Report on the impact of CITES exemptions for *Dalbergia* and *Guibourtia*

Prepared under Decision 18.321 (Rev. CoP19)

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

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Contents

Executive summary

This report evaluates the implementation and impact of annotation #15 for *Dalbergia* and *Guibourtia* species listed in Appendix II. Covering the period from 2013 to 2023, the study examines trade patterns, conservation implications, and regulatory challenges.

Background and overview of the report

At its 19th meeting (CoP19; Panama City, 2022), the Conference of the Parties revised Decisions 18.321 (Rev. CoP19) and 18.322 (Rev. CoP19) on *Annotation #15*.

Annotation #15 applies to the following listings in Appendix II (valid from 23 February 2023):

- *Dalbergia spp. #15* (Except for the species included in Appendix I)
- *Guibourtia demeusei #15*
- *Guibourtia pellegriniana #15*
- *Guibourtia tessmannii #15*

Annotation #15 reads as follows:

All parts and derivatives, except:

a) Leaves, flowers, pollen, fruits, and seeds;
b) Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment;
c) Finished musical instruments, finished musical instrument parts and finished musical instrument accessories;
d) Parts and derivatives of Dalbergia cochinchinensis*, which are covered by Annotation # 4; and*
e) Parts and derivatives of Dalbergia *spp. originating and exported from Mexico, which are covered by Annotation # 6.*

The interpretation section of the Appendices (valid from 23 February 2023) includes the following definitions for the terms and expressions used in annotation #15:

Finished musical instruments
A musical instrument (as referenced by the Harmonized System of the World Customs Organization, Chapter 92; musical instruments, parts and accessories of such articles) that is ready to play or needs only the installation of parts to make it playable. This term includes antique instruments (as defined by the Harmonized System codes 97.05 and 97.06; Works of art, collectors' pieces and antiques).

Finished musical instrument accessories
A musical instrument accessory (as referenced by the Harmonized System of the World Customs Organization, Chapter 92; musical instruments, parts and accessories of such articles) that is separate from the musical instrument, and is specifically designed or shaped to be used explicitly in association with an instrument, and that requires no further modification to be used.

Finished musical instrument parts
A part (as referenced by the Harmonized System of the World Customs Organization, Chapter 92; musical instruments, parts and accessories of such articles) of a musical instrument that is ready to install and is specifically designed and shaped to be used explicitly in association with the instrument to make it playable.

Shipment
Cargo transported under the terms of a single bill of lading or air waybill, irrespective of the quantity or number of containers or packages; or pieces worn, carried or included in personal baggage.

Ten (10) kg per shipment
For the term "10 kg per shipment", the 10 kg limit should be interpreted as referring to the weight of wood of each individual annotated species of genus Dalbergia or Guibourtia present in the items in the shipment. The 10 kg limit is to be assessed only against the individual weights of the portions of wood of each individual annotated species contained in each item of the shipment, and not

against the total weight of the shipment. The total weights present of each individual annotated species are considered individually to determine whether a CITES permit or certificate is required for each individual annotated species, and weights of different individual annotated species are not added together for this purpose.

The current annotation #15 is the result of an amendment to the Appendices adopted by the Conference of the Parties at its 18th meeting (CoP18; Geneva, 2018), see also Notification to the Parties no. 2019/052.

In accordance with paragraph a) of Decision 18.321 (Rev. CoP19), on 15 February 2024, the Secretariat initiated a study with three expected outputs, respectively corresponding to chapters 1 to 3 of the present report:

- Output 1 (Chapter 1): An overview and analysis of the supply-chain of specimens exempted through annotation #15;
- Output 2 (Chapter 2): A regionally balanced set of case studies on the effects of *Dalbergia*/*Guibourtia* species in international trade of exemptions contained in annotation #15, including but not limited to finished musical instruments, parts and instrument accessories; and,
- Output 3 (Chapter 3): Closing reflections and preliminary recommendations in support of the implementation of Decisions 18.321 (Rev. CoP19) and 18.322 (Rev. CoP19).

Key findings

- On the implementation of annotation #15 by Parties:
    - Parties are actively implementing annotation #15, and while some interpretative challenges exist, it is generally functional and aligns with the main principles of the use of annotations in Appendices I and II [paragraph 6 b) of Resolution Conf. 11.21 (Rev. CoP19)], which state that annotations for plants should focus on commodities that first enter trade from range States and primarily drive demand for the wild resource.
    - Annotation #15 has proven effective in regulating trade while accommodating the unique needs of certain industries, such as musical instrument manufacturing of *Dalbergia* and *Guibourtia* specimens. The findings suggest that Decisions 18.321 (Rev. CoP19) and 18.322 (Rev. CoP19) have been largely implemented.
- On trade patterns: Finished musical instruments dominate the trade in exempted products, with most manufacturing occurring outside the range States. This underscores the importance of monitoring non-exempt raw materials used in production.
- On conservation impact: Exemptions under annotation #15 have a low conservation impact for most species, but gaps in traceability and oversight persist, particularly for raw materials that transition into exempted products.
- On data gaps: Trade data for exempted and non-exempt specimens are inconsistent, limiting the ability to fully assess conservation outcomes and ensure compliance.
- On recommendations for clarification: Specific aspects of annotation #15's interpretation, such as shipment thresholds for finished products, would benefit from additional guidance to ensure consistent application.

Reflections on future work

The draft report closes with reflections that could serve as a foundation for future work and possible mandates (such as CITES Decisions) resulting from the implementation of Decisions 18.321 (Rev. CoP19) and 18.322 (Rev. CoP19), and building upon the report:

1. Harmonized reporting: Develop standardized guidelines to improve data collection for specimens not exempted under annotation #15, particularly raw materials (e.g., logs, sawn wood) that are transformed into finished products. This will enhance monitoring and compliance.

2. Traceability systems: Encourage range States to implement robust traceability systems for non-exempt raw materials to ensure transparency and legal trade, especially for materials entering international supply chains.

3. Capacity-building: Provide technical and financial support to range States for monitoring and enforcement efforts, focusing on the transition of raw materials into exempted products under annotation #15.

4. Industry engagement: Foster collaboration with industries benefiting from exemptions, such as musical instrument manufacturers, to ensure sustainable sourcing and to address traceability challenges for raw materials.

5. Guidance on the interpretation of annotation #15: Develop guidance to clarify interpretative aspects of the terms and expressions of annotation #15, to ensure consistent implementation across Parties.

1. Chapter 1: Overview and analysis of the supply-chain of specimens exempted through annotation #15

1.1. Overview of Chapter 1

This chapter delineates the outcomes of a literature review exercise as well as the process for linking data sources for developing a comprehensive comparative analysis of the goals for conservation implications for exemptions contained in annotation #15.

The report delineates changes in regulation for *Dalbergia* and *Guibourtia* species based on a timeline for data capture from 2013 – 2023. This timeline was chosen based on three factors of CITES species listings to appendix II, annotation allocations for regulating the species and amendments to those annotations and species listings under annotation #15.

- The starting point of data analysis begins with the 2013 CoP16 CITES Appendix II listings for *Dalbergia* species from the Americas.
- The second major delineation is the 2016 CoP 17 genus level listing for *Dalbergia* spp. and three *Guibourtia* species with annotation #15 with no commercial exemptions (at that time).
- The third delineated period is based on the annotation #15 as it currently reads, with emphasis on the exemptions outlined in paragraph c) relating to finished musical instruments, parts and accessories.

In order to analyze implications for conservation of regulated and unregulated products clear delineations were made through histograms and charts to present data on the time period of annotation #15 from 2017 to 2019 when finished products were not exempted and the time period of the amended (current) annotation #15 from 2020 – 2023. Data from the CITES Trade Database and other sources was customized to present a comparative analysis.

The goal of the present chapter is to outline the trade flows of the species based on declared data from the CITES Trade Database as well as Harmonized System (HS) codes' data and private sector inputs obtained from several sources including the World Integrated Trade Solution (WITS) database of the World Bank.

The CITES Trade Database was the predominant source of species information regarding trade flows of targeted species. The database was used exclusively for creating histograms, charts and analysis for completing Decision 18.321 (Rev. CoP19).

The CITES Trade Database does not currently have the finished product data filtration necessary to analyze trade flows of specific finished products such as musical instruments. To complete a comprehensive analysis of trade flows of finished products exempted under annotation #15 and most relevant to Decision 18.321 (Rev. CoP19) in comparison with official data reports from the CITES Trade Database, the determination was made to incorporate standard international trade and product allocations using Harmonized Tariff Schedules (HS codes). It was determined that the WITS database was the most appropriate tool to develop analysis of HS codes relevant the trade flows of finished musical instruments and their parts.

In developing the methodology for using the different trade tools, a key goal was to analyze where the target species originate compared to where the finished products are manufactured. This is central to understanding the flow of trade of both the wood commodities and the finished product commodities that have listed species inputs.

The reason for this analysis is to develop a baseline of where implications for conservation values are most relevant to the sustainability of the species and the impact from trade. This goes directly to the point of what were the trade flow trends under annotation #15 during the time period 2016 CoP 17 with no exemptions for finished products and what were trade flow trends with the exemptions in annotation #15 paragraphs b) and c) amended at 2019 CoP 18. A key question was to ask stakeholders if the annotation is working and enforceable. Moreover, what is the conservation impact of the exemptions on the listed species?

Aside from the finished products with a component of *Dalbergia*/*Guibourtia* exempted through paragraph b) or c) under the current CoP18 amended annotation #15, raw materials of primary processed wood and timber specimens still require a CITES export permit as per Article IV of the Convention. The Decision 18.321 (Rev. CoP19) underlying purpose is to determine if the requirements for permitting for all other parts and derivatives except the exemptions found in paragraphs b) and c) are sufficient for maintaining sustainability of the listed species at the range state level.

Workability and functionality of annotation #15 is one of the key issues that has been deliberated during the Annotation Working Group, established after CoP17. There was intersessional deliberation between CoP 17 and CoP 18 on whether requiring CITES permits for exports of the raw materials and for finished products adds conservation value. The discussion revolved around the development of annotations and where regulating trade adds the most conservation benefit for the listed species.

Paragraph c) of annotation # 15 ("*Finished musical instruments, finished musical instrument parts and finished musical instrument accessories*") presented a strong case to review and discuss how annotations are developed, what they are designed to achieve and moreover, how they are enforced. The annotations working group used Resolution Conf. 11.21 (Rev. CoP19) as a foundation for reviewing and amending annotation #15. It is useful to present the structure of the Resolution for review in this study.

In Resolution Conf. 11.21 (Rev. CoP19) on use of annotations in Appendices I and II, the Conference of the Parties recommend:

"6. RECOMMENDS the following guidance and principles for annotations:
- *a) Parties submitting proposals that contain substantive annotations: Resolution Conf. 11.21 (Rev. CoP18) – 3*
  - *i) ensure that the text is clear and unambiguous in the three working languages of the Convention.*
  - *ii) consider the conservation impact of excluding certain specimens from CITES provisions; and*
  - *iii) consider the enforceability of the annotations.*
- *b) two main principles be followed as standard guidance when drafting annotations for plants:*
  - *i) controls should concentrate on those commodities that first appear in international trade as exports from range States; these may range from crude to processed material; and*
  - *ii) controls should include only those commodities that dominate the trade and the demand for the wild resource."*

This resolution was consulted during the annotations working group and was used here to evaluate the conservation impacts of the exemptions contained in annotation #15 under Decision 18.321 (Rev. CoP19).

This chapter maps and provides an analysis on the following:

- Trade flows from top producer or range state exports as raw materials and primary processed products based on commercial (T) source code.
- CITES permit requirements for the exports from range states.
- Key countries where the raw materials were imported.
- Volume calculations in cubic meters of target species of *Dalbergia* and *Guibourtia*.
- Key countries where finished products of musical instruments are produced - that are exempted under annotation #15
- HS code groupings that capture finished musical instrument data on specific products such as guitars.

Preliminary findings Chapter 1

The analysis of trade data from the CITES Trade Database and the World Integrated Trade Solution (WITS) database reveals significant trends in the export and import of *Dalbergia* and *Guibourtia* species across various timeframes, particularly in relation to the implementation of annotation #15.

a) Impact of annotation #15: The data shows clear shifts in trade volumes corresponding to the regulatory changes brought by annotation #15. For instance, there is a noticeable increase in the export volumes of *Dalbergia latifolia* and *Dalbergia melanoxylon* after the initial implementation of annotation #15 in 2017. However, the introduction of exemptions in 2020 seems to have contributed to fluctuations in the trade of finished musical instruments, with some increases in 2020 caused by a higher demand in musical instruments, especially guitars during the Covid-19 pandemic.

b) Geographical Disparities in Trade: The trade analysis indicates that the majority of finished musical instruments are manufactured outside the range states where the target species are harvested. For example, countries like Indonesia, China, and the United States are leading manufacturers of musical instruments, while the raw materials, particularly *Dalbergia* species, are predominantly sourced from countries like India, Nicaragua or Tanzania. In the case of Indonesia there is significant use of domestic sourced *Dalbergia latifolia*, but it is artificially propagated.

c) Data gaps and reporting Inconsistencies: There are significant gaps in the reporting of trade data, particularly concerning the quantities of raw materials versus finished products. This issue is evident in the case of electric guitars, where Indonesian export quantities are underreported, despite the country being a major producer. These gaps in the available data are visible when attempting to correlate the CITES database with manufacturing industries, in this case with the musical instrument production industry, as there is no qualitative data reported regarding the use of the exploited and traded wood volumes, making it difficult to assess the impact of various industries on the exploitation of *Dalbergia* and *Guibourtia* species.

Preliminary reflections on conservation implications of annotation #15

The findings underscore critical conservation concerns, particularly the sustainability of *Dalbergia* and *Guibourtia* species under the current data reporting regime where there are gaps between export and import as well as the inability to report on specific products finished or unfinished. The following points highlight the conservation implications of the study:

a) Sustainability of harvested species: The extent of trade in finished products and the potential prevalence of *Dalbergia* and *Guibourtia* species in finished musical instrument is not of very high impact, considering the results reflected in the pie charts from Chapter 7 of Output 1. However, it is critical to examine exemptions from CITES regulations going forward with more specific reporting on potential exemptions. The lack of data or moreover, the lack of correlated data may undermine conservation efforts by allowing higher volumes of raw material extraction if there is insufficient oversight i.e. lack of scientific and fact based NDFs and LAFs, or a very critical aspect – the lack of proper traceability and transparency systems and tools that could provide key data on the sustainability of the harvesting of these species. In addition, the lack of correlation between the data reported in the CITES database and the type of use of the traded wood does not allow for a critical analysis of the impact that certain types of industries may have on the sustainability of *Dalbergia* and *Guibourtia* species exploitation. As a result, certain conservation measures or restrictions may not be adjusted according to the industries that could exert pressure on forest resources.

b) Need for stricter monitoring: The analysis suggests that current exemptions under annotation #15 may be low impact but more data is needed to protect vulnerable species especially in a context of weak monitoring and control at the range state level. Stricter monitoring, traceability systems and a better, more detailed reporting should be required to the parties, particularly for finished products – this is a gap in the CITES reporting database. Moreover, to assess impacts of various industries on species harvesting it is necessary to get specific data for finished products, which can be correlated to the trade data reported. Better data from the sectors using CITES listed species would enhance the understanding of conservation impacts and increase potential investment towards a species specific or landscape level issue.

c) Conservation vs. Trade Facilitation: While the exemptions aim to facilitate trade in finished products based on their potential impact on species sustainability, It is critical to evaluate and act on recommendations to improve data for CITES listed species so as not to inadvertently prioritize economic interests over conservation. The study highlights the need to balance these objectives, ensuring that the trade in musical instruments does not come at the expense of species conservation but moreover, to increase the ability for regulations to be practical and for trade to have mutual benefits that include environmental, economic and social benefits.

d) Conservation benefits from trade: Based on analysis of the regulations under annotation #15 that continue to require CITES permits for all parts and derivatives except for the exemptions in paragraph b) for weight limits of 10kg per shipment and paragraph c) for finished musical instruments, finished musical instrument parts and finished musical instrument accessories, there are tangible benefits for CITES listed species from trade and in particular trade in musical instrument components.

   As highlighted in the study, conservation and trade are inextricably linked through environmental, cultural, social and economic benefits. The analysis from the trade flows and case studies of species, targeted for this report, shows that *Dalbergia* species are key components in a variety of musical instruments. The trade in these species can be beneficial for the trade of CITES listed species if it is not detrimental to the survival of the species.

   The study found that the trade of the target species provides income throughout the value chain - for small agroforest land holders, family run mills and tax revenue for range states to implement regulations and oversight. Moreover, supplying timber for the musical instrument trade is almost direct and there is a knowledge and education level in the musical instrument industry that is concerned about the long-term sustainability of the species that have been used for centuries to produce musical instruments.

e) Data improvements for range States. A key outcome is the study highlighted challenges facing range state countries where investment in NDFs, traceability systems and accurate data reporting are critical. The lack of linked and correlated data and the need for more investment in technology for data management could impact the sustainability of *Dalbergia* and *Guibourtia* species. These insights will be critical in shaping the recommendations and case studies to be presented in subsequent reports.

f) Impacts of COVID 19. The report indicates, based on trade flows of delineated time frames of regulated and unregulated CITES species, that global issues such as COVID had a direct effect on the trade of species and finished products. There were multiple effects including CITES permit expirations of products in transit, supply chain disruptions due to shipping backups at ports, increase in the volume of raw materials of species of wood used in musical instruments, higher demand for finished musical instruments globally, such as guitars - as people were quarantined, and indicators that these changes and challenges can have an effect on demand and management at the range state level which can affect conservations impacts.

In conclusion, the preliminary findings of this chapter highlight the complex interplay between trade regulation and species conservation. The data suggests that the amendments to annotation #15 (CoP18, 2019) has facilitated trade activities successfully under the Convention and that there is greater understanding of the issues regarding conservation of *Dalbergia* and *Guibourtia* species particularly in the musical instrument community. The study found that there have been more investments in developing organizations, studies and programs for species specific conservation and sustainability because of the CITES listings. The main concerns continue to be more investment in and implementing strong oversight and data reporting requirements. This point was backed up during the intersessional Annotations Working Group where there was strong participation by private sector, environmental NGOs and Parties.

Based on the findings and comparative analysis of trade and management measures it could be concluded that the exemptions in annotation #15 are having a low conservation impact based on comparative levels of total trade. However, the study does determine that producing a finished musical instrument has fairly high conservation implications based on the yield and use of very specific species such as *Dalbergia latifolia* and *Dalbergia melanoxylon* where the demand from the musical instrument sector is almost direct. A key

finding highlights the fact that *Dalbergia latifolia* is by far the most traded rosewood species by volume with the majority being from artificially propagated sources in Indonesia. The study concludes with recommendations, based on findings, for mitigation strategies for conservation implications that require investment from stakeholders throughout the value chain. The musical instrument sector has a very strong role to play in the mitigation process through investment and direct action.

As the issues being addressed in Decision 18.321 (Rev. 19) are becoming more prevalent with genus level listings and commodities, we hope this report will make useful recommendations to the Secretariat and Parties for improving and increasing requirements for declaring data.

1.2. Baseline information and data sources

The "Report on conservation and trade of CITES-listed rosewood tree species [*Leguminosae* (*Fabaceae*)]" (CITES Secretariat, 2024)[1], henceforward referred to as the "CITES Rosewood report", provides the foundation for developing a systematic approach to filter data for priority species and regions relevant to the contract for completing Decision 18.321 (Rev. CoP19). The specimens identified for 18.321 case studies were identified as priorities in the CITES rosewood report's outcomes. The current chapter relies on the comprehensive data provided to successfully complete the process.

The CITES Trade Database is the foundational tool used to generate the trade flow data on species exports and imports in this report for Output 1. Although the CITES Trade Database is useful, it does need to be reviewed for addressing potential data requests for specific product groups and HS code allocations. These recommendations will be described in more detail in the recommendations Output 3 of the Decision 18.321 (Rev. CoP19) study.

Aside from the CITES Rosewood report and the CITES Trade Database, there was limited literature on trade flows for timber and finished products relevant to the present study.

To develop a methodology for completing Decision 18.321 (Rev. CoP19) mandate, it was necessary to look at other database sources that could be used for gathering data on trade flows of the target commodities of "finished musical instruments" and their parts and derivatives. To be clear on the data presented in Output 1 of the study, all species level data was obtained and presented in the following import and export histograms and charts is derived from the CITES Trade Database based on criteria relevant to the species and methodology for completing Decision 18.321.

All specific finished product data was derived using the *World Integrated Trade Solution* (WITS) database, described below. The WITS data presented on finished musical instruments, finished musical instrument parts and finished musical instrument accessories does not contain species specific data.

The charts and histograms in Chapter 4 of Output 1 use exclusively trade data from the CITES Trade Database; they are not combined with data from the WITS database. Through these charts, we aimed to see whether the key moments of entry into force of certain provisions under annotation #15 had an impact or not on the trade of *Dalbergia* and *Guibourtia* species at the global level. Also, in Chapter 4, using the available data from the CITES database, we aimed to highlight which were the main exporting and importing countries during the 10-year period targeted for each species of *Dalbergia* and *Guibourtia* of interest for this study (for species where 10-year data series existed).

In section XX of the present chapter, the charts and histograms related to the trade data reported in the CITES database. In section XX the charts are related to annotation #15 paragraph b) to show the trends reported on products 10kg and less. In Chapter 6, the graphs and histograms are strictly related to the WITS database, where production and trade data (export and import) are reported by product categories, musical instruments – HS code 92. The charts were created using the number of products reported in a year. To estimate and correlate these data with those from CITES, data was created on the average quantities in m3 of rosewood used (including losses) to manufacture a reported product, to roughly estimate the quantities of wood used for manufacturing these products in m3 and their potential impact on *Dalbergia* and *Guibourtia spp*.

In section XX, pie chart-type graphs were created to represent a correlation between the two databases, CITES and WITS, which allows the opportunity to visualize the estimated impact that the musical instrument production industry may have on the exploitation and trade of *Dalbergia* and *Guibourtia spp*.

The species and product data chapters contains information from different time periods of species listings to CITES appendix II and clearly delineates major time periods from CoP 17 adoption and implementation

[1] Available at: https://cites.org/sites/default/files/documents/E-PC27-27.pdf

of annotation #15 from 2017 to 2019 when finished products were required to obtain permits and from periods from CoP 18, 2020 to 2022, when amendments and revisions were implemented for annotation #15.

World Integrated Trade Solution (WITS) database:
To complement the information available in the CITES Trade Database, the best data source found was the *World Integrated Trade Solution* (WITS) database of the World Bank for HS code product declarations.

https://wits.worldbank.org/

The WITS database was used to obtain information on the Harmonized Tariff Schedule (HS) 92[2] which is the classification determining different musical instrument exports and imports. The data was used to develop the comparative analysis for trends of quantities of trade from 2013-2023, product manufacture and trade flows.

The data was sorted by use of the United States Trade Representative (USITC) 2024 Harmonized Tariff Schedule. https://hts.usitc.gov/search.

Music Industry Trade Data Sources:
Music Trades: The Global Music Products Industry Report, 2023 was used to review top countries of manufacture and issues related to COVID effects on the trade of musical instruments.

1.3. Trade Flows - Overview of Methodology for Carrying Out Comparative Data Analysis for *Dalbergia* and *Guibourtia* Species.

