Anatomy), WA of Central European Species, Tropical Timber Atlas etc.)
- Develop complete data base for Wood Anatomy and DNA reference worldwide
- Produce system to ensure the identification of species is appropriately conducted from Forest Management Unit (FMU) up to the industry and this should be documented and traceable (i.e. through certification system/SVLK and CoC) – scientifically reliable
- Raising awareness through workshop for local community and stakeholders regarding the importance of appropriately identifying timber species especially those listed on CITES
- Improving policy and regulation (trade monitoring in collaboration with other relevant ministries within the country)
- Promote Practical Expert System to identify TSP using anatomy characteristics.
- Wood anatomy information should be included in the proposed new timber species to be listed under CITES

Working Group 4: Capacity building and Governance: Identification of gaps and lessons learned and recommendations of follow-up activities, including new target species and new work lines and activities. Towards ensuring that your CITES tree species project has created or strengthened capacities for the long term.

- Chair : Dr. Jagdish Kishwan, IFS (India)
  Members:

1. Mr. Lic Vuthy (Cambodia)
2. Mr. Tajudin Edy Komar (Indonesia)
3. Mr. Ibnu (Indonesia)
4. Ms. Syarifah Khoirunnisa (Indonesia)
5. Ms. Sri Ratnaningsih (Indonesia)
6. Mr. Mashur Bin Mohammad (Indonesia)
7. Mr. Nguyen Ma Ha (Viet Nam)
8. Mr. Suon Phalla (Cambodia)
9. Ms. Margareth (Indonesia-OC)

Target Groups

1. Forest Department Officials-
2. Private entrepreneurs-planters, manufactures, traders,
3. CITES MAs, Assistant CITES MAs, CITES SAs, ……
4. State Owned Companies/Enterprises
5. Department of commerce and trade
6. Customs and other enforcement agencies
7. Local communities
8. Local Government Officials
9. ----

No	Challenge/Issue	Need	Action
A. Technical			
1	Identification of wood, wood products, and other products of *Dalbergia latifolia* from other species	Easy methods of identification by field officials of Forest department/customs/enforcement agencies	- Training workshop - Hands on training - Visit to training and research institution
2	1 above for Aquilaria, Gyrinops, Taxus, other Dalbergia species, Pterocarpus and Guibourtia species	Easy methods of identification by field officials of Forest department/customs/enforcement agencies	- Training workshop - Hands on training - Visit to training and research institution - Exchange visits
3	Preservation of the raw material and the products	Proper methods (ecofriendly) of storage and preservation of the raw material and the products	- Demonstration session - Dissemination of information in local dialect - Visit to manufacturing units
4	Inoculation of Agarwood trees to optimize and promote agarwood production	Cooperation amongst CITES countries to share knowledge and information about latest methodologies of agarwood inoculation	- Interaction with experts - Training workshop - Dissemination of information in local dialect - ToT - Demonstration session - Hands on training
5	Unsuccessful plantations-non availability of Quality Planting Stock (QPS), proper management of nursery and plantation (Malaysia, Cambodia, …….)	Sharing experience, knowledge and information about growing QPS and plantation management	- Interaction with expert - Training workshop - Dissemination of information in local dialect - Exchange visits - Demonstration session - Field visits
B. Governance			
1	Maintenance of records of production, conversion, trade (domestic and international)	Proper and common formats for recording of plantations, production, conversion, trade data. Harmonization of recording of data of different agencies within the countries with HS Code and CITES instruction	- Public campaign for awareness - Dissemination of information in local dialect - Demonstration session
2	Keeping abreast with latest NDF	Producing countries to be made aware, and	- Interaction with expert

	methodology	capable of carrying out NDF of target species	- Training workshop - Public campaign for awareness - Exchange visits - ToT - Field visit
3	Use of traditional knowledge and local wisdom (TK&LW) in plantation management and utilization (QPS, plantation, detection, identification, ….)	Documenting and sharing application of TK&LW	- Public campaign for awareness - Dissemination of information in local dialect - Exchange visits - Demonstration session - Field visits
4	Sustainability of capacity building	Continuity of skill upgradation and development, and effecting attitudinal change	Institutionalization of CTSP for continuous exchange and sharing of information and knowledge amongst CITES parties

Annex 2

Unedited reports of working groups convened as part of the Second Asian Regional Workshop on the Management of Wild and Planted Agarwood Taxa

Working Group 1 - *Natural forest management – NDF*.