1.3.1. Timeframes for study and information linkages:

It was necessary to use trade data from the CITES Trade Database and other available databases to make critical links for determining implications for exemptions in annotation #15. To capture data from appropriate timeframes of regulated and unregulated trade, the data was filtered based on three key timeframes:

Table 1. Timeframe scope of the report

Timeframe	Listings of *Dalbergia*/*Guibourtia* in Appendix II	Annotation
CoP16 (2013) to CoP17 (2016)	Dalbergia species: *D. retusa*, *D. tucerensis* and *D. stevensonii* were listed in the Appendix II. No *Guibourtia spp.* species had been listed in the Appendices at that time.	*#6* *Logs, sawn wood, veneer sheets and plywood.*
CoP17 (2016) to CoP18 (2019)	Annotation #15 for *Dalbergia*/*Guibourtia* entered in effect, with no exemptions for finished products.	*#15* *All parts and derivatives are included, except:* *a) Leaves, flowers, pollen, fruits, and seeds;* *b) Non-commercial exports of a maximum total*

[2] https://www.trade.gov/harmonized-system-hs-codes

Timeframe	Listings of *Dalbergia*/*Guibourtia* in Appendix II	Annotation
		weight of 10 kg. per shipment; *c) Parts and derivatives of Dalbergia cochinchinensis, which are covered by Annotation # 4;* *d) Parts and derivatives of Dalbergia spp. originating and exported from Mexico, which are covered by Annotation # 6.*
CoP18 (2020) to date (2024)	Exemptions for finished products and musical instruments entered in effect with the amendments to annotation #15 agreed at CoP18.	*#15* *All parts and derivatives, except:* *a) Leaves, flowers, pollen, fruits, and seeds;* *b) Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment;* *c) Finished musical instruments, finished musical instrument parts and finished musical instrument accessories;* *d) Parts and derivatives of Dalbergia cochinchinensis, which are covered by Annotation # 4; and* *e) Parts and derivatives of* Dalbergia *spp. originating and exported from Mexico, which are covered by Annotation # 6.*

1.3.2. CITES Trade Database search criteria

The CITES Trade Database was used for obtaining the declared information on target species outlined above and agreed for the case studies which will be presented as Output 2 of the current study.

A comparative analysis was calculated at the species and genus level for *Dalbergia* and *Guibourtia* for portraying the overarching differences based on the following criteria presented in (Table 2). The data was also converted to cubic meters and all criteria of the CITES Trade Database were incorporated to capture all potential forms to be converted.

All species charts and histograms presented are species specific data only. The species data does capture aggregate product data on forms and criteria required for different time periods that are delineated in red lines in the charts which define the periods of regulations for annotation #15 between CoP 17 and CoP 18. An example is from 2017 -2019, all finished products containing *Dalbergia* species. and the three *Guibourtia* species regulated under annotation #15 were required to have a CITES permit. This required statistical reporting from Parties on volumes exported and imported of the listed species. After CoP 18, when annotation #15 was amended, data reporting for exempted finished products, regulated by paragraph b) and c), would not be captured. The histograms and charts demonstrate overall changes in trade flows and delineate the major periods of time from the regulatory changes.

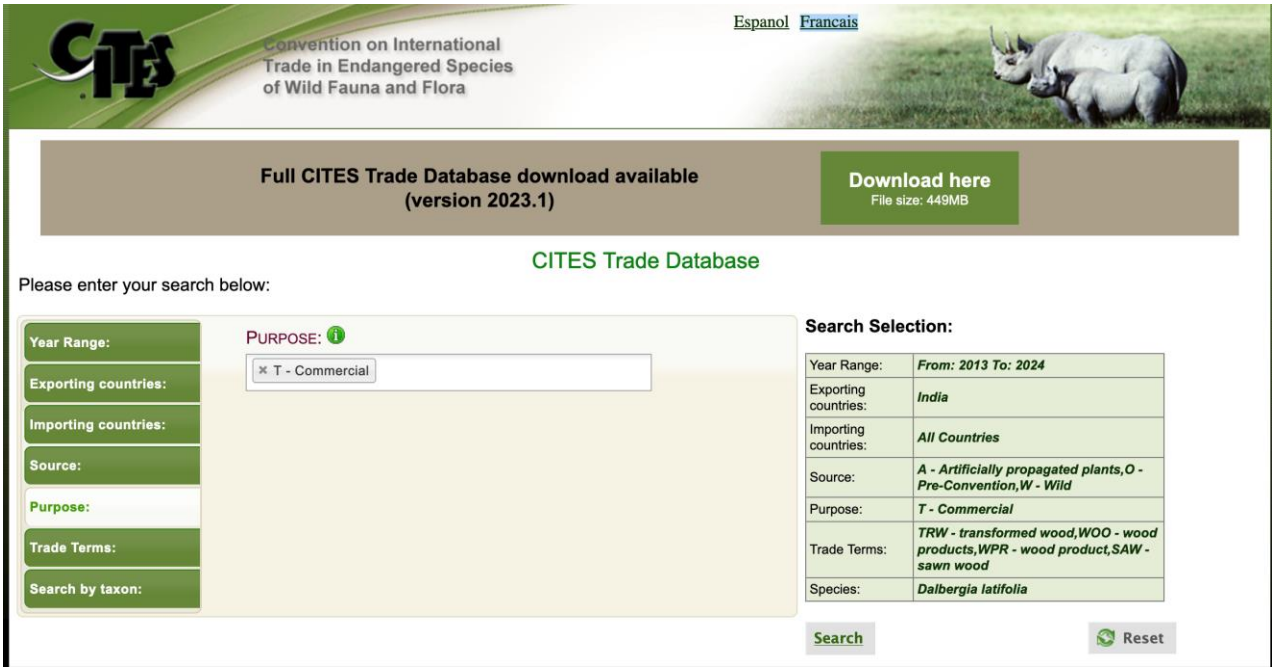
The species data does not contain specific target product data on finished musical instruments, finished musical instrument parts and finished musical instrument accessories. The comparative data and analysis for finished products exempted in paragraphs b) and c) of annotation #15 are derived from other data sources which will be described in detail in Chapter 5.

The CITES Trade Database is not capable of providing specific product data. This will be discussed in the conservation impact assessment as data reporting, classification and allocation is a critical component to accurately analyze conservation impacts of trade.

Table 2. - CITES Trade Search Criteria Example:

Year Range	2013-2024
Exporting Countries	Ex: India
Importing Countries	All
Source	Artificial Propagation (A); Pre-convention; (O) and Wild (W)
Purpose	Commercial (T)
Trade Terms	Sawn Wood (SAW); Veneer (VEN); Transformed Wood (TRW); Wood Products (WOO); Wood Products (WPR)
Taxon	*Dalbergia latifolia*

Photo 1. - Screenshot of the CITES Trade Database Platform



This criterion was used for all target species as well as for Dalbergia species outside our case studies for highlights in the genus. For management of objectives, priority was placed on export data from range countries as there were often gaps of either the exporter or the importer not declaring full data. The use of export data was set as a priority where there is non-alignment of export and import data.

Additional searches were made for species of interest such as *Dalbergia latifolia* from Indonesia and *Dalbergia spruceana (Brazil)*, and *Dalbergia cearnesis (Brazil)* 2016 - 2024. These species are used in musical instruments but are not part of the current target case studies of Output 2 for this report. They are highlighted in this section of Output 1 of this study as both Indonesia and Brazil are different than other range states in the that they also have mature musical instrument manufacturing domestically that is export bound.

Indonesia is a particularly interesting scenario as the *D. latifolia* is Artificially Propagated (A) and it has a large musical instrument manufacturing sector, mostly based on OEM contracts for large international musical instrument companies such as Yamaha Corporation Japan, Fender Musical Instruments USA, Gibson Guitars USA and others.

Dalbergia species search outside target species using all criterion listed above will be added on two species from Brazil *Dalbergia spruceana* and *Dalbergia cearensis* to show a comparison. Searches of the CITES Trade Database indicate reporting is not very comprehensive for the two species from Brazil very similar to reporting for *Guibourtia pelegriniana,* which confirms small volumes and short timeframes of data reported.

1.3.3. Conversion of CITES trade data to cubic meters

To manage the multiple declarations of export and import data and the different classifications, all “Units” of volumes, measurements, forms and weights were converted to cubic meters. The following tables will breakdown the conversions by target species and timeframe 2013-2022. The following data is based on declared information strictly obtained from the CITES Trade Database. Calculations for conversion are included.

Table 3. – Densities of assessed rosewood tree species:

Densities of rosewood species		
Name	**Density variation at 12% moisture (kg/m3)**	**Average density (kg/m3)**
Dalbergia latifolia	800-900	840
Dalbergia melanoxylon	900-1100	1000
Dalbergia retusa	950-1200	1100
Dalbergia stevensonii	850	850
Dalbergia tucurensis	800-950	900
Guibourtia demeusei	790-900	850
Guibourtia tessmannii	800-950	920
Guibourtia pellegriniana	800-950	875

The yield estimates for calculating square meters (m2) to cubic meters is based on an assumed yield of 50% from a raw log to a finished veneer product of 1 mm average in thickness.

Volume = Area × Thickness= 1 m2 × 0.001 m = 0.001 m3;

Required Volume= 0.001 m3 / 0,50 = 0,002 m3

Note: All tables and charts in this section represent two distinct time frames of regulation under annotation #15 which are CoP 17 decisions 2016 -2019 and CoP 18 decisions 2020 -2022. The data focuses on species related reporting. The time frames between 2016 and 2019 would capture finished product inputs and 2020-2022 would not capture finished product inputs of exempted products under paragraphs b) and c) for annotation #15.

Table 4. – *Dalbergia latifolia* trade data recorded between 2016 and 2022 and obtained from the CITES Trade Database.

Dalbergia latifolia						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2016	0.00	0.00	m3	0.00	0.00	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	4,764.00	No of specimens	4,764.00		**0.00**
2017	248,749.51	105,472.77	m3	354,222.28	354,222.28	
	201,983.22	22,794.79	kg	224,778.02	267.59	
	13,743.55	10,699.96	m2*	24,443.51	48.89	
	1,205,300.11	4,247,882.27	No of specimens	5,453,182.38		**354,538.76**
2018	486,440.52	86,285.92	m3	572,726.44	572,726.44	
	2,453,615.01	4,788.96	kg	2,458,403.97	2,926.67	
	10,539.29	2,387.35	m2*	12,926.64	25.85	
	1,783,053.86	2,176,785.21	No of specimens	3,959,839.07		**575,678.97**
2019	41,738.89	96,010.08	m3	137,748.98	137,748.98	
	32,947.72	19,986.92	kg	52,934.64	63.02	
	878.36	7,190.84	m2*	8,069.20	16.14	
	661,440.64	611,910.50	No of specimens	1,273,351.14		**137,828.13**
2020	264.63	77,918.36	m3	78,182.99	78,182.99	
	142.71	12,945.48	kg	13,088.18	15.58	
	10,147.44	2,204.05	m2*	12,351.49	24.70	
	904,222.00	152,992.00	No of specimens	1,057,214.00		**78,223.28**
2021	1,251.85	89,739.36	m3	90,991.21	90,991.21	
	138,628.79	28,873.72	kg	167,502.51	199.41	
	9,902.00	770.55	m2*	10,672.55	21.35	
	251,395.00	180,125.00	No of specimens	431,520.00		**91,211.96**
2022	76,641.26	2,024.88	m3	78,666.14	78,666.14	
	298,161.68	4,301.50	kg	302,463.18	360.08	
	11,898.00	1,268.43	m2*	13,166.43	26.33	
	123,727.00	147,176.45	No of specimens	270,903.45		**79,052.55**
				GRAND TOTAL m3		**1,316,533.64**

Table 5. – *Dalbergia melanoxylon* trade data recorded between 2017 and 2022 and obtained from the CITES Trade Database.

Dalbergia melanoxylon						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTAL	Unit type converted in m3	Yearly Totals in m3
2017	13,785.03	61.18	m3	13,846.20	13,846.20	
	59.59	924,998.43	kg	925,058.02	925.06	
	0.00	0.00	m2*	0.00	0.00	
	27,192.50	361,317.33	No of specimens	388,509.83		**14,771.26**
2018	23,509.54	10,319.94	m3	33,829.48	33,829.48	
	598.45	74,884.00	kg	75,482.45	75.48	
	0.00	0.00	m2*	0.00	0.00	
	223,923.17	2,264,229.37	No of specimens	2,488,152.53		**33,904.96**
2019	14,404.76	35.47	m3	14,440.23	14,440.23	
	31,096.92	38,712.64	kg	69,809.57	69.81	
	0.00	0.00	m2*	0.00	0.00	
	75,968.60	1,023,725.96	No of specimens	1,099,694.56		**14,510.04**
2020	8,669.64	34,576.02	m3	43,245.66	43,245.66	
	0.00	5,287.06	kg	5,287.06	5.29	
	0.00	0.00	m2*	0.00	0.00	
	732.00	479,507.67	No of specimens	480,239.67		**43,250.94**
2021	2,587.34	35,263.61	m3	37,850.94	37,850.94	
	5,397.97	11,159.31	kg	16,557.28	16.56	
	0.01	0.00	m2*	0.01	0.00	
	185.21	3,307.00	No of specimens	3,492.21		**37,867.50**
2022	4,887.82	279.36	m3	5,167.17	5,167.17	
	57.00	2,586.20	kg	2,643.20	2.64	
	0.00	0.00	m2*	0.00	0.00	
	737.00	712.50	No of specimens	1,449.50		**5,169.82**
				GRAND TOTAL		**149,474.52**

Table 6. – *Dalbergia retusa* trade data recorded between 2013 and 2022 and obtained from the CITES Trade Database.

Dalbergia retusa						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2013	2,163.63	8,300.13	m3	10,463.76	10,463.76	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	38.00	0.00	No of specimens	38.00		**10,463.76**
2014	19,339.40	11,492.84	m3	30,832.24	30,832.24	
	0.00	63,970.00	kg	63,970.00	58.15	
	0.00	780.03	m2*	780.03	1.56	
	215.00	63,892.00	No of specimens	64,107.00		**30,891.95**
2015	2,525.86	3,342.97	m3	5,868.83	5,868.83	
	20.00	0.00	kg	20.00	0.02	
	0.00	432.63	m2*	432.63	0.87	
	101.00	2,109.00	No of specimens	2,210.00		**5,869.71**
2016	1,631.65	3,907.25	m3	5,538.90	5,538.90	
	20,236.00	0.00	kg	20,236.00	18.40	
	0.00	237.86	m2*	237.86	0.48	
	0.00	25.00	No of specimens	25.00		**5,557.78**
2017	3,418.35	3,335.67	m3	6,754.02	6,754.02	
	26,789.60	66.66	kg	26,856.26	24.41	
	0.00	0.00	m2*	0.00	0.00	
	232.50	3,055.50	No of specimens	3,288.00		**6,778.44**
2018	1,096.72	1,510.20	m3	2,606.93	2,606.93	
	0.26	87.37	kg	87.63	0.08	
	0.00	165.96	m2*	165.96	0.33	
	2,565.75	3,535.00	No of specimens	6,100.75		**2,607.34**
2019	2,649.58	2,878.96	m3	5,528.54	5,528.54	
	0.00	16.65	kg	16.65	0.02	
	0.55	0.00	m2*	0.55	0.00	
	908.50	37,683.00	No of specimens	38,591.50		**5,528.55**
2020	3,533.92	2,093.78	m3	5,627.71	5,627.71	
	7.07	10.73	kg	17.80	0.02	
	0.00	0.00	m2*	0.00	0.00	
	85.00	848.41	No of specimens	933.41		**5,627.72**
2021	1,490.14	2,283.14	m3	3,773.28	3,773.28	
	0.00	24.34	kg	24.34	0.02	
	0.00	0.00	m2*	0.00	0.00	
	168.00	284.00	No of specimens	452.00		**3,773.30**
2022	663.30	2,755.04	m3	3,418.34	3,418.34	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	112,160.00	No of specimens	112,160.00		**3,418.34**
				GRAND TOTAL		**80,516.89**

Table 7. – *Dalbergia stevensonii* trade data recorded between 2013 and 2022 and obtained from the CITES Trade Database.

Dalbergia stevensonii						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2013	471.20	643.25	m3	1,114.46	1,114.46	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**1,114.46**
2014	127.30	258.32	m3	385.62	385.62	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	4.00	No of specimens	4.00		**385.62**
2015	61.66	274.24	m3	335.90	335.90	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**335.90**
2016	59.72	274.03	m3	333.75	333.75	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**333.75**
2017	80.82	171.72	m3	252.54	252.54	
	90.18	4,496.52	kg	4,586.70	5.40	
	0.00	0.00	m2*	0.00	0.00	
	482.00	2,498.60	No of specimens	2,980.60		**257.93**
2018	90.99	388.31	m3	479.30	479.30	
	81.97	4,838.95	kg	4,920.92	5.79	
	9.94	0.00	m2*	9.94	0.02	
	2,092.52	2,989.50	No of specimens	5,082.02		**485.11**
2019	433.40	198.17	m3	631.57	631.57	
	0.26	4,455.18	kg	4,455.44	5.24	
	0.00	0.00	m2*	0.00	0.00	
	838.91	3,938.00	No of specimens	4,776.91		**636.81**
2020	356.72	81.85	m3	438.56	438.56	
	70.00	1.13	kg	71.13	0.08	
	0.00	0.00	m2*	0.00	0.00	
	26.00	5.00	No of specimens	31.00		**438.65**
2021	54.38	146.51	m3	200.89	200.89	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	14.00	2.00	No of specimens	16.00		**200.89**
2022	79.74	98.95	m3	178.69	178.69	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**178.69**
				GRAND TOTAL		**4,367.81**

Table 8. – *Dalbergia tucurensis* trade data recorded between 2014 and 2022 and obtained from the CITES Trade Database.

Dalbergia tucurensis						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2014	1,409.00	4,413.25	m3	5,822.25	5,822.25	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**5822.2526**
2015	1,579.61	1,802.85	m3	3,382.45	3,382.45	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.11	No of specimens	0.11		**3382.45**
2016	166.35	312.86	m3	479.21	479.21	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	2.00	0.00	No of specimens	2.00		**479.207**
2017	854.37	553.07	m3	1,407.44	1,407.44	
	0.00	12.30	kg	12.30	0.01	
	0.00	0.00	m2*	0.00	0.00	
	1.00	7.00	No of specimens	8.00		**1407.455161**
2018	3,189.52	226.90	m3	3,416.42	3,416.42	
	0.00	2.00	kg	2.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	89.33	119.00	No of specimens	208.33		**3416.425592**
2019	639.04	651.25	m3	1,290.29	1,290.29	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	33.00	7,230.00	No of specimens	7,263.00		**1290.291189**
2020	39.29	116.07	m3	155.37	155.37	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	3.00	5,000.00	No of specimens	5,003.00		**155.3663**
2021	330.35	308.89	m3	639.24	639.24	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	7,000.00	No of specimens	7,000.00		**639.241**
2022	8.51	8.25	m3	16.76	16.76	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		**16.76**
				GRAND TOTAL		**16,609.45**

Table 9. – *Guibourtia demeusei* trade data recorded between 2017 and 2022 and obtained from the CITES Trade Database.

Guibourtia demeusei						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2017	2,639.19	3,249.33	m3	5,888.53	5,888.53	
	3,411.82	16,485.60	kg	19,897.42	23.41	
	3,336.95	4,085.66	m2*	7,422.61	14.85	
	8,955.50	28,116.50	No of specimens	37,072.00		**5,926.78**
2018	863.48	8,850.31	m3	9,713.79	9,713.79	
	343.54	6,511.17	kg	6,854.70	8.06	
	0.00	6,754.54	m2*	6,754.54	13.51	
	22,958.90	32,075.90	No of specimens	55,034.80		**9,735.36**
2019	5,125.97	4,799.22	m3	9,925.20	9,925.20	
	1,413.84	4,645.34	kg	6,059.18	7.13	
	0.00	7,207.25	m2*	7,207.25	14.41	
	22,959.40	27,984.00	No of specimens	50,943.40		**9,946.74**
2020	10,228.85	5,175.25	m3	15,404.10	15,404.10	
	0.00	3,202.78	kg	3,202.78	3.77	
	0.00	2,343.15	m2*	2,343.15	4.69	
	2,970.00	7,760.00	No of specimens	10,730.00		**15,412.56**
2021	7,418.69	3,383.64	m3	10,802.32	10,802.32	
	4.90	0.00	kg	4.90	0.01	
	1,943.79	2,790.17	m2*	4,733.96	9.47	
	11.00	2,095.00	No of specimens	2,106.00		**10,811.80**
2022	6,411.75	35.23	m3	6,446.98	6,446.98	
	0.00	0.00	kg	0.00	0.00	
	0.00	9,486.57	m2*	9,486.57	18.97	
	1.00	132.00	No of specimens	133.00		**6,465.95**
				GRAND TOTAL		**58,299.18**

Table 10. – *Guibourtia pellegriniana* trade data recorded between 2017 and 2018 and obtained from the CITES Trade Database. [3]

Guibourtia pellegriniana						
Year	Importer reported quantity	Exporter reported quantity	Unit Type	TOTALS/Unit Type	Unit type converted in m3	Yearly Totals in m3
2017	1,477.98	5,237.58	m3	6,715.56	6,715.56	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		6715.561
2018	210.90	1,805.00	m3	2,015.90	2,015.90	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	0.00	No of specimens	0.00		2015.9
				GRAND TOTAL		8,731.46

Table 11. – *Guibourtia tessmanii* trade data recorded between 2017 and 2022 and obtained from the CITES Trade Database.

Guibourtia tessmannii						
Year	Importer reported quantity (m3/kg/m2)	Exporter reported quantity (m3/kg/m2)	Unit Type	Totals/Unit Type	Unit type converted in m3	Yearly Totals in m3
2017	10,001.84	53,178.15	m3	63,179.99	63,179.99	
	8.61	1,250.74	kg	1,259.35	1.37	
	0.00	79.81	m2*	79.81	0.16	
	15,364.14	54,005.99	No of specimens	69,370.13		63,181.52
2018	42,901.75	87.06	m3	42,988.81	42,988.81	
	1.60	85.99	kg	87.59	0.10	
	0.00	0.00	m2*	0.00	0.00	
	4,130.67	13,282.50	No of specimens	17,413.17		42,988.91
2019	14,679.98	625.80	m3	15,305.77	15,305.77	
	49.64	51.02	kg	100.66	0.11	
	0.00	502.60	m2*	502.60	1.01	
	3,794.50	4,529.00	No of specimens	8,323.50		15,306.89
2020	12,054.77	6,644.62	m3	18,699.39	18,699.39	
	551,997.00	0.84	kg	551,997.84	600.00	
	0.00	0.00	m2*	0.00	0.00	
	920.00	5,452.00	No of specimens	6,372.00		19,299.39
2021	6,111.10	4,283.74	m3	10,394.85	10,394.85	
	0.00	0.00	kg	0.00	0.00	
	0.00	1,480.74	m2*	1,480.74	2.96	
	1,015.00	764.00	No of specimens	1,779.00		10,397.81
2022	3,318.30	1,921.27	m3	5,239.57	5,239.57	
	0.00	0.00	kg	0.00	0.00	
	0.00	0.00	m2*	0.00	0.00	
	0.00	140.00	No of specimens	140.00		5,239.57
				GRAND TOTAL		156,414.08

[3] Based on the CITES Trade Database, there was only data from 2017 and 2018 for this species.

1.3.4. Stakeholder consultations:

Stakeholder consultations were used to obtain information on regulatory, trade and conservation impacts. The goal was to interview professionals from different sectors affected by annotation #15. Interviews were completed with professionals from the music and timber industries, management and scientific authorities as well as relevant non-governmental organizations involved in range country conservation programs and global policy development regarding CITES listed species.

The key issues of Decision 18.321 (Rev. CoP19) were presented on whether the overall amendments to annotation #15 were working based on direct interviews on COVID 19, permit allocations as well as positions on the importance of trade of the targeted CITES species.

A questionnaire was used to contact Parties and Management Authorities. Direct interviews were conducted with Non-governmental organizations – including the private sector.

1.4. Trade Flows of Declared Data 2013 – 2023 – CITES Trade Database

The following data and analysis form the basis for demonstrating trade flows of target species as well as trends at the genus level. The CITES Trade Database had some gaps of declared data from exporters and importers which will be discussed more in the recommendations for harmonizing reporting by Parties, as required on an annual basis. This was addressed by converting and analyzing data from both export and import with an emphasis on the export as this is more directly related to range state forest and species management systems and quotas.

The trade flows of the target species highlight exports from the countries of origin / range states of the species for the timeframes of regulated and unregulated trade 2016-2022. The goal is to demonstrate trends with no exemption 2016-2019 and with the exemption 2020-2022 – for data available. The charts and histograms are marked with indicators representing these two distinct time frames for changes to annotation #15.

- During the first-time frame of 2016-2019 data would include regulated products, such as finished musical instruments and carvings that contained one of the listed species regulated under annotation #15.
- During the period 2020-2022 the data would not include the unregulated products, such as finished musical instruments and carvings that were exempted from annotation #15 at CoP 18.

The issue at hand is to show the overall trends in volumetric reporting between the two distinct time frames of regulating finished products and not regulating finished products exempted under paragraphs b) and c) of annotation #15 after CoP 18.

The trade flows also demonstrate the trends of import in the target timeframes as this is important to compare with the trends of Finished Musical Instruments and where they are manufactured.

A key question has loomed - *Are finished musical instruments manufactured in the range states where conservation impact is most direct?*

This question is a key factor on analyzing implications of conservation and regulating finished musical instrument products used that have inputs of the target species and the other species of the genus but not included in the case studies.

The following data will be presented based on individual target species of *Dalbergia latifolia, Dalbergia melanoxylon, Dalbergia retusa, Dalbergia stevensonii, Dalbergia tucerensis,* and the three *Guibourtia* species.

The charts and tables were developed based on our target regions and species data declared in the CITES Trade Database.

In creating the charts, which highlight the trends in the trade of *Dalbergia* and *Guibourtia* species, both for volumes (m^3) and for quantities of less than 10kg, we used two important timelines that depict the following changes to the Annotation #15:

Changes in 2016 (CoP17)

At the 17th Conference of the Parties (CoP17, 2016; Johannesburg), the following significant changes were made:

1. **Expanded Scope of Protection**: Annotation #15 was applied to cover **all species of the genus *Dalbergia***, except for *Dalbergia nigra*, which was already listed in Appendix I. This broadened the protection to all rosewoods, which were increasingly threatened by illegal logging due to the high demand for luxury furniture and musical instruments.
2. **Regulated Parts and Derivatives**: The annotation stipulated that all parts and derivatives of these species were subject to trade controls, with the following exceptions:
    - **Leaves, flowers, pollen, fruits, and seeds**.
    - **Finished products containing parts of *Dalbergia* and *Guibourtia*** species were regulated only when the wood comprised more than **10 kg per shipment**.

Changes in 2020 (CoP18)

At the 18th Conference of the Parties (CoP18, 2019; Geneva), further clarifications and modifications were made to Annotation #15:

1. **Musical Instruments Clarification**: One key clarification was related to musical instruments. The new language stated that **finished musical instruments, finished musical instrument parts, and finished musical instrument accessories** were now **excluded from CITES controls**. This addressed concerns raised by musicians and instrument manufacturers, who had previously faced difficulties transporting instruments made from *Dalbergia* species (particularly *Dalbergia latifolia* and *Dalbergia cochinchinensis*).
2. **Finished Products**: Finished products to a **maximum weight of 10 kg per shipment** that contain parts of *Dalbergia* and *Guibourtia* species were further clarified to ensure that small-scale, personal use (e.g., musical instruments or small craft products) could continue without regulatory burden.

1.4.1. Asia - *Dalbergia latifolia*

Chart 4.1.1 - Combined trade evolution by volume (m3) of all target species to highlight *D. latifolia*: 2013-2022. Red lines for 2017 and 2020 depict changes to annotation #15:

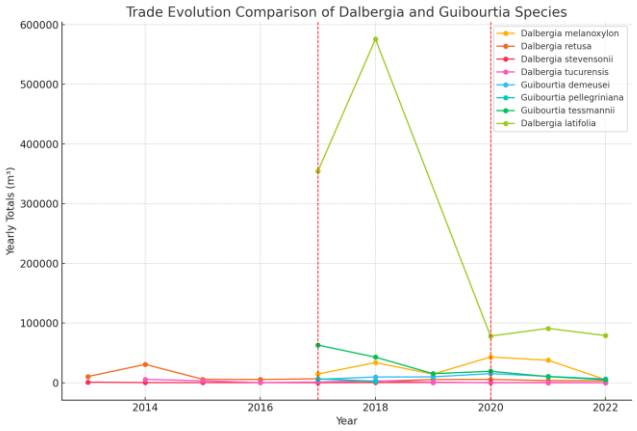


Chart. 4.1.2. - *Dalbergia latifolia* – Trade trends delineating key events as well as export and import based on volume and source code

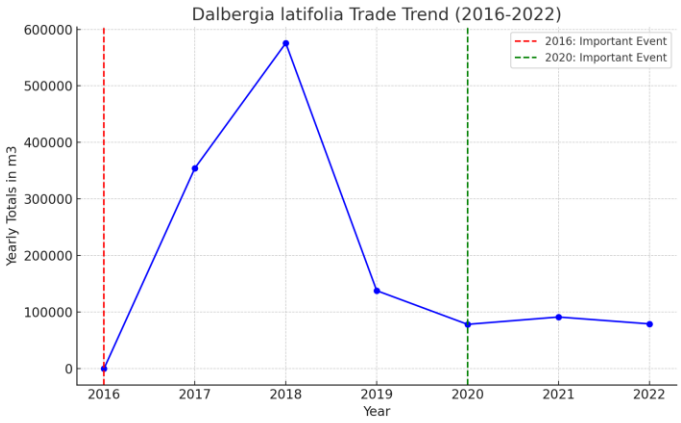
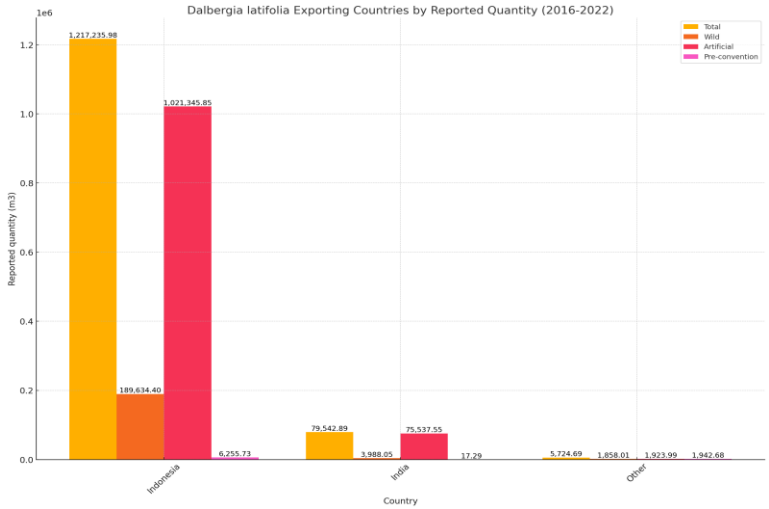


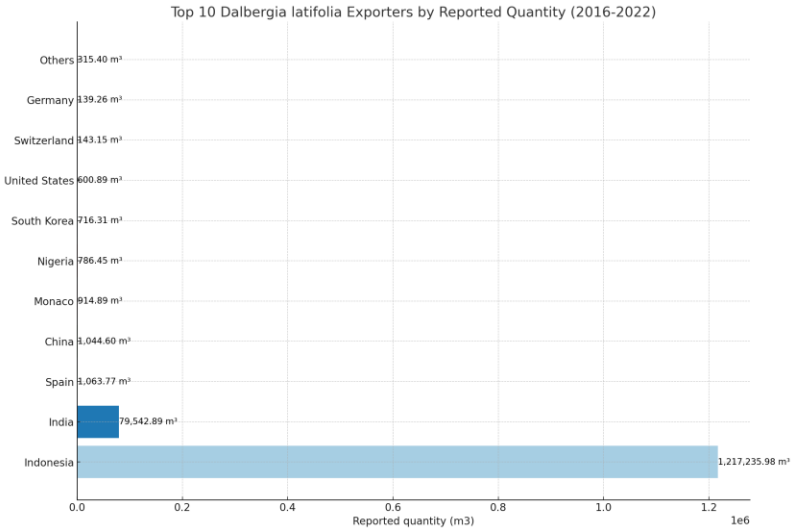
Chart 4.1.3. – *Dalbergia latifolia* – Exporting countries by reported volume (m3) between 2016-2022



The chart 4.1,3. shows the key countries of export of *D. latifolia* as Indonesia and India which are the typical countries of distribution of both Wild and Artificially propagated specimens. Pre-convention exports are declared as minimal comparatively. The charts delineate the trends of export when data is captured during the target time frames as well as the volumes. There are significant increases in volumes reported when the initial #15 annotation went into effect in 2017. Covid also plays a role in the reporting of data during issues of shipping from 2020 till 2022. Shipping became very difficult and expensive at this time.

The goal of these charts is to compare with trends of the orign of the target species compared to the regulations under annotation #15 during the periods of regulation on finished products and then for unregulated finished products under paragraph c).

Chart 4.1.4. – *Dalbergia latifolia* – Top 10 exporting countries by reported volume (m3) between 2016-2022

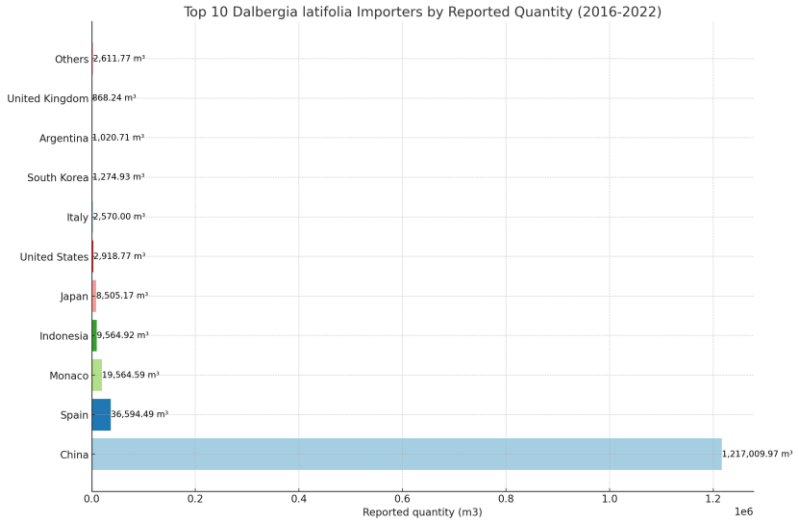


The chart 4.1.4 depicts the export of *D. latifolia* by country based on quantity 2016-2022, which would also include non-range state exports. Logs are not legal to export from Indonesia or India of *D. latifolia,*

so the forms are mixed within the available data. This would include finished and unfinished products requiring CITES permits depending on the timeframe.

Although it is not possible to segregate by products or forms, the non-range state exports in the study timeline will pick up regulated re-exports of finished products 2017-2019. The declared data would also pick up regulated primary and semi-processed materials which would require a CITES permit from 2016 COP 17 listing of the entire Dalbergia genus to the current period.

Chart 4.1.5. – *Dalbergia latifolia* – Top 10 importing countries by reported volume (m3) between 2016-2022



As with the export, it is important to look at the major importing countries as this data will be used to look at where the trade flows are prevalent as they relate to the manufacture of Finished Musical Instruments as well as Finished Parts and Finished Accessories. This will be discussed more in Section 5.

1.4.2. Africa – *Dalbergia melanoxylon* – Trade Trends delineating key events as well as export and import Based on Volume and Source Code

Chart 4.2.1. – *Dalbergia melanoxylon* - Trade evolution by reported volume (m3) between 2017 and 2022. Red lines for 2017 and 2020 depict changes to annotation #15.

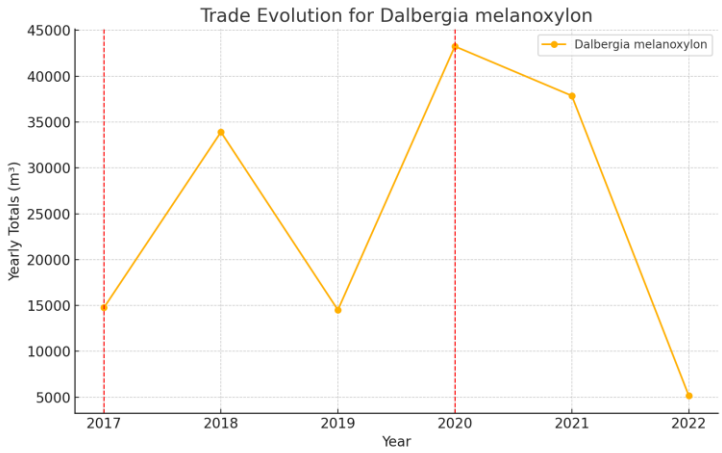


Chart 4.2.2. – *Dalbergia melanoxylon* - Top 5 exporter countries by reported volume (m3) and source distribution between 2016 and 2022

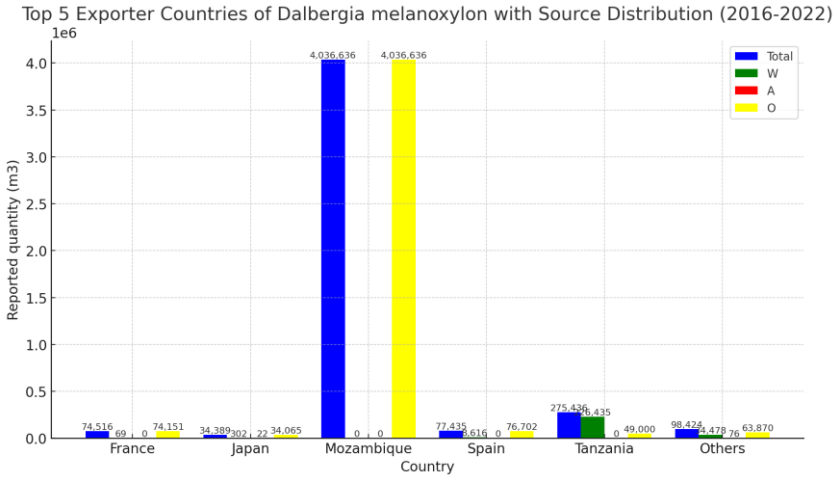


Chart 4.2.3. – *Dalbergia melanoxylon* - Top 5 origin countries by reported volume (m3) between 2016 and 2022

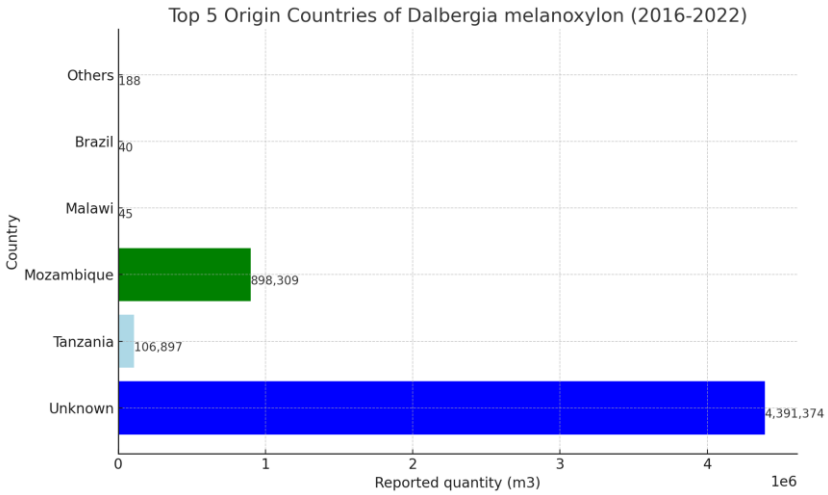


Chart 4.2.4. – *Dalbergia melanoxylon* - Top 10 exporter countries by reported volume (m3) between 2016 and 2022

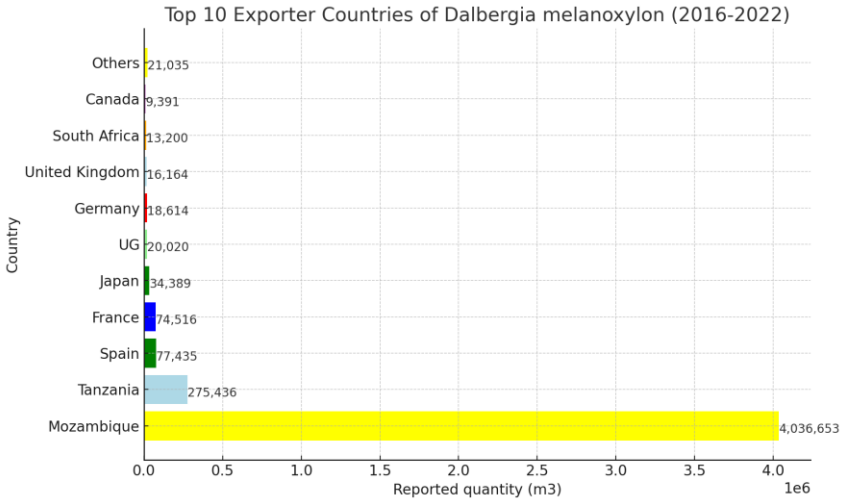
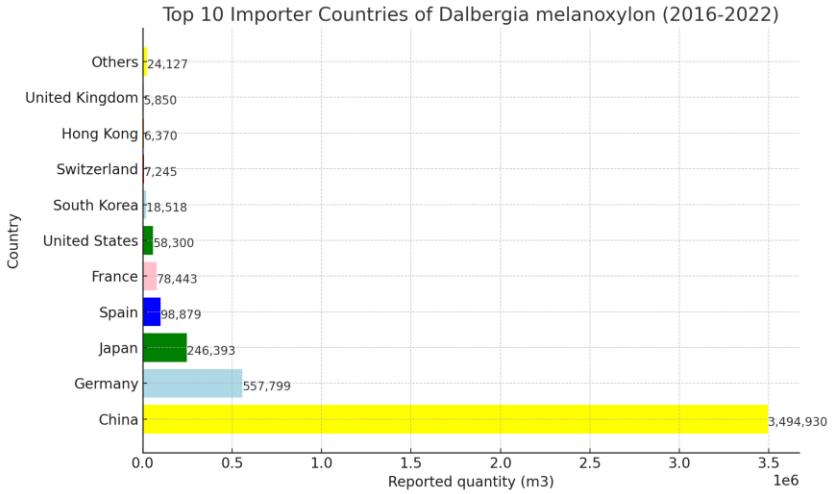
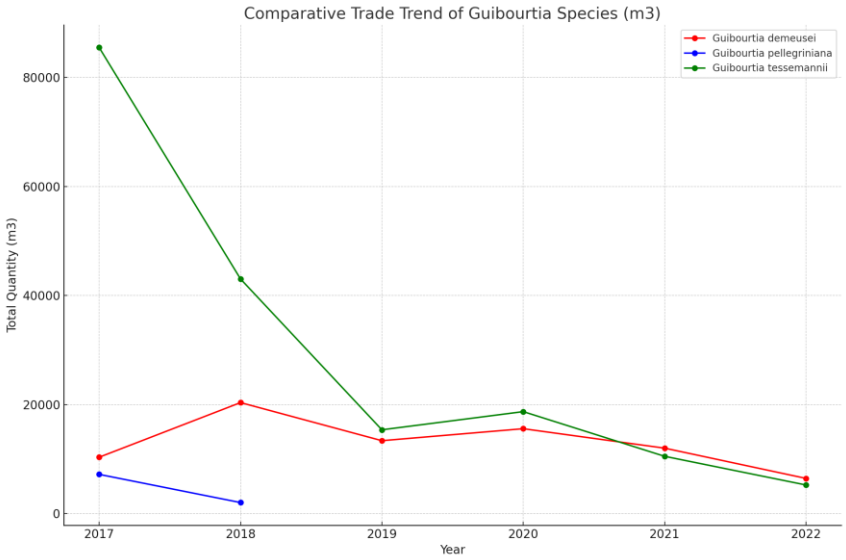


Chart 4.2.5. – *Dalbergia melanoxylon* - Top 10 importer countries by reported volume (m3) between 2016 and 2022



1.4.3. Africa – *Guibourtia* spp.- Trade Trends delineating key events as well as Export and Import Based on Volume and Source Code.

Chart 4.3.1. Comparative trade trends at the *Guibourtia spp*. genus level by Quantity (m3) between 2017 and 2022



Guibourtia demeusei

Chart 4.3.2. *Guibourtia demeusei* - Trade evolution by reported volume (m3) between 2017 and 2022

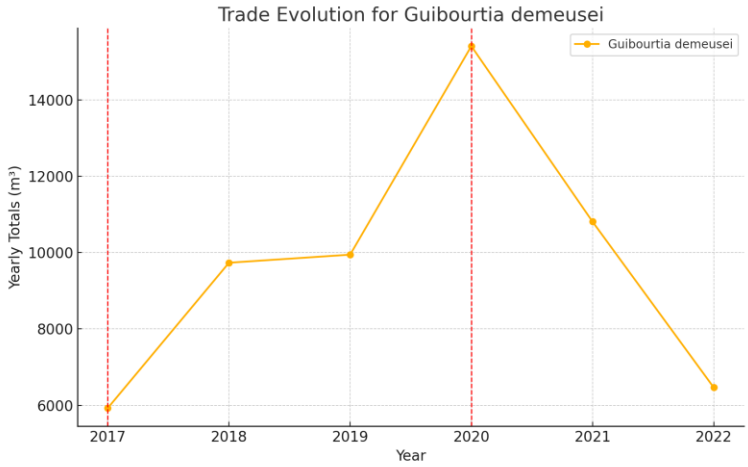


Chart 4.3.3. *Guibourtia demeusei* – Top 10 exporter countries by quantity (m3) and source distribution between 2017 and 2022

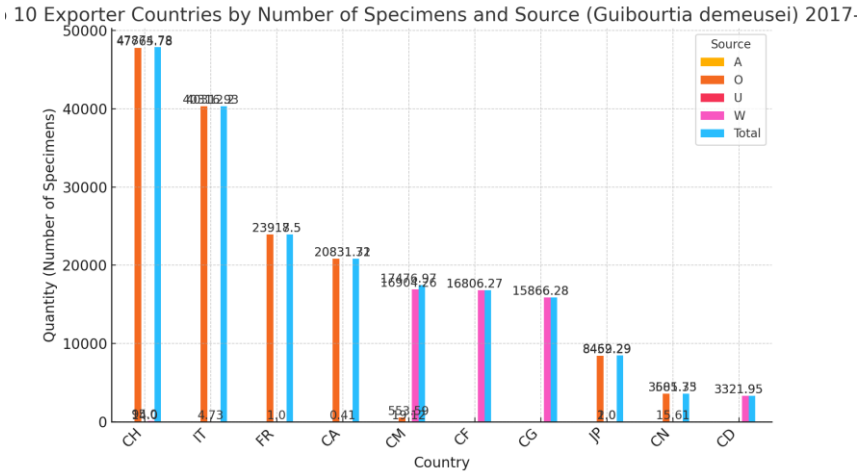


Chart 4.3.4. *Guibourtia demeusei* – Top 10 exporter countries by number of specimens between 2017 and 2022

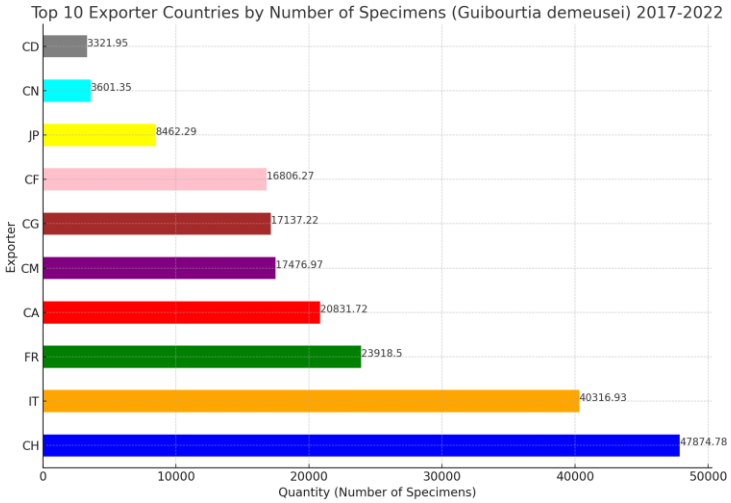


Chart 4.3.5. *Guibourtia demeusei* – Top 10 importer countries by number of specimens between 2017 and 2022

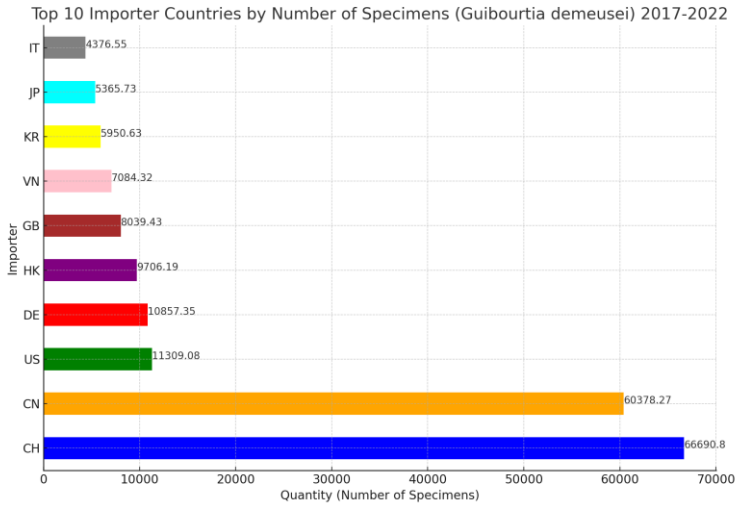
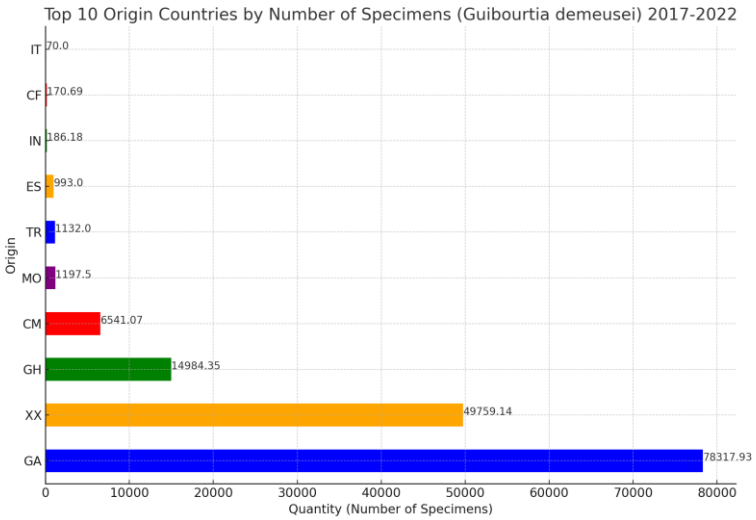


Chart 4.3.6. *Guibourtia demeusei* – Top 10 origin countries by number of specimens between 2017 and 2022



Guibourtia pellegriniana

Chart 4.3.7. *Guibourtia pellegriniana* - Trade Evolution by Volume (m3) between 2017 and 2018. It is necessary to point out that there was a significant data reporting deficiency for this species. The CITES Trade database only had data reported between 2017 and 2018.