Chairs : Dr. Joeni Rahajoe - Indonesia;
Presented by Lic Vuthy

Members:

1. Wita Wardani (Indonesia)
2. Marlina Ardiyani (Indonesia)
3. Daniwari Widiyanto (Indonesia)
4. RSC Jayaraj (india)
5. Dr. Lillian Swee-Lian Chua (Malaysia)
6. Suchitra Changtragoon (Thailand)
7. Dr. Liu Yangyang (china)
8. Kang Yong (china)
9. Lin Baizhou (china)
10. Suon Phalla (Cambodia)
11. Sri Ratnaningsih (Indonesia)
12. Mashur bin Mohammad Alias (Indonesia)

Issues to be discussed and reviewed:

1. Identifying main challenges and trends to cooperate to ensure the long-term survival of agarwood producing species in the wild through the establishment of agarwood plantation programmes that integrate forest recovery programmes;

    a. Does any countries have the programme of rehabilitation/re-introduction/replantation (other than reforestation in the protected area or concession)
        - If yes, what is the challenge
        - If no, do you have the plan to do those programme
    b. Trend
        - of scale of agarwood plantation
        - of re-introduction of agarwood to the wild

CHALLENGE:

1. Enforcement to ensure that wild agarwood resource remain intact
2. Identification of species to avoid the germ-plasm movement across population
3. Educate officers and communities for rehabilitation using the right collection
4. Control the agarwood from the wild based on the quota also include market demand (applicable only to the countries that allow harvest from the wild)
5. Certification of plantation (transfer to WG 2)
6. Maintain species diversity in the protected area (based on the each countries regulation)
7. In revival of the natural population, emphasis should be on assisted natural regeneration, if regeneration is inadequate (method)
8. If [replanting] [rehabilitation] is required seeds/seedlings should not be moved across locations/provenances, in order to conserve within species genetic diversity (method)
9. Workshop/forum on agarwood (also beyond agarwood) should more involve industries to share the challenge

10. Insufficient Fund and capacity for enforcement

TREND

- of scale of agarwood plantation (family, local company, joint venture) (WG 2)
- of re-introduction of agarwood to the wild

No	Countries	re-introduction of agarwood to the wild	
		Yes	No
1	Cambodia		N
2	China	Y es(Hainan, Guangdong, Yunnan, Guang Xi) Total Approx. 5000ha *Aquilaria sinensis*	
3	India		N
4	Indonesia	Planning to replant approx. 1000 trees/year in Papua (Asmat and Mappi District)	
	Malaysia		N

2. Sharing information on natural forest management, technologies, harvest and trade;

No	Countries	natural forest management	technologies	harvest and trade	Additional information
1	Cambodia	• 80% natural forest in Cambodia is protected • agarwood (A. crassna) is App II and also protected • mapping of A. crassna distribution in cambodia	Using Traditional technology (manual harvesting) Using inoculation in plantation but it is not successful yet	Harvest for household and traditional utilization is allowed For commercial utilization need certificate	No information regarding the plantation Since 2005 start the plantation in small scale and scatter
2	China	Agarwood from wild is protected (A. sinensis) Yunnanensis only occur (few) in several province Already have distribution mapping	Using Agar wit technology for injection/: testing in India, Cambodia, Malaysia, Indonesia Govt give financial incentive (capital, providing stock material, after	Plantation/cultivated agarwood enough to fulfill the demand Use almost agarwood for medicine material use only A. sinensis for trade	Collecting seed from the wild Establish gen bank for agarwood