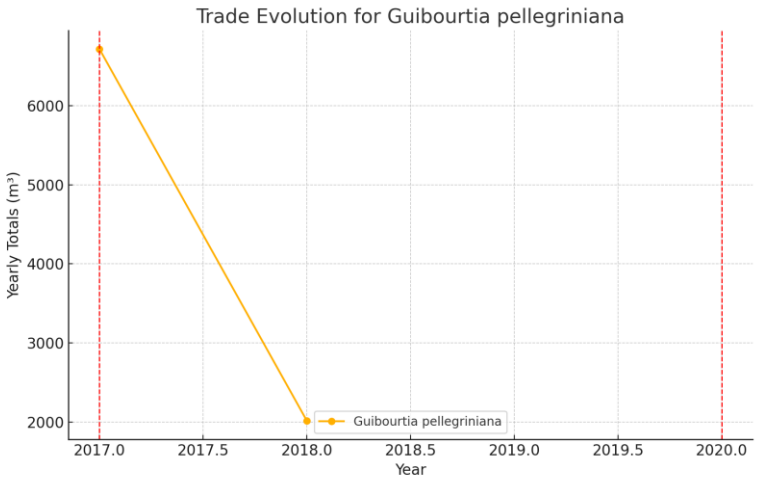
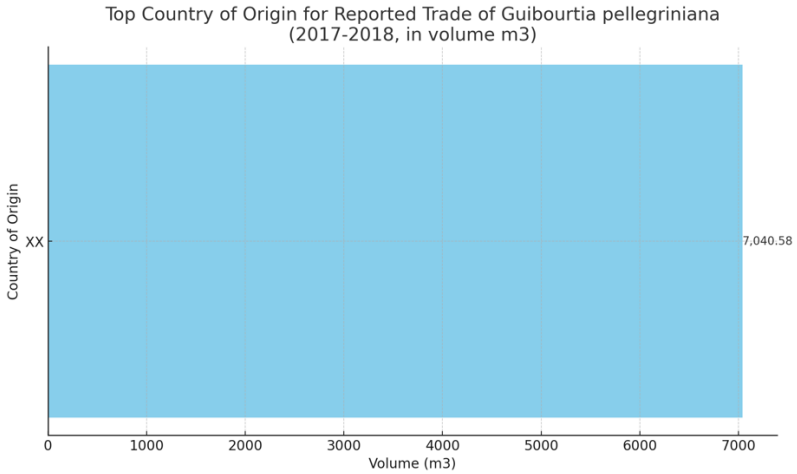
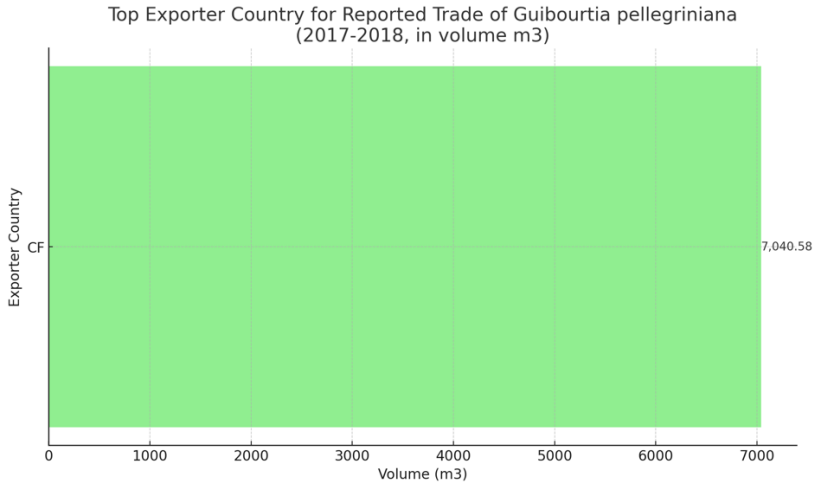


Chart 4.3.8. *Guibourtia pellegriniana* – Top origin Country by reported volume (m3) between 2017 and 2018



As observed above, for *Guibourtia pellegriniana*, as all the data available in the CITES Trade Database recorded between 2017 and 2018 is of unknown origin, marked with XX

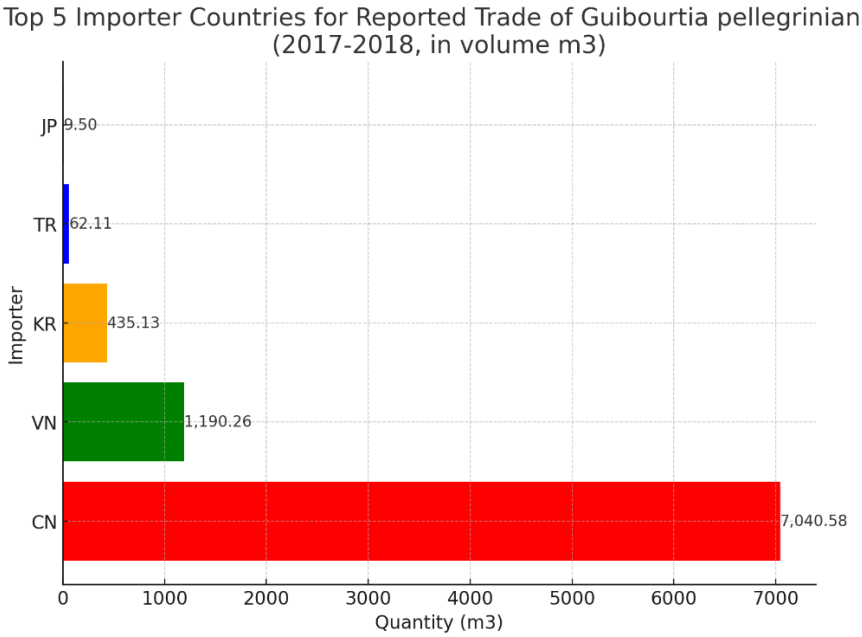
Chart 4.3.9. *Guibourtia pellegriniana* – Top exporter country by reported volume (m3) between 2017 and 2018.



CITES Trade database only had data from 2017-2018 and this corresponds to the implementation of annotation #15.

The Central African Republic ("CF") is the primary exporter, accounting for the majority of the reported volume.

Chart 4.3.10. *Guibourtia pellegriniana* – Top 5 importer countries by reported volume (m3) between 2017 and 2018



Guibourtia tessmannii

Chart 4.3.11. *Guibourtia tessmannii* - Trade evolution by reported volume (m3) between 2017 and 2022. Red lines for 2017 and 2020 depict changes to annotation #15:

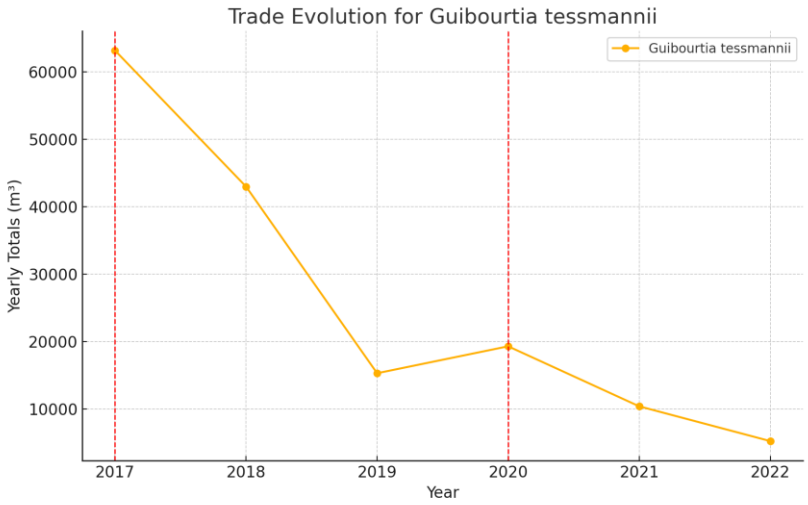


Chart 4.3.12. *Guibourtia tessmannii* – Top 5 origin countries by reported volume (m3) between 2017 and 2022

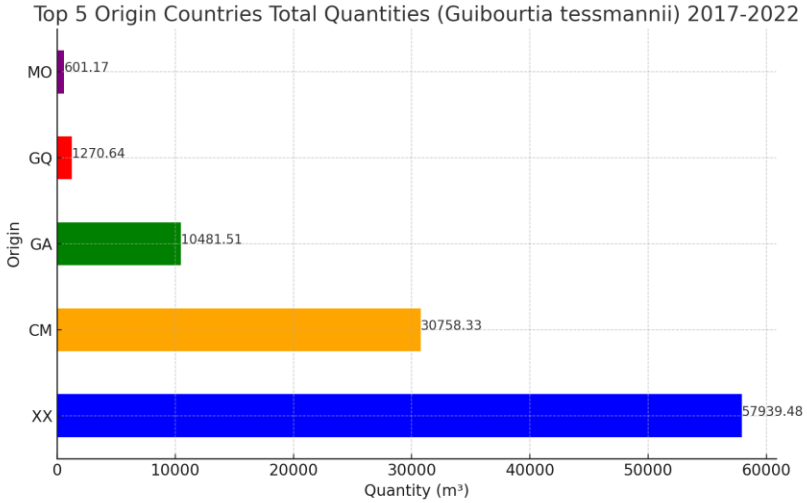


Chart 4.3.13. *Guibourtia tessmannii* – Top 10 exporter countries by reported volume (m3) and source distribution between 2017 and 2022.

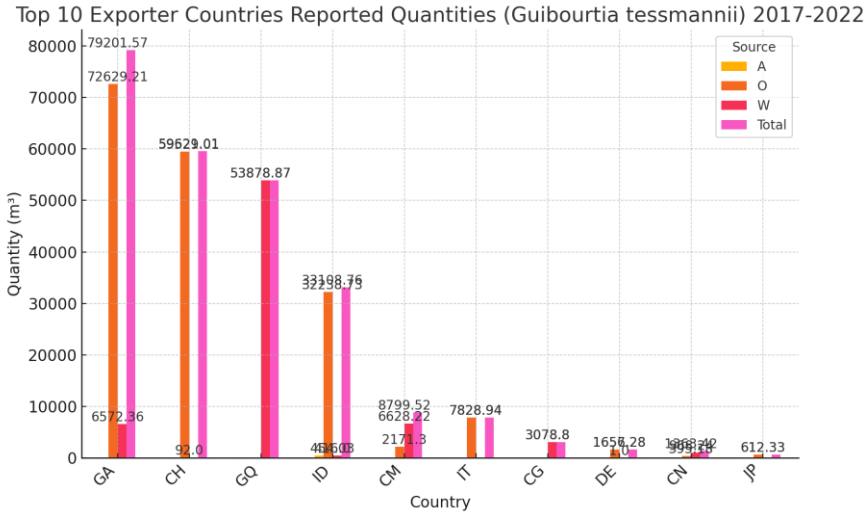


Chart 4.3.14. *Guibourtia tessmannii* – Top 10 exporter countries by reported volume (m3) between 2017 and 2022

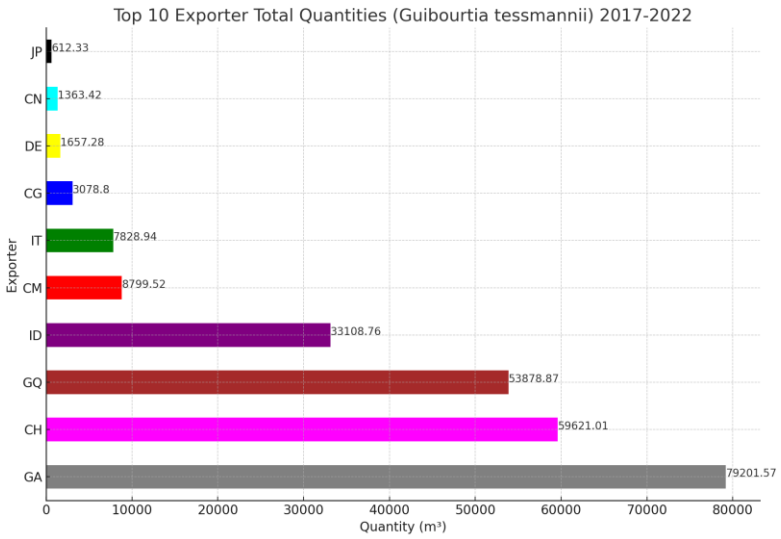
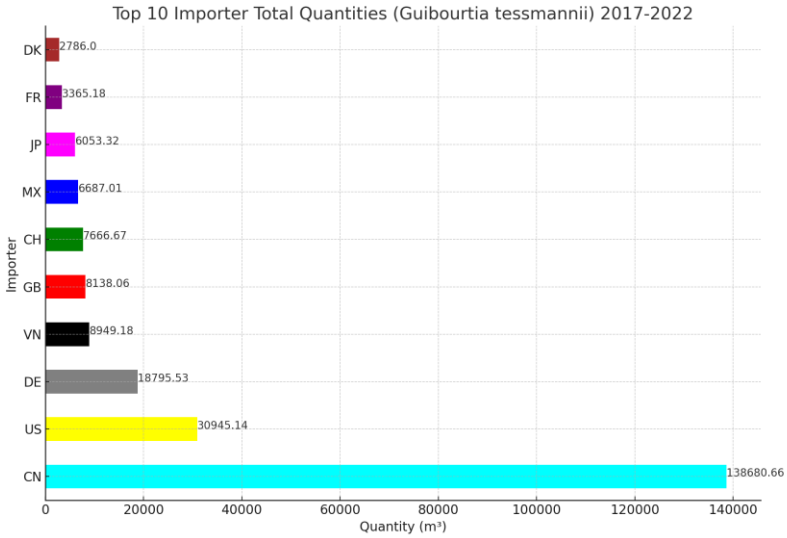


Chart 4.3.15. *Guibourtia tessmannii* – Top 10 importer countries by reported volume (m3) between 2017 and 2022



The basic trends for the three species of *Guibourtia spp.* listed in Appendix II with annotation #15 indicate similar patterns as with export and import of *Dalbergia spp.* The countries of origin are exporting to major markets with China importing the most significant volumes of wood. The analysis also indicates that almost all exports from range states are source code (W) wild. Gabon and Cameroon are the largest exporters of the three species with *G. tessmanni* and *G. demeusei* most prevalent.

The analysis of the *Guibourtia* species will be further developed in the case studies in Output 2, but there are important indicators from the trade flows as well as use in finished musical instruments.

Historically, *Guibourtia* species have been used in musical instruments, but the trend has diminished significantly over the last ten years.

1.4.4. Central and South America and the Caribbean – *Dalbergia retusa, Dalbergia stevensonii*, *Dalbergia tucurensis* - Trade Trends delineating key events as well as Export and Import Based on Volume and Source Code.

Dalbergia retusa

Chart 4.4.1. *Dalbergia retusa* - Trade evolution by reported volume (m3) between 2013 and 2022. Red lines for 2017 and 2020 depict changes to annotation #15:

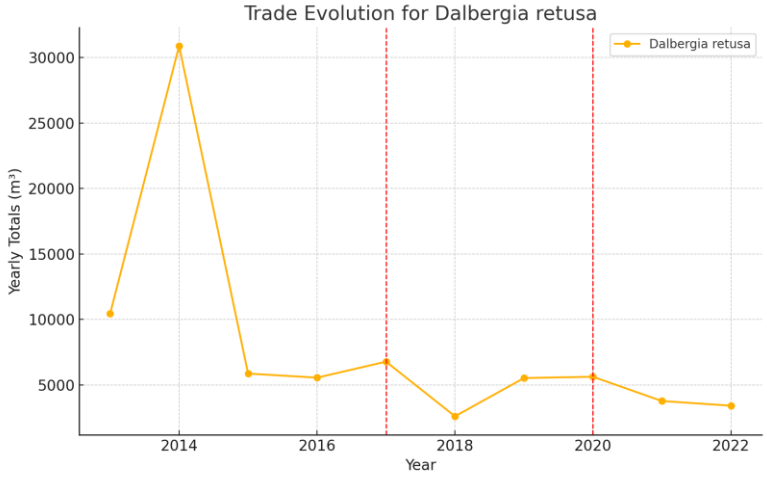


Chart 4.4.2. *Dalbergia retusa*- Top 5 exporter countries by reported volume (m3) and source distribution between 2013 and 2022

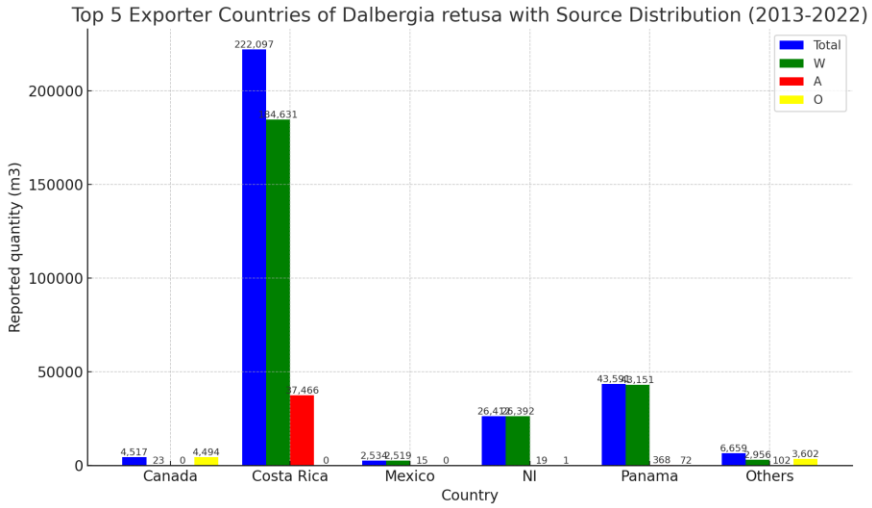


Chart 4.4.3. *Dalbergia retusa* - Top 5 origin countries by reported volume (m3) between 2013 and 2022

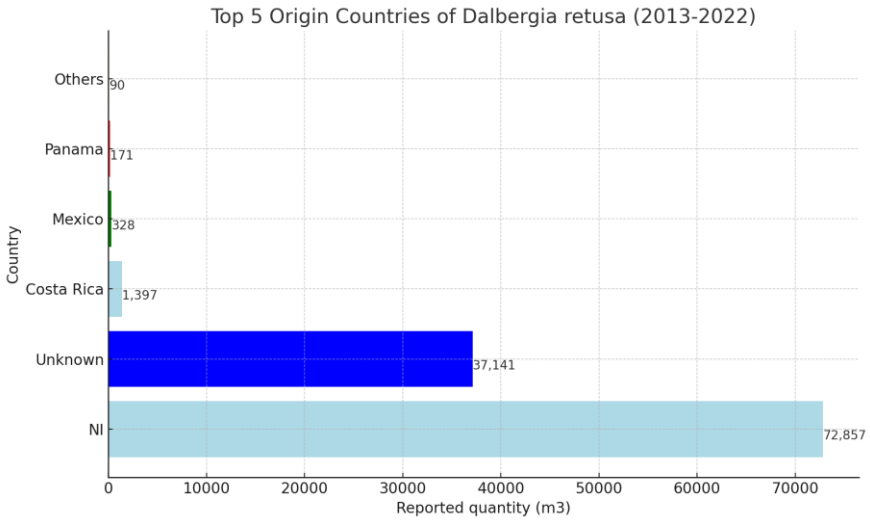


Chart 4.4.4. *Dalbergia retusa* - Top 10 exporter countries by reported volume (m3) between 2013 and 2022

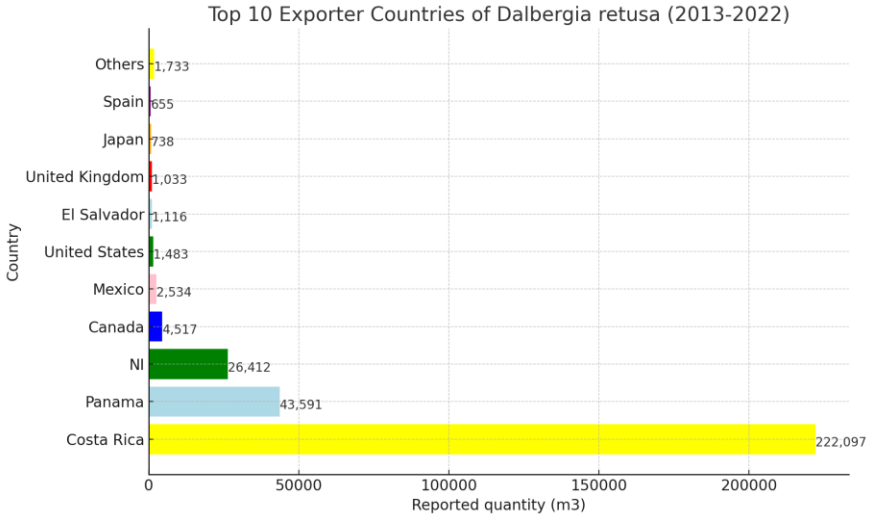
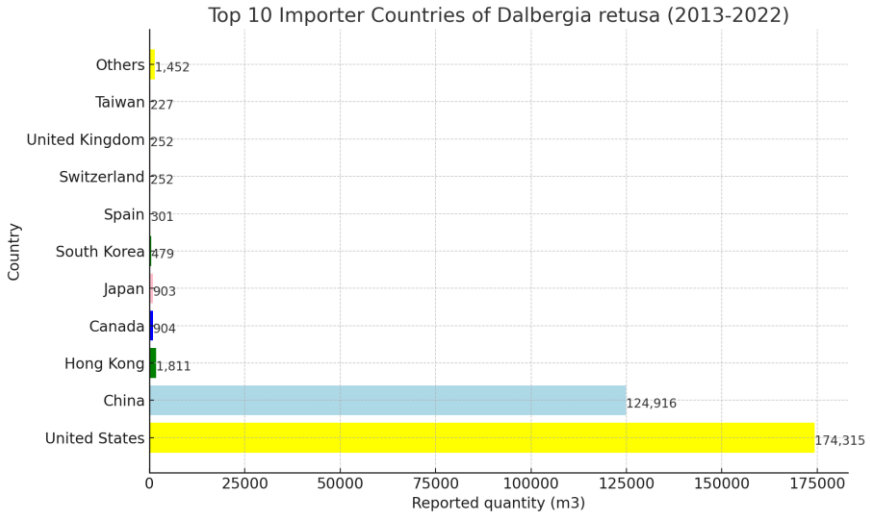


Chart 4.4.5. *Dalbergia retusa* - Top 10 importer countries by reported volume (m3) between 2013 and 2022



Dalbergia stevensonii

Chart 4.4.6. *Dalbergia stevensonii* Trade Evolution by Reported volume (m3) between 2013 and 2022. Red lines for 2017 and 2020 depict changes to annotation #15:

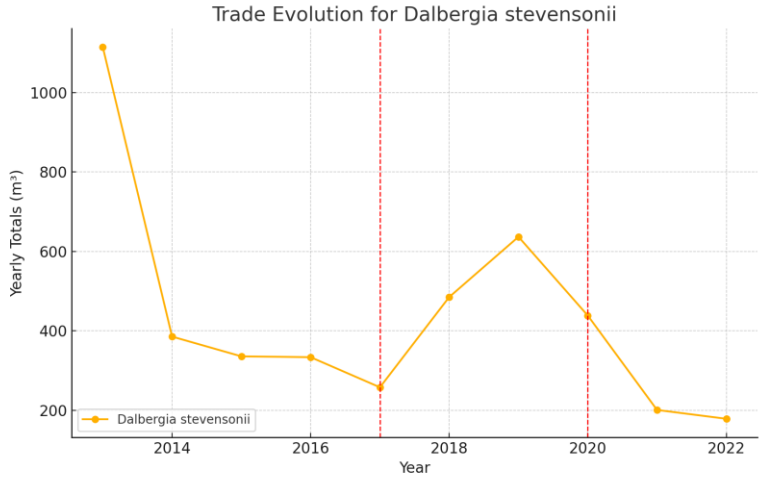


Chart 4.4.7. *Dalbergia stevensonii* - Top 5 exporter countries by reported volume (m3) and source distribution between 2013 and 2022

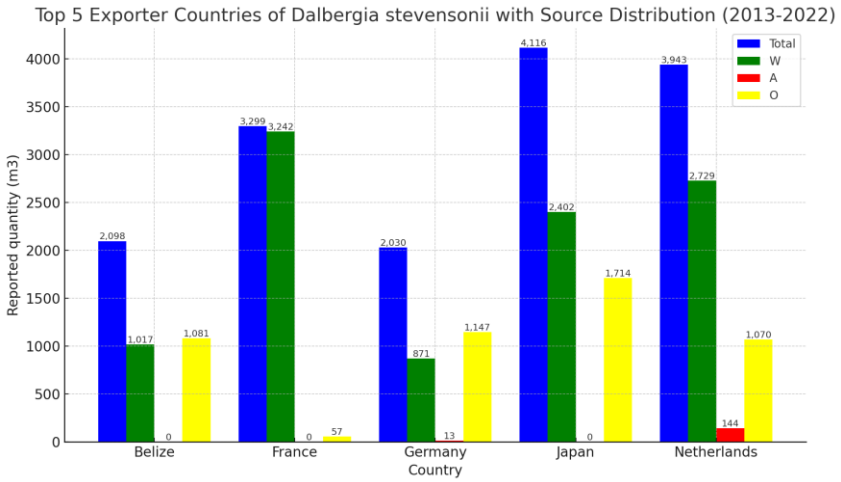


Chart 4.4.8. *Dalbergia stevensonii* - Top 5 origin countries by reported volume (m3) between 2013 and 2022

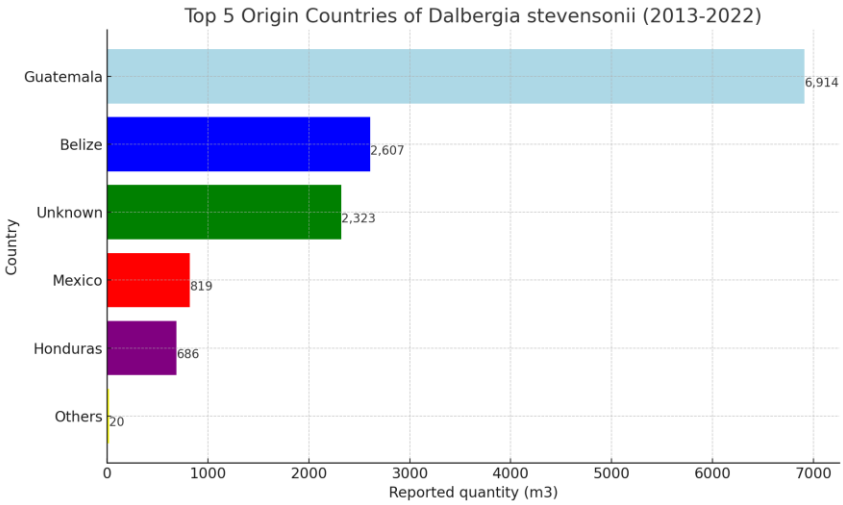


Chart 4.4.9. *Dalbergia stevensonii* - Top 10 exporter countries by reported volume (m3) between 2013 and 2022.

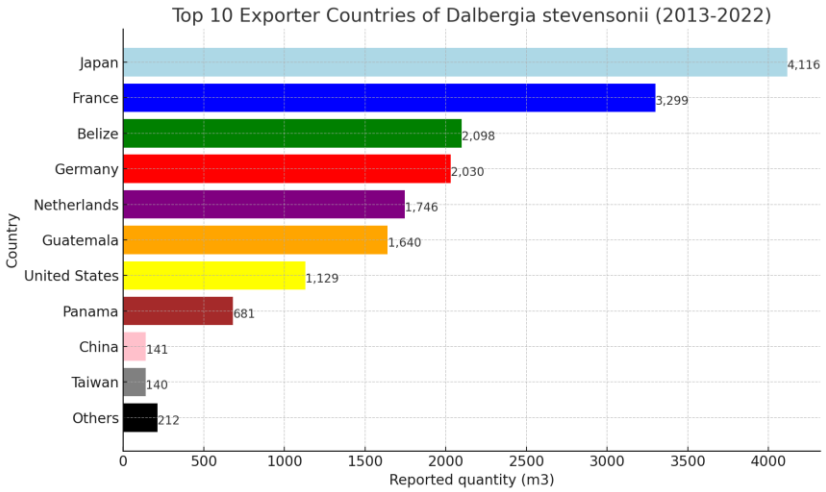
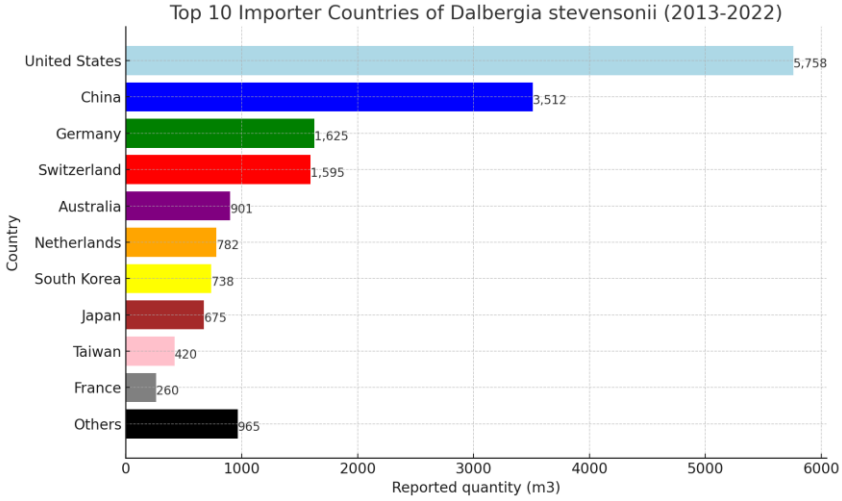


Chart 4.4.10. *Dalbergia stevensonii* - Top 10 importer countries by reported volume (m3) between 2013 and 2022



Dalbergia tucurensis

Chart 4.4.11. *Dalbergia tucurensis* - Trade evolution by reported volume (m3) between 2014 and 2022

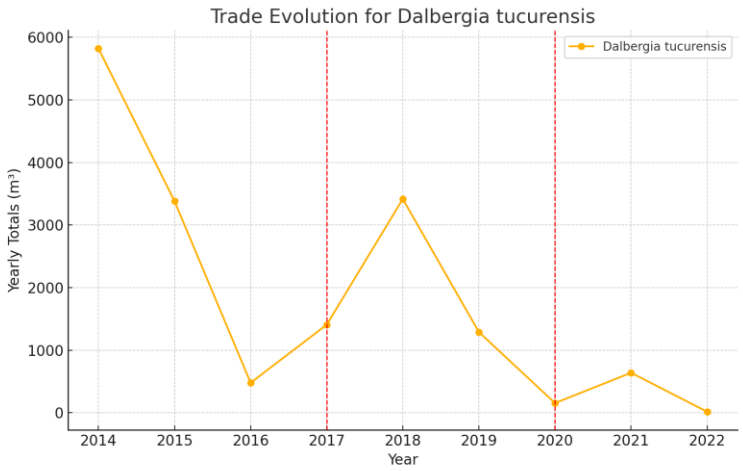


Chart 4.4.12. *Dalbergia tucurensis* - Top 5 exporter countries by reported volume (m3) and source distribution between 2014 and 2022

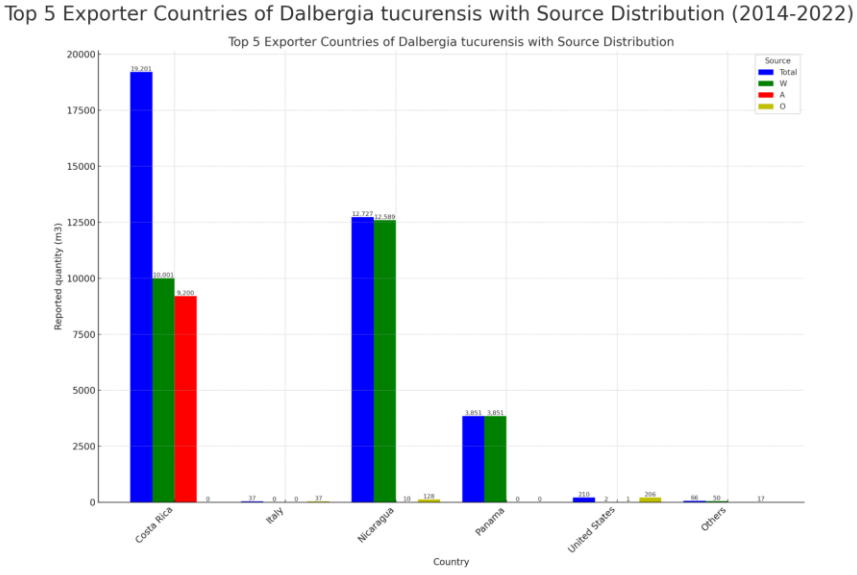


Chart 4.4.13. *Dalbergia tucurensis* - Top 5 origin countries by reported volume (m3) between 2014 and 2022. Red lines for 2017 and 2020 depict changes to annotation #15:

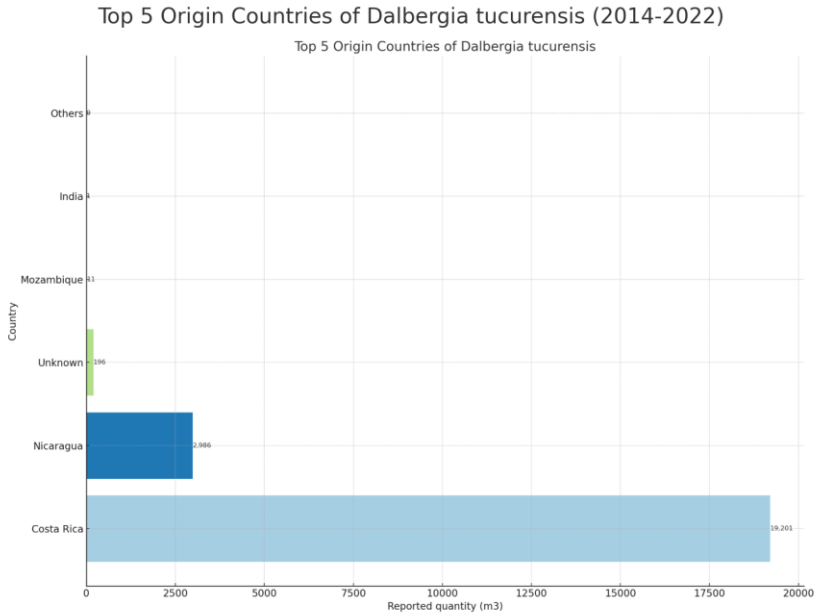


Chart 4.4.12. *Dalbergia tucurensis* - Top 10 exporter countries by reported volume (m3) and source distribution between 2014 and 2022

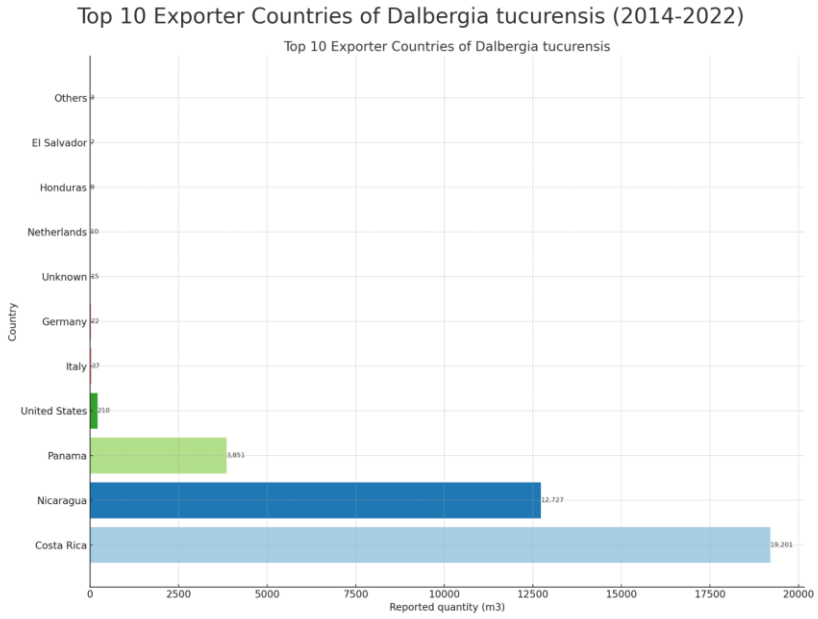
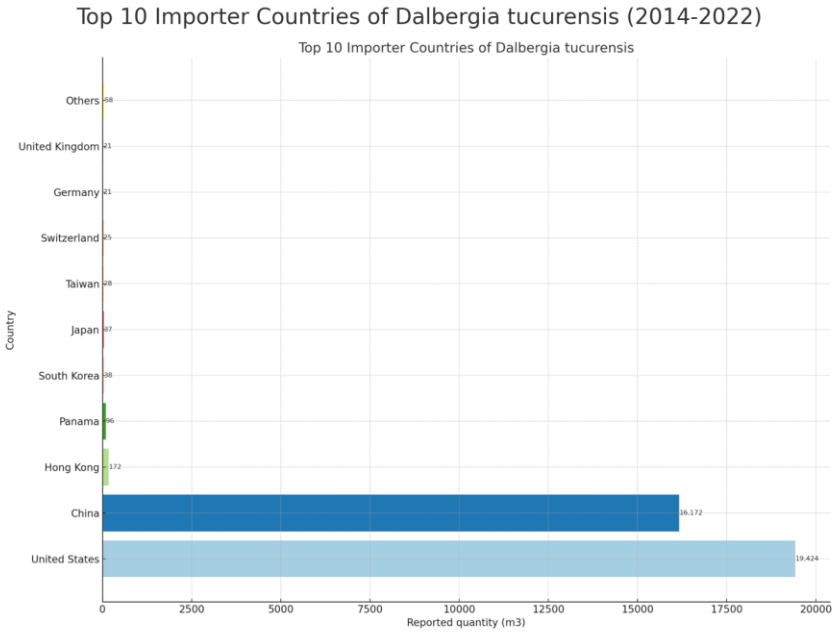


Chart 4.4.13. *Dalbergia tucurensis* - Top 10 importer countries by reported volume (m3) and source distribution between 2014 and 2022



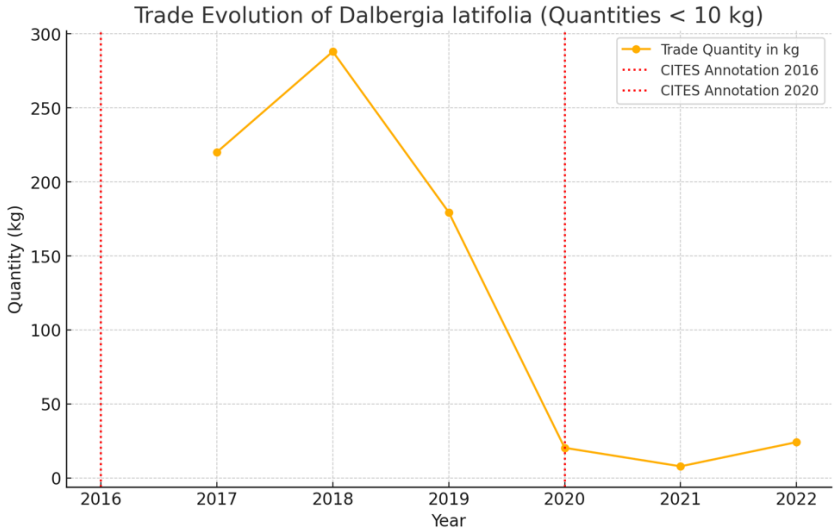
These three *Dalbergia* species will be discussed more in Output 2 of this report but trends show *D. retusa* as the primary volume of trade and this will also be shown in the case studies.

1.5. Trade Flows of Declared Data 2016 - 2022 for Annotation #15 paragaph b) CITES Trade Data Database Quantities 10kg or less.

The CITES Trade Database was used exclusively to analyze the trade trends of quantitates reported as 10kg or less over the two periods of regulation 2016 CoP 17 and 2019 CoP18 annotation #15. This analysis refers to paragraph b) *Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment.*

1.5.1. *Dalbergia latifolia*:

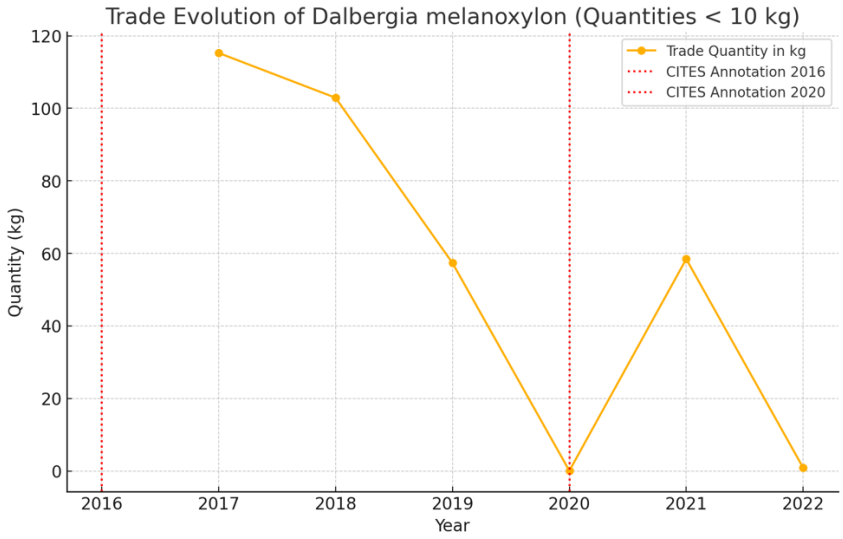
Chart. 5.1.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia latifolia* between 2017 and 2022.



- The trade volume for *Dalbergia latifolia* (quantities below 10 kg) shows limited activity before 2017, with a noticeable increase in reported trade starting in 2017. The quantities remain relatively low, but the increase after the CITES Annotation in 2016 may suggest enhanced regulatory measures led to increased reporting or trade compliance. However, there is no significant fluctuation after the 2020 annotation.

1.5.2. 5.2. *Dalbergia melanoxylon*:

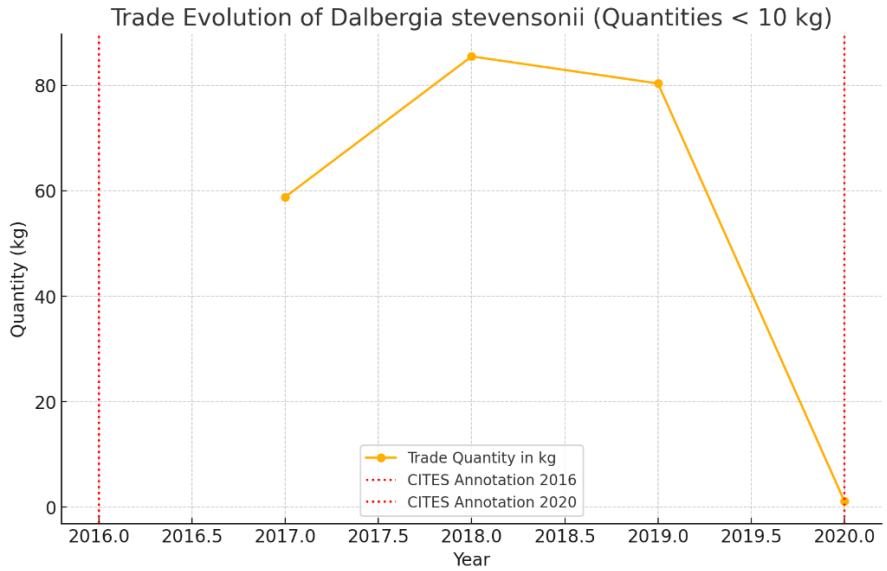
Chart. 5.2.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia melanoxylon* between 2017 and 2022.



- For *Dalbergia melanoxylon*, there is some recorded trade activity after 2017, with very low quantities reported. The trend is relatively flat with no major fluctuations, indicating a steady but low level of trade. This could be a result of consistent enforcement of CITES regulations or low market demand for small quantities.

1.5.3. 5.3. *Dalbergia stevensonii:*

Chart. 5.3.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia stevensonii* between 2017 and 2022.

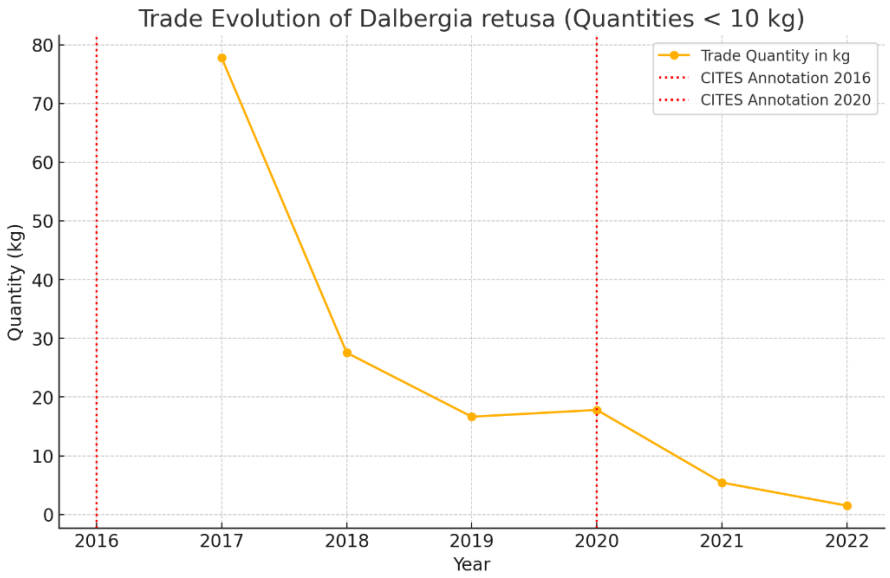


- *Dalbergia stevensonii* shows sporadic trade activity, with most of the recorded trade occurring post-2016. This species sees small but consistent quantities traded in 2017 and onward. The CITES

Annotation #15 in 2016 correlates with an uptick in activity, but there is no significant spike after the 2020 regulation. This suggests a steady but controlled level of trade.