3	India	Govt protected area (natural forest) : no harvest allowed Community forest : no control No NDF, no quota India only have Aquilaria malacensis (sinonim of agalocha) India already have distribution mapping of A. malacensis	• Traditional, • Chemical (CA Kit) → unsuccessful • biological → Successful	Harvest from plantation and communities forest Trade : No product from india agarwood are allowed to be export except Oil Import, re-export product from other countries are allowed 9-10 million plantation (harvested last 5 years)	Collecting seed and seedling form the wild Have gen bank
4	Indonesia	A. malacensis, filaria, gyrinops versteegii Non of them protected No harvest from protected area All harvest is accompanied by certificate NDF in 2009	• Traditional for harvest • Successful percentages is low for biological techniq (inoculation) • Wounding tech by axed, nail, peeling the bark skin in some plantation (in Bengkulu and Riau)	Companies has license to harvest and trade Quota impose	
5	malaysia	• Harvest from permanent reserve forest is regulated. • Harvest not permitted on protected areas • Illegal harvest is rampant	Traditional Method (almost the same with above), High technology method (almost the same with above/others countries)	• Have annual quota • Removal passes after extraction, this must be attached to get CITES permit • Local communities can harvest • Local communities require removal passes for harvesting but this is not really enforce	
	Thailand	o crassna,	Traditional Method	Harvest from	Note : almost all

		subintegra, malacensis, • Agarwood in protected areas in not allowed to harvest • Have the distribution map • Forest communites: over 10000 register for utilization on NTFP • Not allowed to harvest the tree • No NDF	Barcoding for the law enforcement (protected species/dna barcoding include agarwood)	plantation Govt support private sector to improve the investment on plantation Govt provide incentive for private and communities 100 USD/ha/ 5 years	countries conduct genetic diversity research (dna barcoding)
	Myanmar				
	Viet Nam				
	Bangladesh				
	Nepal				

3. Recommendation

Recommendation at National Level

- India : Setting NDF and Quota, Promote Plantation to protect Wild population, restoration of wild population
- Malaysia : detail inventory, implement some of the suggested recommendation in conservation action plan for A. malacensis in peninsular malaysia
- Indonesia : Promote conservation of genetic resources in the wild and promote Plantation, updating NDF
- Cambodia : assessment /inventory, capacity building, awareness on A. crassna ,
- China : protect wild agarwood strictly, establishing the standard on methodology to distinguish wild and plantation, Promote Plantation to protect Wild population, invite others countries to strictly enforce the illegal trade
- Thailand : geographic DNA marker for identify population origin and DNA finger printing of the wild and plantation, concrete identification of the tree species → practical manual for species identification, enhance DNA forensic capacity to improve law enforcement
- Myanmar : protect and restore population in the wild, capacity building on sample collection and identification of agarwood species, mapping the distribution of agarwood species,
- Viet Nam : restore wild population of agarwood

- Bangladesh : enrichment planting and assisted natural regeneration to restore the original population
- Nepal : Promote Plantation of Nepal Agarwood, recover the original existing population with assistance from other range states

Recommendation for regional level

1. Enhance law enforcement, management and supervision for producing and importing countries on to prevent the smuggling
2. Encourage the establishment of sharing/exchange platform/mechanism on technology, information and knowledge amongst parties.
3. Establish a forum potentially hosted on CTSP website to enable stakeholders to share information and knowledge on agarwood as appropriate
4. Encourage engagement of private sector and Agarwood industries in the effective implementation of Agarwood resource sustainability. Invite the private sectors to contribute financially to the organization of a follow up meeting to discuss management and strategies that balance the use of planted and natural forest.
5. Protection, restoration, and sustainable use of wild population in range states as needed.
6. Encourage Range states, as appropriate, to adopt and implement measures to create a national agarwood species fund, to collect fees paid by each user of agarwood producing populations. This fund could assist strengthening implementation of national strategies to ensure conservation, sustainable management, and international trade in agarwood products.