1.5.4. *Dalbergia retusa*:

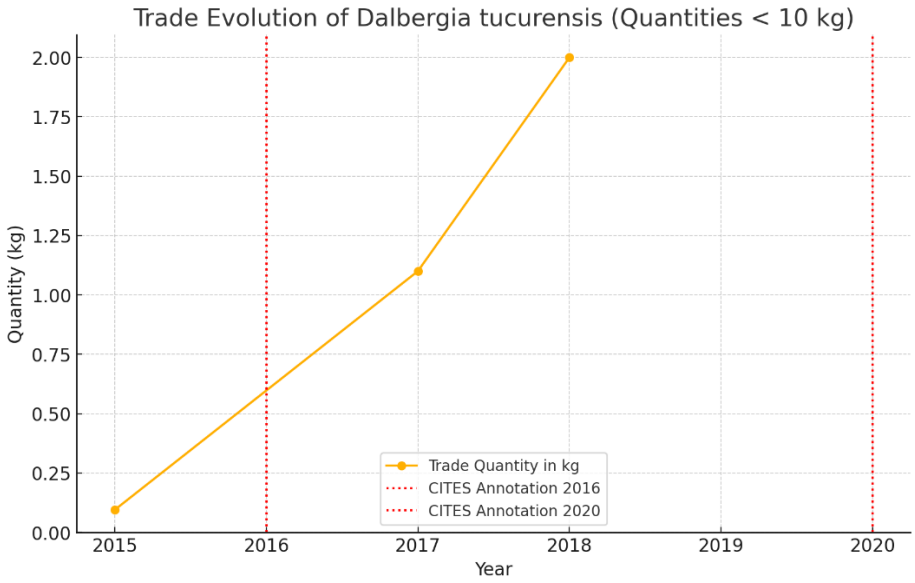
Chart. 5.4.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia retusa* between 2017 and 2022.



- Trade for *Dalbergia retusa* is concentrated primarily around 2017, with quantities remaining under 10 kg. There is a clear peak in 2017, likely influenced by the CITES listing in 2016. After this, trade appears to taper off, with little to no significant activity in the following years, suggesting tighter trade controls or reduced demand after the initial rush of compliance post-annotation.

1.5.5. *Dalbergia tucurensis*:

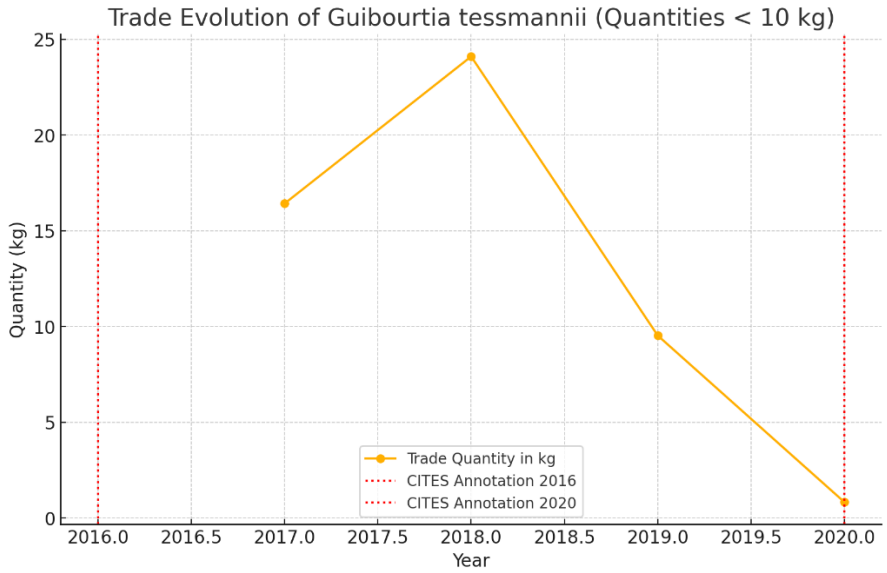
Chart. 5.5.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia tucurensis* between 2015 and 2018.



- *Dalbergia tucurensis* shows limited trade, with a few instances of small quantities being traded in 2015 and 2017. After 2017, there are no notable spikes or increased trade. This suggests that while there was some initial trade, the quantities remained minimal, possibly due to stricter regulations or low demand.

1.5.6. *Guibourtia tessmannii*:

Chart. 5.6.1. Trade evolution of reported weights of less than 10 kg for *Dalbergia latifolia* between 2017 and 2022.



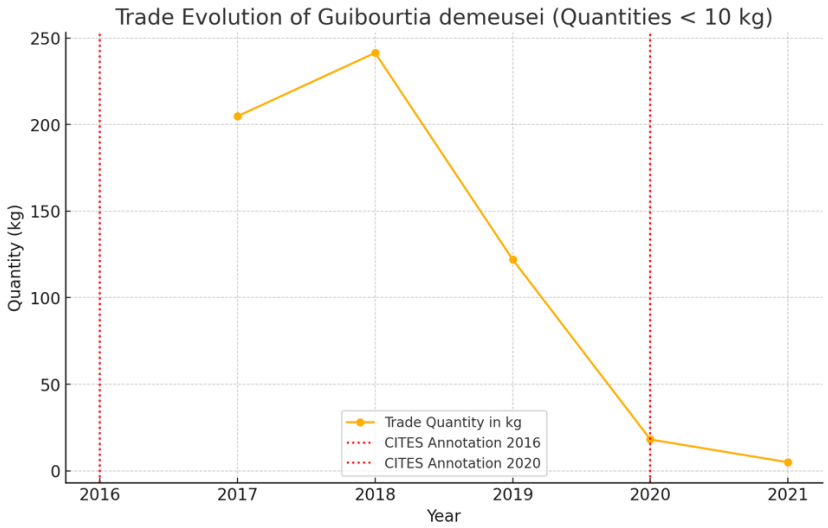
- Trade of *Guibourtia tessmanni*i shows activity starting in 2017, with a few small quantities being traded. There are no visible trends of increased or decreased trade, suggesting a steady but controlled level of trade since 2017. This may imply that the 2016 CITES annotation #15 helped to stabilize trade activity at low levels.

1.5.7. *Guibourtia pellegriniana*:

- No trade activity below 10 kg was recorded for *Guibourtia pellegriniana*, indicating that either the species is not frequently traded in small quantities or that most trade occurs in larger volumes, which are excluded from this analysis.

1.5.8. *Guibourtia demeusei*:

Chart. 5.8.1. Trade evolution of reported weights of less than 10 kg for *Guibourtia demeusei* between 2017 and 2021.



- *Guibourtia demeusei* has a few instances of trade, primarily concentrated in 2017, with small but consistent quantities. Similar to other species, this activity likely reflects compliance after the 2016 CITES Annotation. There is no substantial change post-2020, suggesting that trade has remained steady but low.

Overall, many of the species saw an uptick in trade after 2016, reflecting the impact of the CITES annotation #15, but most have low or steady levels of trade in quantities under 10 kg. The 2020 regulation did not appear to trigger any significant shifts in trade behavior for these species.

1.6. Target Commodities in Trade for annotation #15 Paragraph c) - Musical Instrument Analysis:

When discussing data analysis for species and trade it is critical to use the CITES standard nomenclature references [Resolution Conf. 12.11 (Rev. CoP19)]. It is very common to use terms such as “rosewood” to describe components of musical instruments as well as other commodities in trade, but this becomes very confusing especially when there are multiple regions, countries and species involved.

In this chapter of musical instrument analysis, we will demonstrate the trade flows of both the musical instrument as they relate to countries where the instrument, say a guitar, is manufactured and “finished” compared to where the species of *Dalbergia* and *Guibourtia* species originate. The goal as it relates to Decision 18.321 and the exemptions in annotation #15 paragraph c), is to analyze first commodities in trade

based on the prescription of (a-b) Conf. 11.21 (Rev. CoP18) - Use of annotations in Appendices I and II that was outlined above in the Executive Summary.

Key questions:

- Does regulating the first commodity in trade provide the needed protection for the CITES listed species?
- Is there any conservation benefit to permitting the raw material inputs of wood used to manufacture finished musical instruments as well as requiring permits for the finished product?
- Where are finished products of musical instruments produced compared to the management and origin of the species?

This chapter will focus on the trade flows based on the HS Code classifications for both the species / wood forms exported and imported as well as the HS Code classifications of the commodity produced – finished musical instruments.

The Harmonized System is an international classification system standardized between countries at a basic 6-digit level, with country-specific definitions for the 8- and 10-digit levels.

Finished musical instrument products are traded globally under Harmonized Tariff Code (HS) 92. Wood or timber products are traded under the classification HS 44.

Table 12. is an example of the regions, species origin / producer countries of *Dalbergia spp.* and the major uses of these species in finished musical instruments. The table also indicates the most common export form and HS Code of that relates to the export of that form for example 4407 – sawn wood. The key indicators are the species and the export form.

Table 12. - *Dalbergia spp*. - Regions, Producer Country, Species and Major Musical Instrument Uses

Region	Producer Countries	*Dalbergia* Species	Major Use	Common Export Form / HS Code
Africa	Madagascar	*Dalbergia baronii; Dalbergia greaveana; Dalbergia monticola*	Guitars	Zero Export Quota
Africa	Mozambique	*Dalbergia melanoxylon*	Woodwinds; Guitars	Sawn Wood 4407
Africa	Tanzania	*Dalbergia melanoxylon*	Woodwinds; Guitars	Sawn Wood 4407
Asia	India	*Dalbergia latifolia*	Guitars; String Instruments	Semi-Finished Veneer 4408; Music Parts 9209
Asia	Indonesia	*Dalbergia latifolia*	Guitars; String Instruments	Finished products; Semi-Finished Sawn Wood and Veneer 4407; 4408; 9202; 9207; 9209

Central and South America and the Caribbean	Belize	*Dalbergia stevensonii*	Guitars; marimbas	Sawn Wood 4407
Central and South America and the Caribbean	Brazil	*Dalbergia cearensis*	Guitars	Sawn Wood and Music Parts 4407, 9209
Central and South America and the Caribbean	Brazil	*Dalbergia nigra*[4]	Guitars	Mostly semi-finished back and side veneer - 4408
Central and South America and the Caribbean	Brazil	*Dalbergia spruceana*	Guitars	Sawn Wood and Music Parts 4407, 9209
Central and South America and the Caribbean	Guatemala	*Dalbergia retusa* *Dalbergia tucurensis*	Guitars	Sawn Wood 4407
Central and South America and the Caribbean	Honduras	*Dalbergia stevensonii*	Guitars; Marimbas	Sawn Wood 4407
Central and South America and the Caribbean	Nicaragua	*Dalbergia retusa* *Dalbergia tucurensis*	Guitars	Sawn Wood 4407
North America	Mexico	*Dalbergia spp.*	Guitars	Sawn Wood 4407

1.6.1. HS Code Designations for Finished Musical Instruments:

The target commodities exempted in Annotation #15 paragraph c) are Finished Musical Instruments; Finished Musical Instrument Parts; and Finished Musical Instrument Accessories.

The 92 HS codes are divided into groups based on the following.

Table 13. - HS Code Classification for Musical Instruments, Parts and Accessories

HS Code 92	Subdivision
9201 pianos, harpsichords and other keyboard string instruments	920110 Upright pianos 920120 Grand pianos 920190 Harpsichords and Other Keyboard Stringed Instruments
9202 string musical instruments nesoi (violins etc.)	920210 String Musical Instruments, Played with a bow 920290 Other String Musical Instruments

[4] *Dalbergia nigra* is listed as CITES Appendix I and is not regulated under annotation #15. The species has been a traditional wood used in guitars for over 100 years.

9203 keyboard, pipe organs, etc., with free metal reeds	920300 Keyboard pipe organs; harmoniums and similar keyboard instruments with free metal reeds
9204 accordions and similar instruments, mouth organs, nesoi	920410 Accordions and similar instruments 920420 Mouth Organs
9205 wind musical instruments	920510 Brass-wind instruments 920590 Other wind musical instruments
9206 percussion musical instruments, drums etc.	920600 Percussion musical instruments (for example, drums, xylophones, cymbals, castanets, maracas)
9207 musical instruments with sound electric prod etc.	920710 Keyboard instruments, other than accordions: 920790 Other Musical Instruments, Electrically
9208 musical boxes, fairground organs etc., whistles etc.	920810 music boxes 920890 Other (Fairground Organs, Mechanical Street Organs, Mechanical singing Birds)
9209 parts etc. of musical instruments, metronomes, pitchfork etc.	920910 Metronomes, tuning forks and pitch pipes 920920 Mechanisms for music boxes 920930 Musical instrument strings 920991 Parts and accessories for pianos 920992 Parts and accessories for String Musical instruments (Guitars, Violins) 920993 Parts and accessories for Keyboard Pipe Organs; Harmoniums, Reed Organs 920994 Parts and accessories for Electric Musical Instruments 920999 Other Parts and Accessories of Musical Instruments
Antique Musical Instruments	97.05 and 97.06 old musical instruments (included in collector's items and antiques)

1.6.2. Trade Flows of Musical Instruments by HS Code Declarations

The following data is presented to demonstrate the major supply chains of musical instruments and the top countries of import and export. In conjunction, the goal is to present data on volumes of *Dalbergia* and *Guibourtia* species that would be inputs in a series of examples for musical instruments based on unfinished parts to finished musical instruments.

The data was derived from the World Bank WITS database using declared values and quantities based on HS Codes 92 for musical instruments as well as direct interviews and research on types of musical instruments, parts and accessories that potentially could have *Dalbergia* or *Guibourtia spp*., as components.

The WITS data does not provide any insights into the input of raw materials, such as *Dalbergia spp*., but it is the basis for determining a baseline for volumes of finished musical instruments, finished musical instrument parts and finished musical instrument accessories that could have at least one component of *Dalbergia* or *Guibourtia spp.*

The WITS database is one of the few sources of data related to international trade, reported by product categories represented by HS codes. Given that Output 1 of the study aims to measure the impact that the musical instrument manufacturing industry – HS codes 92 – can have on the species of *Dalbergia* and *Guibourtia* as outlined in the context of the exemptions specified in annotation #15 paragraph c), the WITS database has allowed us to gain an overview of the quantities (number of products) traded from the musical instruments category, reported at the level of importing or exporting countries, during the same period as the quantities reported for species within the CITES database.

In completing the data reviews, there were apparent gaps in reporting for quantities of specific items of interest. An example that will be highlighted is the fact that Indonesia did not report export quantities of HS Code 920290 which is the classification for guitars. Indonesia is in fact a major producer of electric guitars and other instruments that have (Sonokelling) *Dalbergia latifolia*, that is Artificially Propagated – Source Code (A), as an input.

To address data gaps, the research incorporated methodologies for calculating the potential number, for example “electric guitars,” that could have a fingerboard, or other components made from *Dalbergia spp*. in the finished product.

The goal was to highlight the supply chains of country of origin and harvest of *Dalbergia* and *Guibourtia* species and compare this to country of manufacture of the finished musical instruments, finished parts and finished accessories. The value for the study is to demonstrate the commodities permitted and regulated by CITES annotation #15 versus the finished commodities that are exempted under annotation #15.

Chart 6.2.1. Top 20 countries of export of guitars - HS Code 920290 - by quantity (2013-2023)

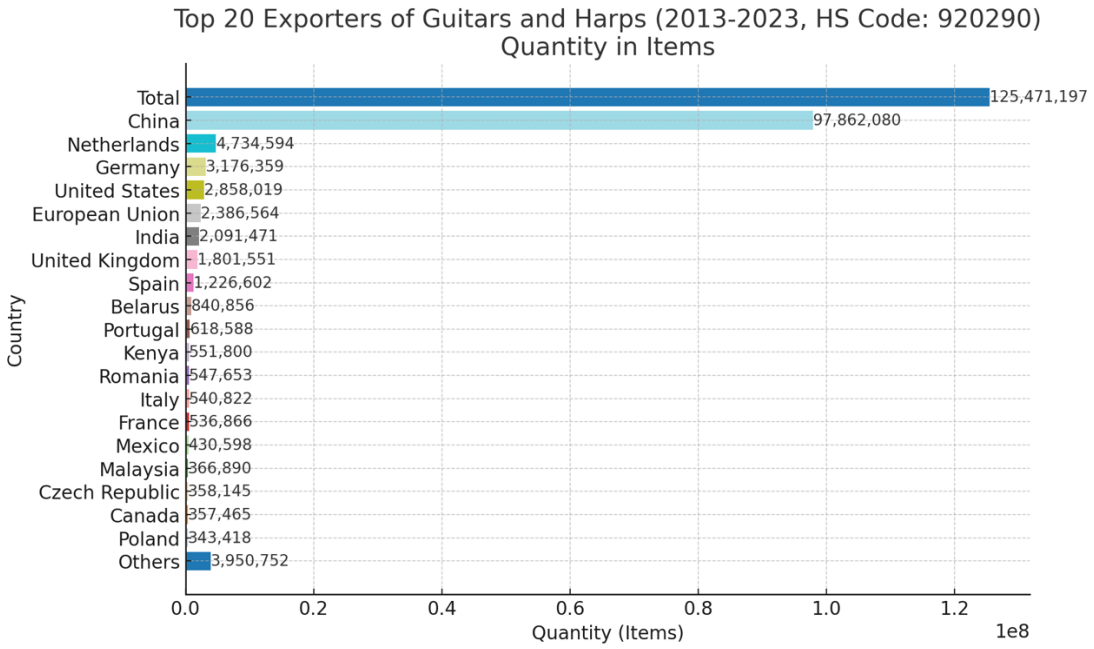


Chart 6.2.2. Trade quantity trend for guitars - HS Code 920290 (2013-2023)

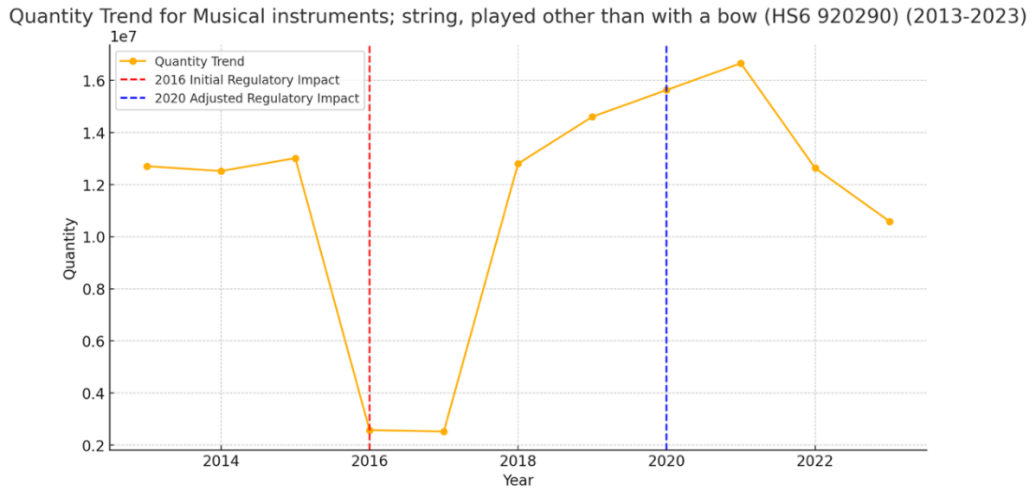


Chart 6.2.3. Top 20 countries of export of electric guitars - HS Code 920790 by quantity (2013-2023)

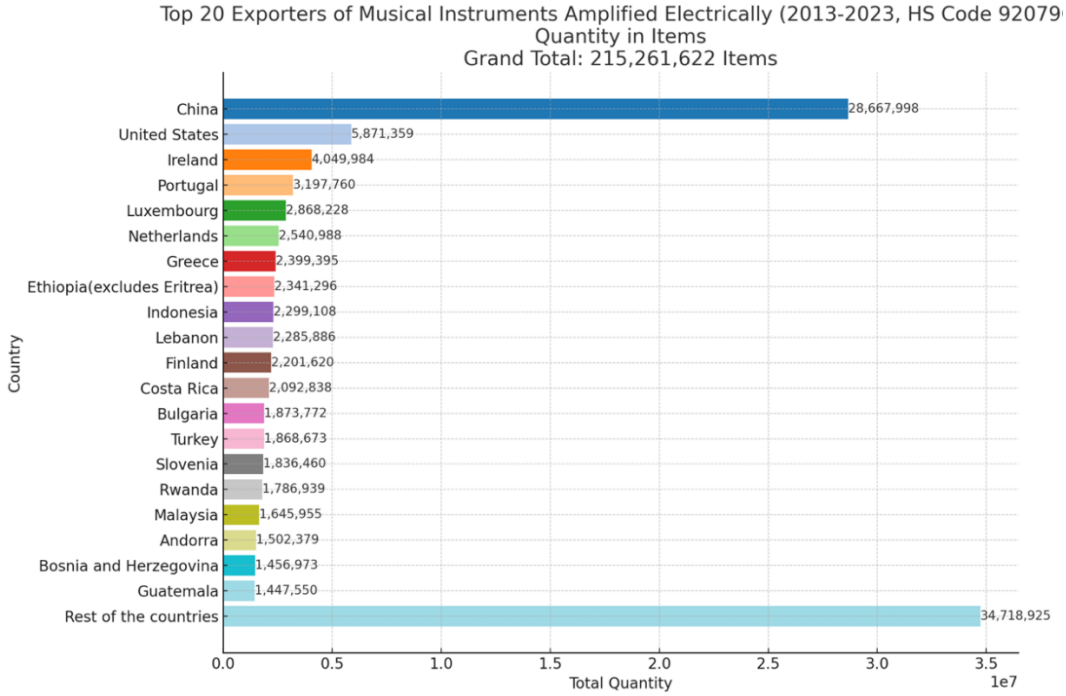
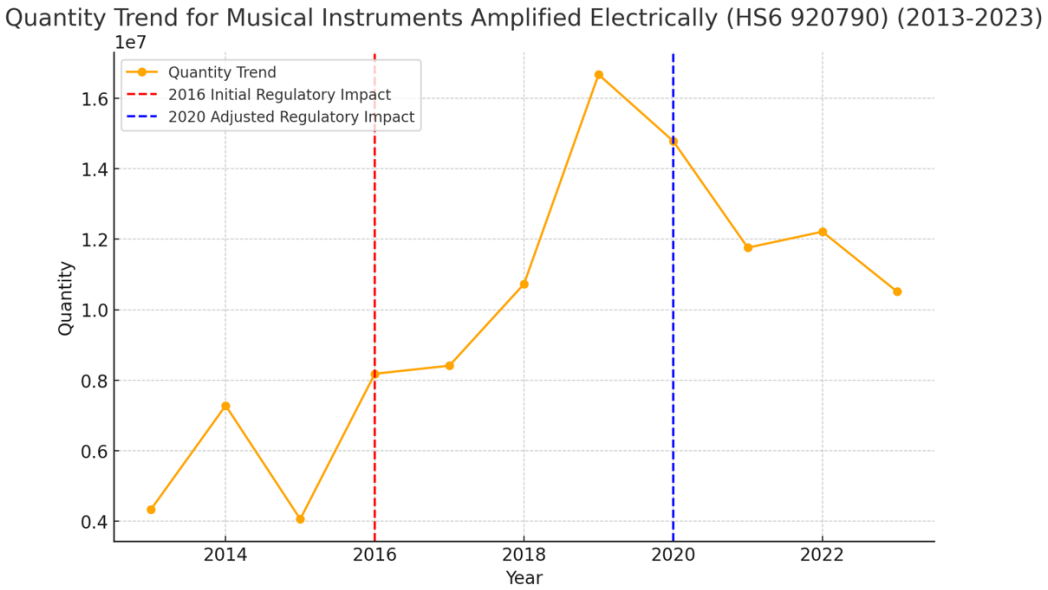
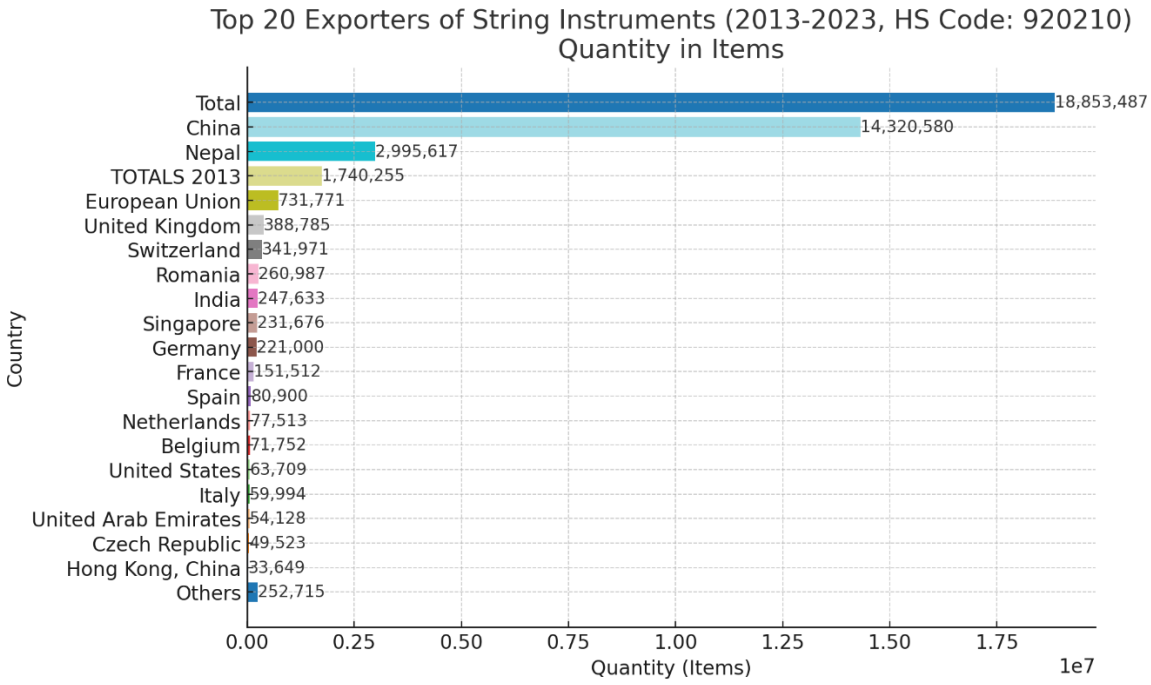


Chart 6.2.4. Trade quantity trend for electric guitars - HS Code 920790 (2013-2023)



For the purposes of the study, this grouping would provide data capture for instruments such as violins, cellos, double bass and higher end instruments that could possibly have *Dalbergia or Guibourtia* species. The trends provide indicators of the issues that are relevant to countries of manufacture versus the country of species origin. There are clear indicators by comparative analysis that the countries of export of finished musical instruments captured under HS Code 920210 are not the countries of export of the target species.

Chart 6.2.5. Top 20 countries of export of string instruments played with a bow - HS Code 920210 (2013-2023)



It is important to provide the data on the quantities of exports of finished musical instruments under the designated HS Code to look at comparative analysis of the potential quantity of inputs of target species of *Dalbergia* and *Guibourtia*. This will be demonstrated by example in following parts of section 6.

Chart 6.2.6. - Trade quantity trend for string musical instruments played with a bow - HS Code 920210 (2013-2023)

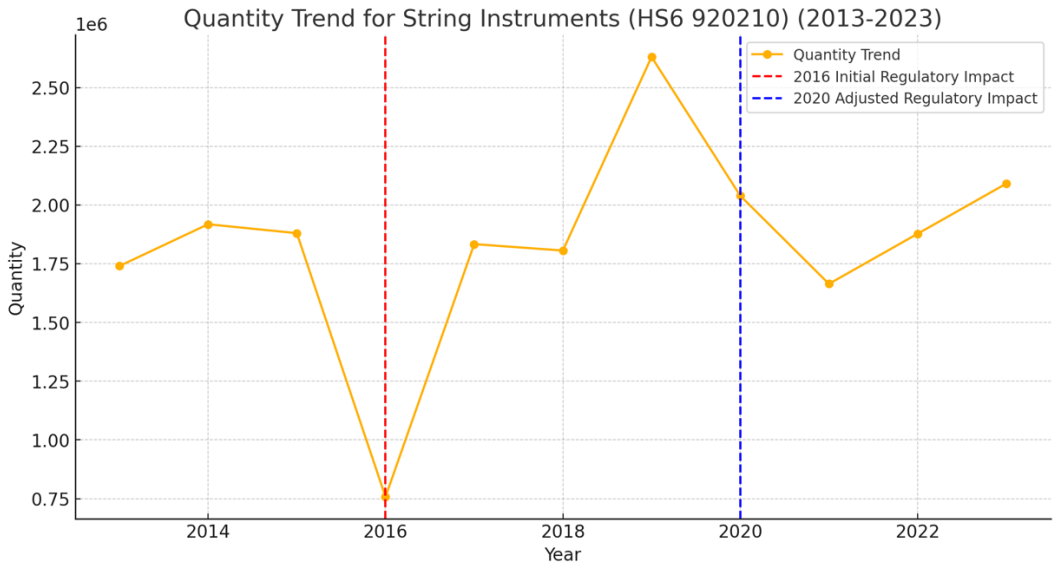


Chart 6.2.7. - Top 20 countries of export of wind instruments - HS Code 920590 by quantity (2013-2023)

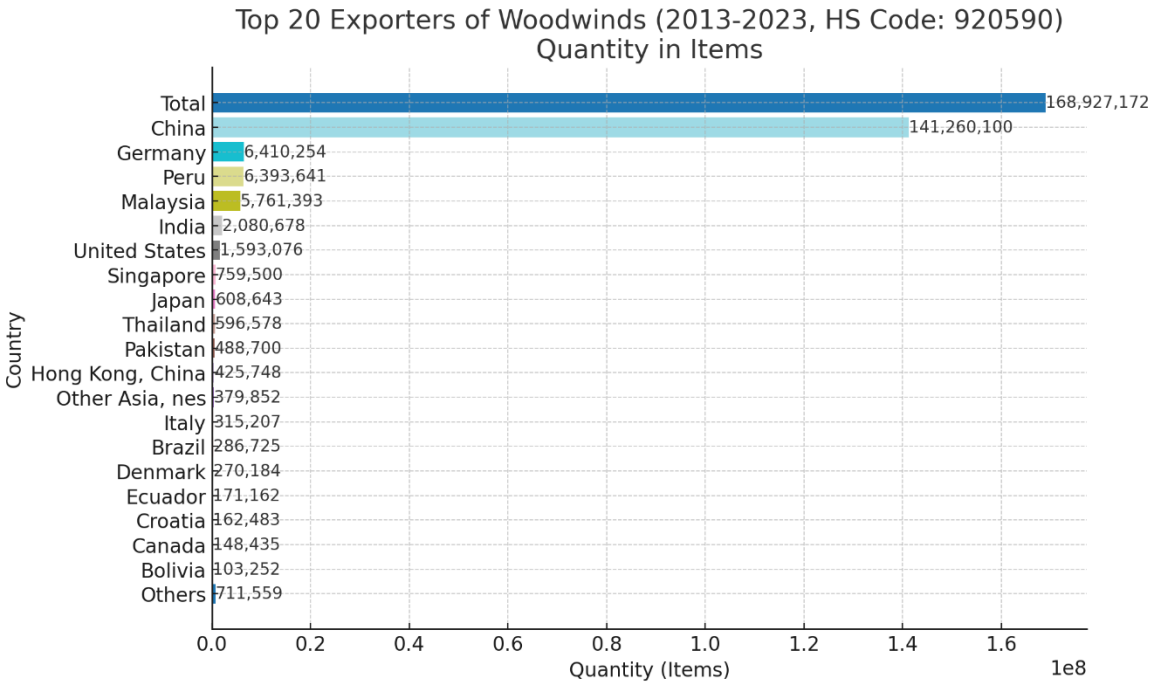
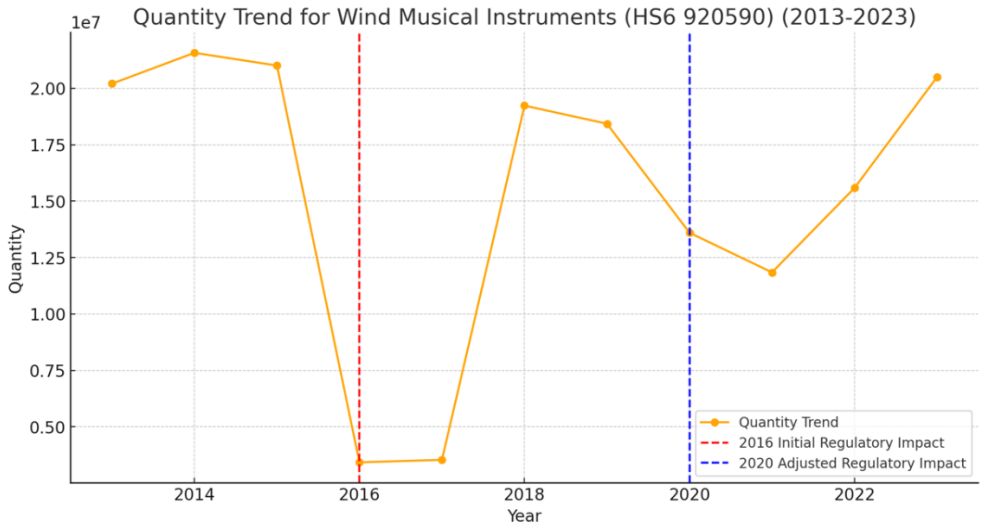


Chart 6.2.8. -Trade quantity trend for wind instruments - HS Code 920590 (2013-2023)



The trends in woodwind exports indicate that the finished products are not manufactured in the countries where *Dalbergia* and *Guibourtia* originate. This is especially apparent for *Dalbergia melanoxylon*, which is the primary species used to produce high end woodwinds such as clarinets and oboes.

The trends also indicate clear changes in trade base on the initial regulatory impacts of 2016 with no exemption and again in 2020 when COVID becomes a factor.

Chart 6.2.9. -Top 20 exporting countries for parts and accessories for string musical instruments (guitars, violins) - HS Code 920992 by quantity (kg) (2013-2023). This data does not include information on Taxa or genus of species. Data reporting to capture CITES species level information for HS Code and products is one of the recommendations that will put forward from this analysis.

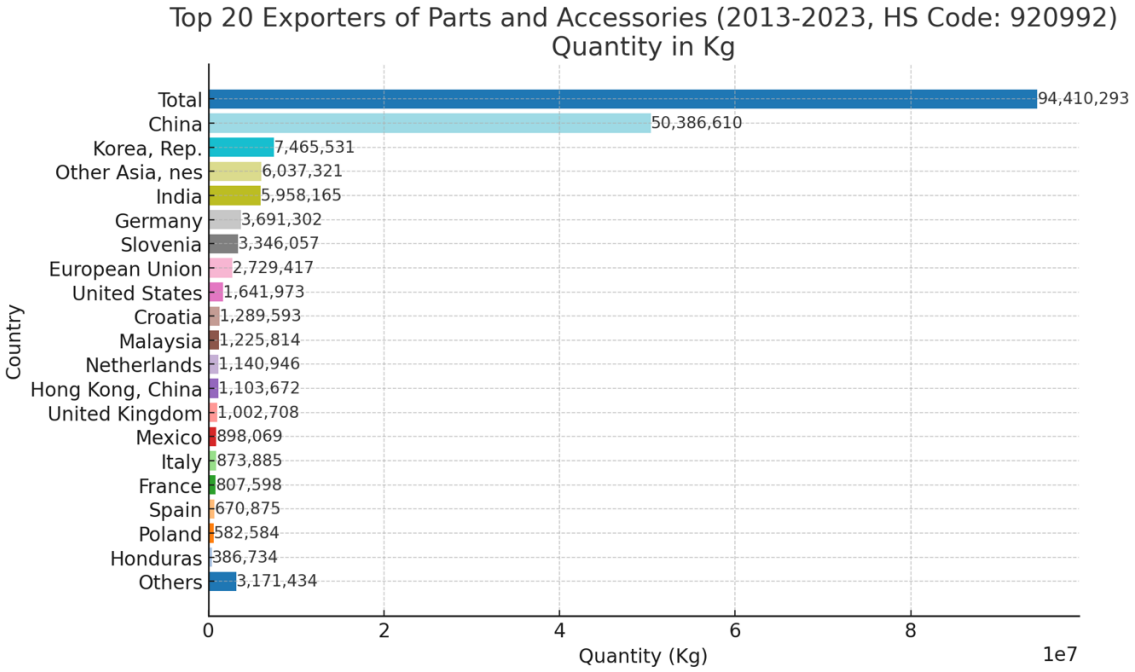
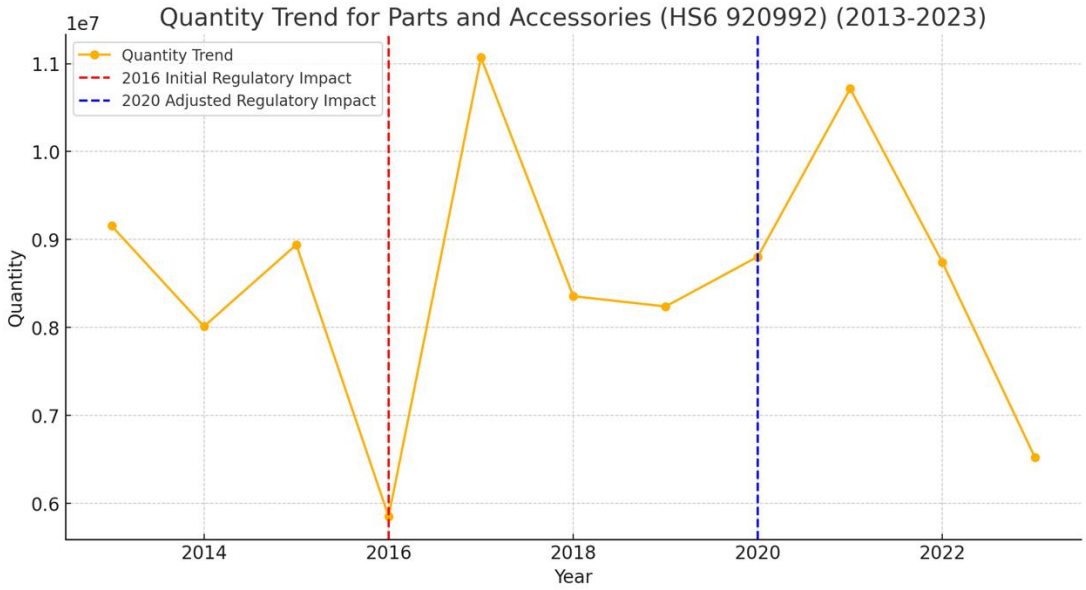


Chart 6.2.10. - Trade quantity (kg) trend for parts and accessories - HS Code 920992 (2013-2023)



The data trends indicate that the finished musical instrument parts and finished musical instrument accessories are not produced in the countries of origin of *Dalbergia* and *Guibourtia*.

India is an outlier in this scenario as there are parts for violins and small bridge pin (craft level) production for acoustic guitars produced in the range state from *Dalbergia latifolia*. Additionally, there are some semi-finished parts, such as fingerboards for violins and guitars, produced in India and exported based on Indian law for specifications for exporting *D. latifolia* under semi-finished parts for musical instruments HS Code 920992.

These cases of exporting semi-finished musical instruments parts under HS Code 920992 require a CITES export permit. This would be the requirement in any country that is exporting or re-exporting unfinished parts and accessories of musical instruments regardless of if it is the range state or not.

1.6.3. Top 20 Countries Exporting Musical Guitars by Quantity and Value

The charts below were presented to show that the export trends from the top countries exporting guitars needs show the quantities as well as the values of exports. These charts provide the indicators for the analysis of where guitars are manufactured compared to where the wood inputs of *Dalbergia* or *Guibourtia* species originate.

The charts and trends throughout the finished musical instrument presentation indicate that finished musical instruments are not manufactured at the species range state level. There are several direct reasons for this.

- Musical instrument companies that use species such as *Dalbergia* or *Guibourtia* consider these species “high-end” and “high value” woods where the value of the instrument reaches a threshold price point.

- Musical instrument companies have many specifications for crafting or finishing the parts to their models and this requires manufacturing the finished product in their specific factories or workshops.

As discussed before, Indonesia is an outlier in this scenario as it is both a producer country of *Dalbergia latifolia* as well as a key OEM manufacturing center for many international musical instrument companies – especially for electric guitars.

Indonesia did not report quantities of exports based on HS Code research in the WITS database, but they did report exports based on value which provides the basis for their position in the market. As indicated in the species level exports, Indonesia accounts for the most volume exported of *Dalbergia* latifolia and *Dalbergia spp*. globally. The species is considered Artificially propagated under source code (A) and this will be discussed further in the conservation implications for exemptions in annotation #15.

Chart 6.3.1. - Top 20 exporter countries by quantities and trade value for guitars and harps (2013-2023). Again, data on species is not captured in this data point.

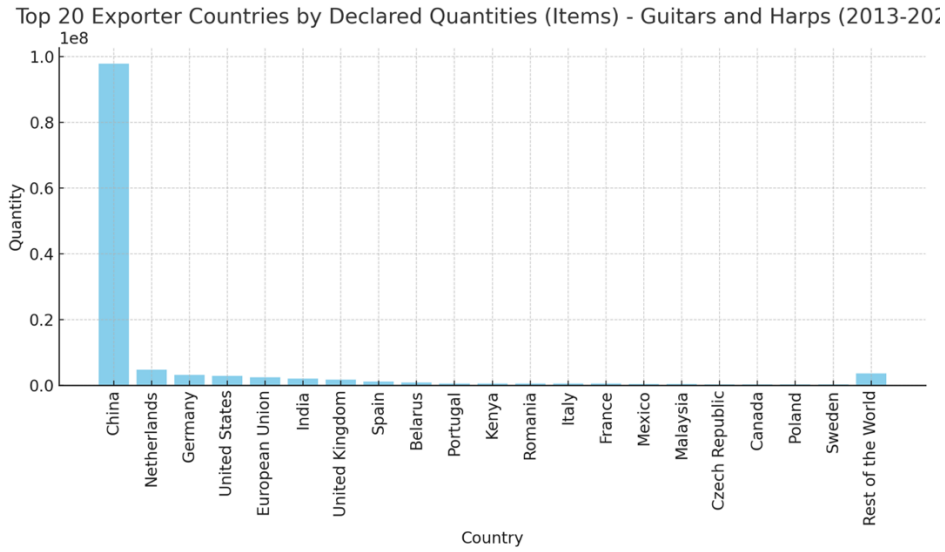


Chart 6.3.2. - Top 20 exporter countries by trade value for guitars and harps (2013-2023)

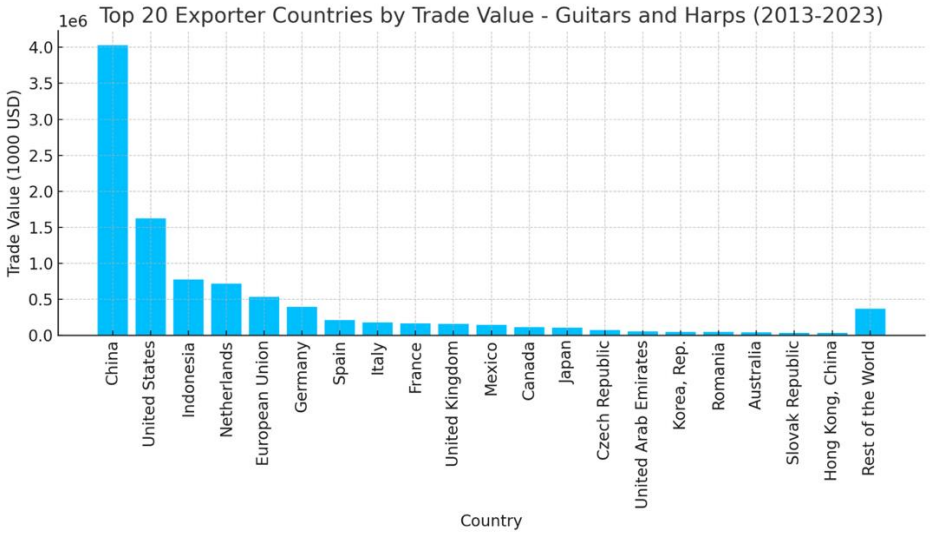


Chart 6.3.3. - Top 20 exporter countries by quantities and trade value for musical instruments amplified electrically (2013-2023)

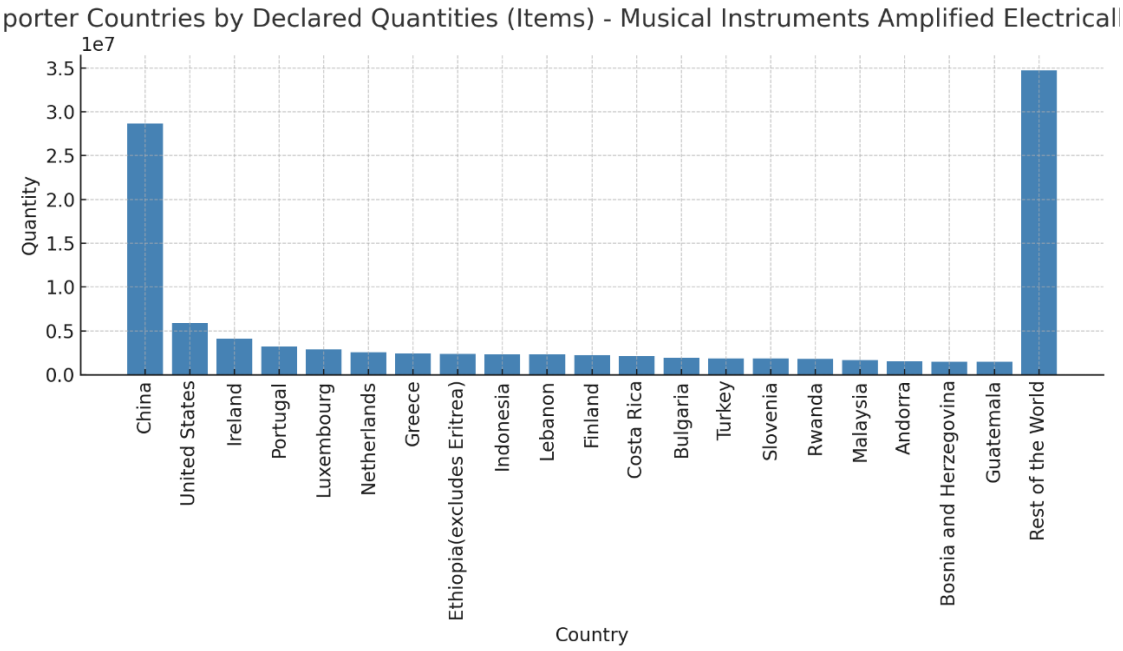


Chart 6.3.4. - Top 20 exporter countries by trade value for musical instruments amplified electrically (2013-2023)

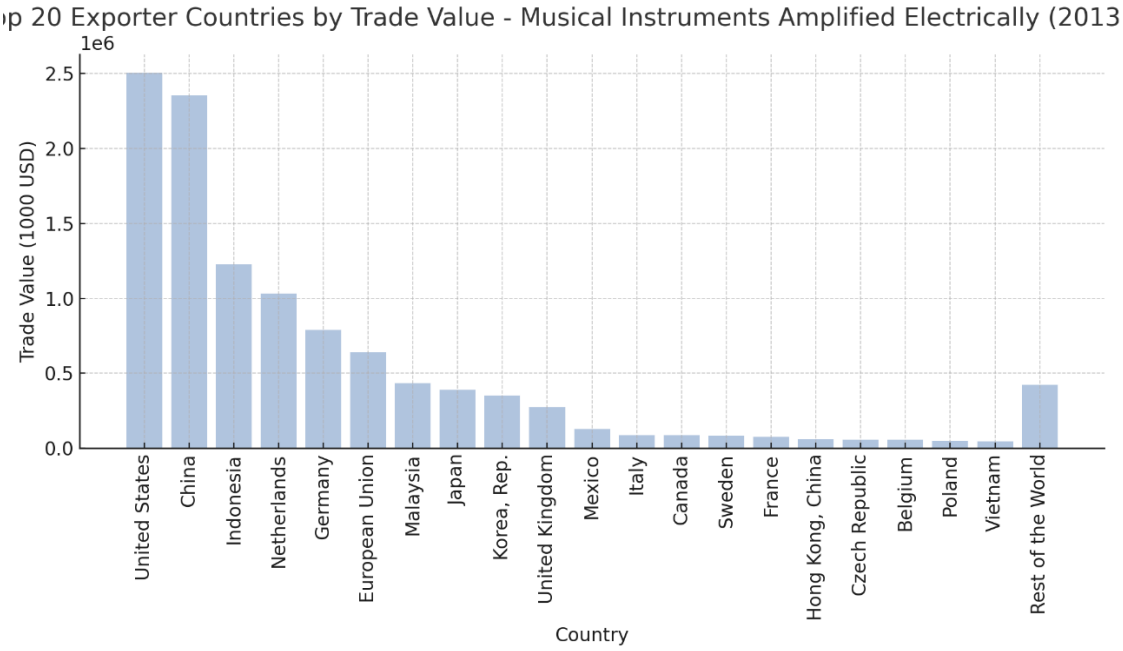


Chart 6.3.5. - Top 20 exporter countries by quantities and trade value for string instruments (2013-2023)