WORKING GROUP 2 REPORT
PLANTATIONS – NDF

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1. CHALLENGES IDENTIFIED AND TRENDS TO COOPERATE TO ENSURE THE LONG-TERM SURVIVAL OF AGARWOOD PRODUCING SPECIES IN THE WILD THROUGH THE IMPLEMENTATION OF AGARWOOD PLANTATION PROGRAMMES THAT INTEGRATE FOREST RECOVERY PROGRAMMES;

	Challenges	Gaps	Recommendations*
1	Information dissemination on inoculation technology to the people, establish communication in order to obtain information for setting NDF (Bangladesh)	No reliable data available.	
2	Lack of enabling condition and supporting factor for legal framework to promote plantation		
3	Mobile Apps available to support plantation inventory. Need support from government to develop and apply (Myannmar)		
4	How to produce agarwood from the plantation. The plants grow well but the agarwood formation is still highly variable (Indonesia).		

5	No inoculation method that good enough to convince planters to grow agarwood and not taking from the wild		
6	Differentiate agarwood from plantation or the wild is still a problem. Currently one regulation for both coming from plantation and wild (China)		China: More relaxed regulations for agarwood from the plantation.
7	Knowledge of producing high-quality agarwood is still a problem (Nepal)	Technology that can easily be used by farmers	CITES can review the method of inoculation and kit (as what WHO do with vaccines) and induce the company/country to produce it in mass production to be available for other countries to buy (precaution: do no harm to local species, do small pilot test) Steps: - CITES will make review and recommendations ➢ Set up plantations ➢ Inoculant technologies ➢ Processing technologies of agarwood product - Respective Countries will do the pilot testing
8	No record on seeds origin		- Maintenance of records of origin of seeds, planting material and observations of plantations - Registration for plantation
9	Government policies		- Preferably not to convert natural forest for agarwood plantation

****** Issue of inoculation developed by one country to be shared to others -> patent(?)

2. INFORMATION SHARED ON PLANTING STOCKS, MANAGEMENT, TECHNOLOGIES, HARVEST AND TRADE;

No.	Country	Information
1	Vietnam	**Management**: 1. Government have nursery and give free seedlings to people as incentives for people to plant agarwood producing trees. 2. Strong support from the government **Harvest:** Success rate of inoculation are still low
2	Indonesia	**Management:** Strong support from government **Harvest:** Success rate of inoculation are still low
3	Nepal	**Planting Stocks**: Planted millions trees of Aquilaria; unavailability of inoculant
4	Cambodia	**Management:** Strong support from government **Harvest:** Success rate of inoculation are still low
5	Myanmar	**Planting Stocks**: 2.5 million trees, only 1/3 goes to market, loss around 20% of trees due to improper treatment **Management:** Using mobile Apps for information sharing between farmers and association **Trade**: Northern Myanmar has co-op who will be responsible for the product marketing. Avoiding contract farming.
6	China	**Technologies:** - Agar-Wit Technology - Each tree is tagged by one barcode to make sure the traceability **Trade:** - Big market in China for Agarwood products: Medicines and Incenses. and new product: Cigarettes, Wines, bead
7	India	**Technologies:** Inoculation technology using microbes is available in India and is successfully in 8-10 year old plantation of agarwood.

3. RECOMMENDATIONS

- CITES can review the method of inoculation and kit (as what WHO do with vaccines) and induce the company/country to produce it in mass production to be available for other countries to buy (precaution: do no harm to local species, do small pilot test)
  Steps:
  a. CITES will make review and recommendations
     - Cultivation using the best practices
     - Inoculant technologies
     - Processing technologies of agarwood product
  b. Respective country will do the pilot testing
- Monitoring for environmental safety: Maintenance of records of origin of seeds, planting material and observations of plantations behavior
- Registration and verification for plantation
- Preferably not to convert natural forest for agarwood plantation
- Enabling policy and legal framework for monetary and fiscal incentives and ease of trade to promote cultivation and trade of agarwood
- Preferably agroforestry or mixed plantation for agarwood

Annex 3

List of participants

CITES Tree Species Programme Regional Meeting for Asia
25 – 28 June 2018, Yogyakarta, Indonesia

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Second Regional Workshop on the Management of Wild and Planted Agarwood Taxa

28 – 29 June 2018, Yogyakarta, Indonesia

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