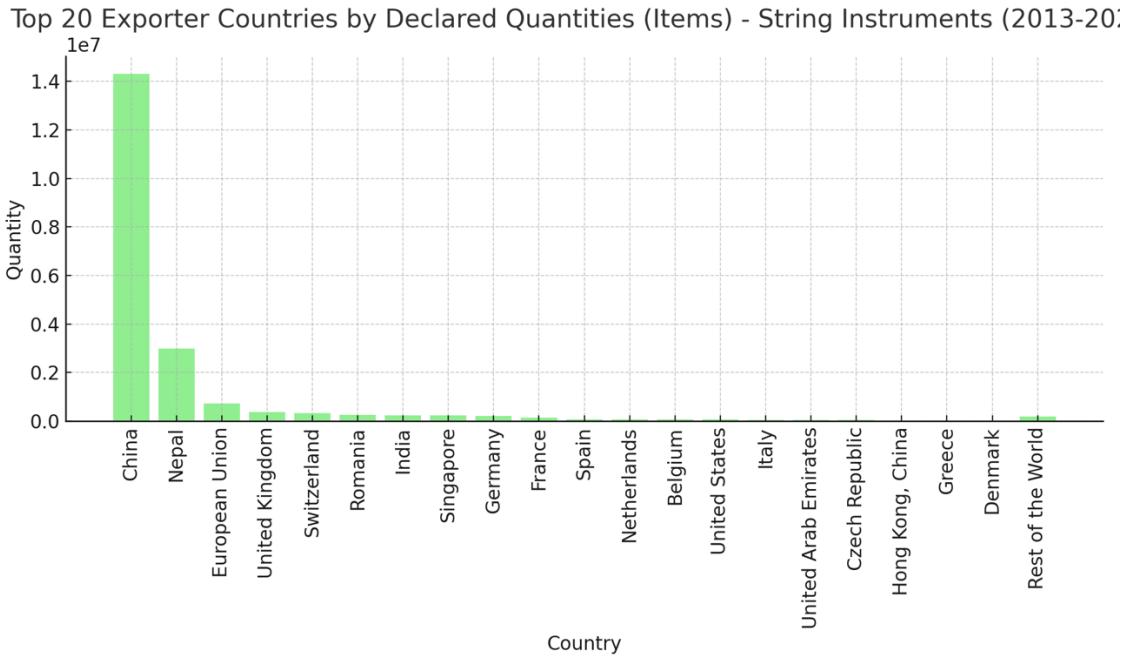


Chart 6.3.6. - Top 20 exporter countries by trade value for string instruments (2013-2023)

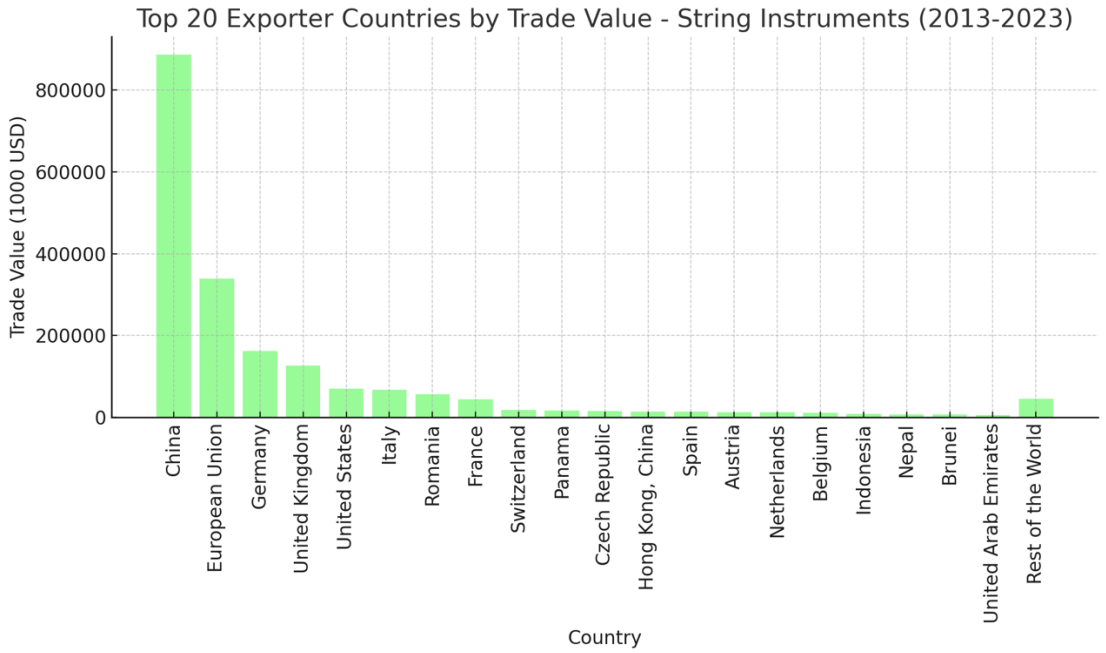


Chart 6.3.7. Top 20 exporter countries by quantities for wind instruments (2013-2023)

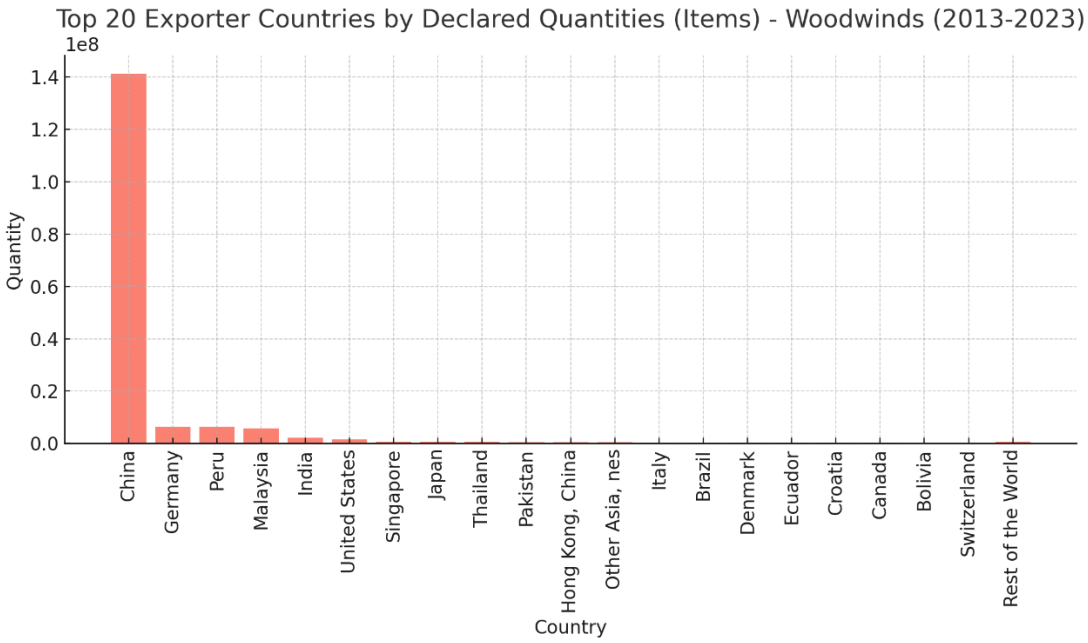


Chart 6.3.8. Top 20 exporter countries by trade value for wind instruments (2013-2023)

Chart 6.3.9. Top 20 exporter countries by quantities for parts and accessories (2013-2023)

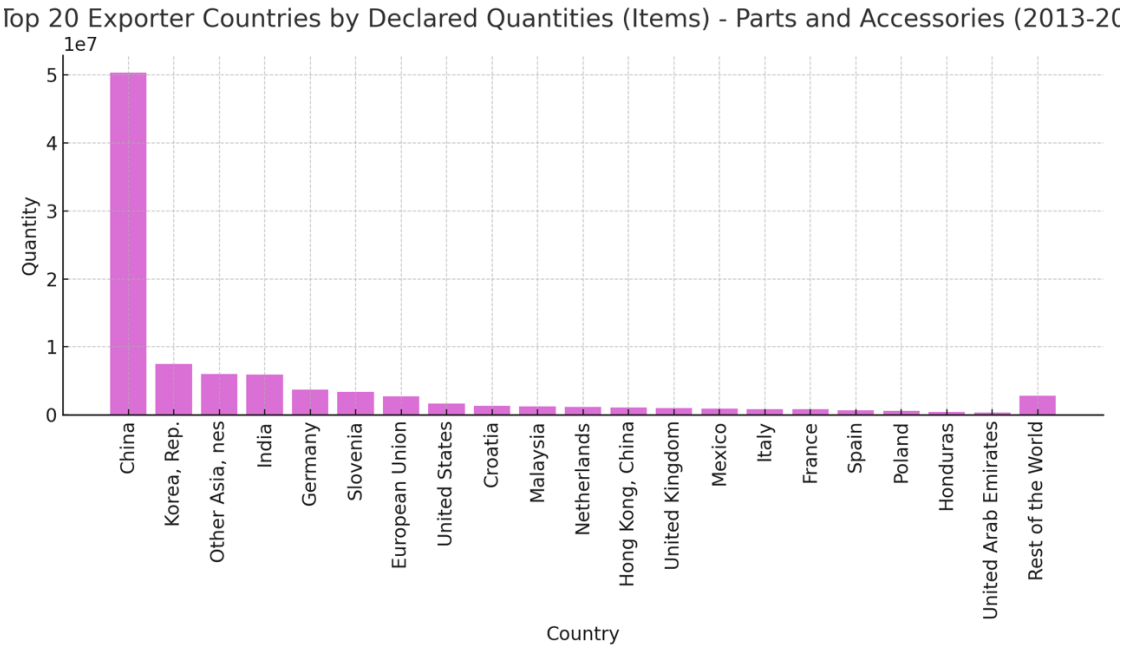
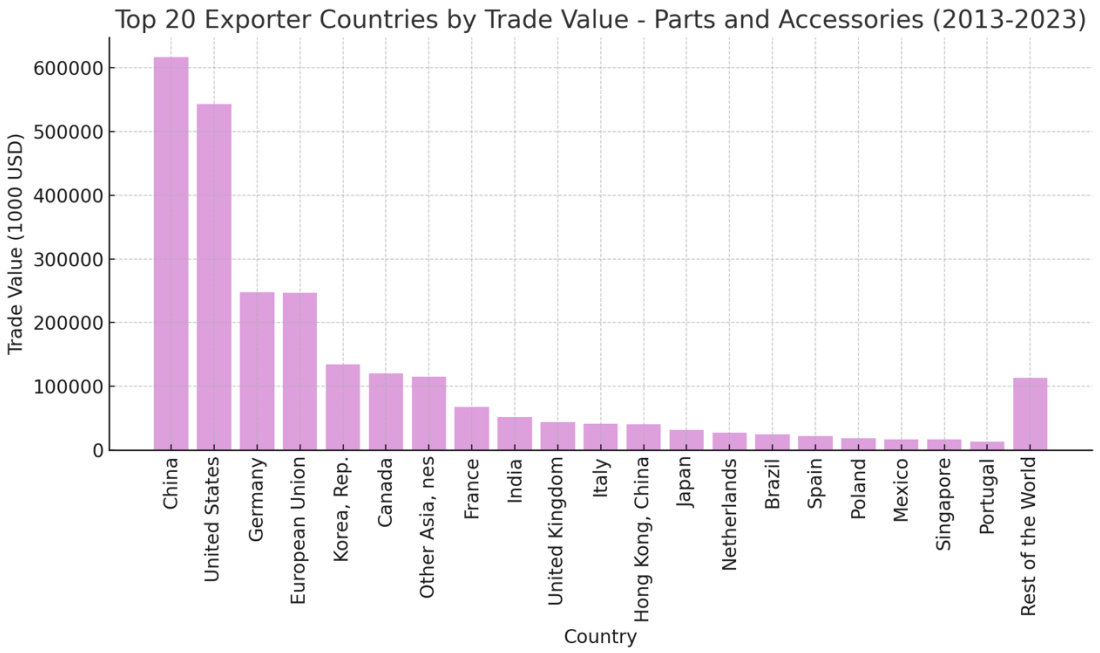


Chart 6.3.10. Top 20 exporter countries by trade value for parts and accessories (2013-2023



1.7. Sample Calculations of Target Species and Target Musical Instruments

1.7.1. Sample Calculation of Unfinished and Finished Volume of *Dalbergia latifolia* in an Acoustic Guitar

In this example, we are presenting a very common process of supply chain dynamics for sourcing Indian rosewood (*Dalbergia latifolia*) musical instrument parts.

Below are the typical dimensions of semi-finished un-sanded and sanded parts made from Indian rosewood (*Dalbergia latifolia*) of a Dreadnaught (D) size acoustic guitar for both volume and weight.

As it is not legal to export sawn wood products of *Dalbergia* from India, the parts are exported from India under the following:

- Back and side materials and headplates (6mm <) = HS code 4408 veneer, and
- Fingerboard blanks (9mm <) and bridge blanks as semi-finished musical instrument parts = HS code 9209.
- All exports of raw materials or semi-finished parts of D. latifolia or any CITES Appendix II listed species requires a CITES Export permit from India.

The parts described would be for one guitar. The parts are processed from logs into the un-sanded semi-finished parts in India. From log to un-sanded part or blank there is a 30% yield which is a 70% loss. From un-sanded to fully sanded and trimmed part ready for a finished instrument is a loss of 50% of the blank material.[5]

The un-sanded semi-finished parts are produced in India and would be bundled and shipped to a designated manufacturer in the United States or could be Europe, Japan, China or Korea – where the majority of musical instruments are manufactured.

Table 14. - Guitar Parts Dimensions

Part[6]	Dimensions un-sanded (mm)	Volume (m3) un-sanded	Weight un-sanded (kg)[7]	Thickness sanded ready for production (mm)[8]	Percent trimmed from sanded part to produce instrument[9]
Backs (pair)	5 x 215 x 560 (x2)	0.001204	1.0234	3	50
Sides (pair)	4 x 140 x 820 (x2)	0.0009184	0.7806	2.5	50
Fingerboard Blank	9 x 70 x 500	0.0003339	0.2838	4.75	50
Bridge Blank	12 x 50 x 356	0.0001068	0.0907	3	50
Head Plate	4 x 100 x 800	0.00032	0.2720	2	50

[5] Interview with Overseas Traders June 19, 2024 – Rosewood Yield

[6] The dimensions are per piece and per pair as noted.

[7] To obtain weight in kg for a rosewood blank – multiply cbm by 0.85.

[8] Sanded thickness is almost half of un-sanded thickness of parts.

[9] Percent trimmed refers to process of cutting the parts to shape and specifications for applying the part in the manufacturing process.

Total		**0.0028831**	**2.4505**		**Total for finished instrument = 0.00144155 m3**

D. latifolia back and sides unfinished

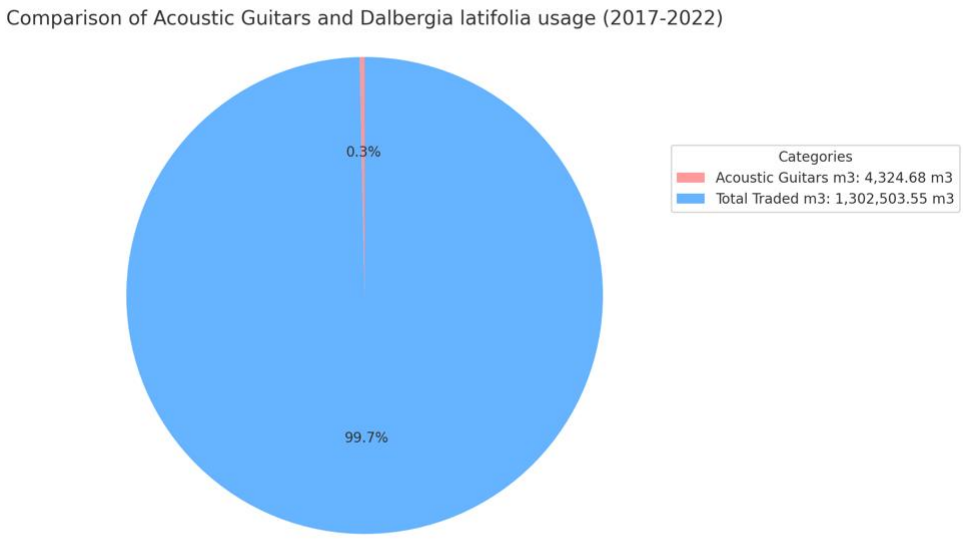
D. latifolia Fingerboard unfinished[10]

Based on the per instrument total volume of *D. latifolia*, the following calculation is presented:

- The estimate of annual global volume of rosewood to make 500,000 acoustic guitars with all the components listed above would equal 720.78m3 of *Dalbergia* species. There will be a very tiny percent of change based on very small inputs of *D. retusa, D. stevensonii*, and *D. tucurensis*.
- This calculation is based on interviews with major acoustic guitar manufacturing companies as well as the data presented from the WITS database using HS Codes for the reported quantities and values of that would include acoustic guitars or stringed instruments played without a bow.

[10] Photos from Stew Mac website https://www.stewmac.com

Chart 7.1.1.– Percentage of use of *Dalbergia latifolia* in manufacturing acoustic guitars versus the grand totals of species trade (2017-2022)



1.7.2. Sample Calculation of Un-Finished and Finished Volume of Dalbergia latifolia in an electric guitar

Below are the typical dimensions of semi-finished un-sanded and sanded parts made from Indian rosewood (*Dalbergia latifolia*) of a fingerboard for and electric guitar for both volume and weight.

Fingerboards and necks for electric guitars range from solid maple *Acer spp.* to a range of species for application as a fingerboard to the neck. The most common "rosewood" fingerboards are made from *Dalbergia latifolia* from both India and Indonesia.

D. latifolia Fingerboard finished.

Acer spp. Neck finished[11]

[11] Photos from Stew Mac website https://www.stewmac.com

The fingerboard for electric guitars is the most common component that would use a rosewood input. The following calculations of volume are based on single component on the instrument.

Below is the dimension of the common fingerboard part un-finished as a blank and finished and ready for application to the finished guitar.

Table 15. – Electric Guitar Fingerboard Dimensions

Part	Dimensions un-sanded (mm)	Volume (m3) un-sanded	Weight un-sanded (kg)	Thickness sanded ready for production (mm)	Percent trimmed from sanded part to produce instrument
Fingerboard Blank	9 x 70 x 500	0.0003339	0.2838	4.75	50
Total		**0.0003339**	**0.2838**		**Total for finished instrument = 0.00016695 m3**

If the *D. latifolia* fingerboard blank is produced in India, the same rules and yield outcomes are relevant to the fingerboard export and import. A CITES permit would be required to export the semi-finished fingerboard blank. The export from India would be classified under HS Code 920990 as part of a musical instrument but not a finished part.

If the *D. latifolia* fingerboard blank was produced in Indonesia, the same processing and yield outcomes are relevant to the fingerboard as the same from India. A CITES permit would be required to export the semi-finished fingerboard blank. The export from Indonesia would be classified under HS Code 4407 for sawnwood.

Based on the per instrument total volume of *D. latifolia*, the following calculation is presented:

Table 16. - Annual Global Guitar Production - Finished Electric and Acoustic with a Rosewood Fretboard

Country	**Number per year**	**Volume m3**	**Metric Tons**	**Kg**
China	2,000,000	333	283	283,000
Indonesia	1,125,000	187.3	159.2	159,200
USA and Mexico	500,000	41.7	35.5	35,500
Japan	100,000	16.65	14.15	14,150
Korea	100,000	16.62	14.15	14,150
EU and UK	30,000	9.99	4.995	4,995
Rest of World	500,000	83.475	79.953	79,953

Total	4,355,000	688.735	590.948	590,948

1) One fretboard of a CITES listed-rosewood (*Dalbergia spp*.) semi-finished blank equals 0.0003339 m3

2) The cubic meter volume of one fretboard of rosewood dry should be multiplied by 0.85

to obtain the weight in kg.

3) One fretboard of rosewood, ready for use on a finished guitar, will be sanded which will

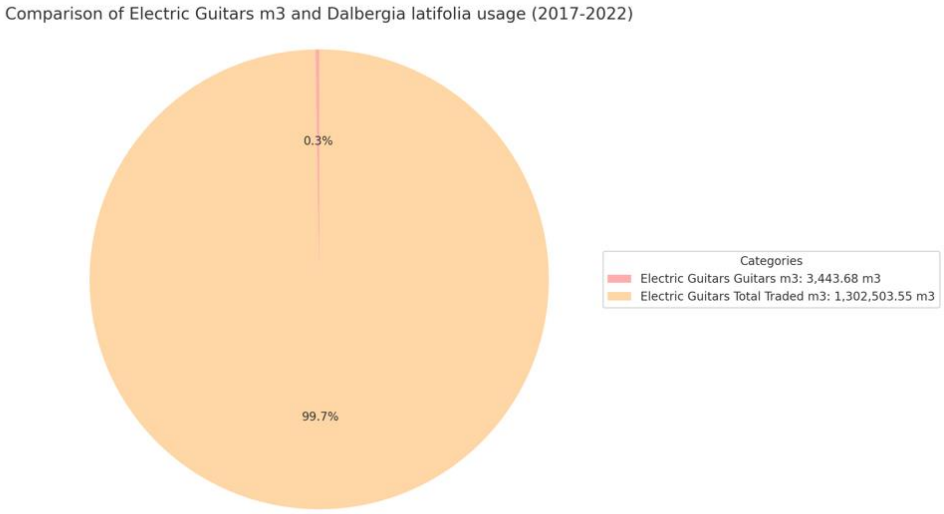
reduce the volume by 50% from its semi-finished blank form.

4) The Volumes in the table reflect dried and sanded units of fretboards on a finished guitar.

5) The number of guitars for the US and Mexico were combined as three US guitar companies produce approximately 90% of the guitars made in Mexico. All three have factories in Mexico.

6) The volumes of EU and UK were combined only to aggregate potential numbers of guitars as a key region of production.

Chart 7.2.1. – Percentage of use of *Dalbergia latifolia* in manufacturing electric guitars versus the grand totals of species trade (2017-2022)



1.7.3. Sample Calculation of un-finished and finished Volume of Dalbergia melanoxylon in Clarinets – as a representative of the woodwind family of instruments

This example will outline the key components of raw materials and the resulting production yields for producing a finished clarinet. High-end woodwinds such as clarinets, oboes, bagpipes etc.… are almost exclusively a single species instrument. African blackwood (*Dalbergia melanoxylon*) is almost exclusively used to produce the parts for this group of instruments.

There are some alternatives being tested but the woodwind industry is reliant on D. melanoxylon for its durability, aesthetics and tradition.

D. melanoxylon is a very dense wood with a ratio of Kg to cubic meters is on average 1200.

The primary processing of the wood billets for woodwinds is commonly completed at the range state level of Tanzania, for example. Processing D. melanoxylon has a lot of waste and very low yield. Manufacturing clarinets requires wood without any defects or imperfections.

Each clarinet requires billets with a combined total of 0.0015 or 0.0018 m3 of wood to make the instrument. There is potentially a 75% loss rate when crafting from billet to finished parts.

There are estimates of exports for making clarinets and oboes, from Tanzania of 120 m3 to 190 m3 a year. This would produce about 150,000 instruments a year for all major manufacturers (Jenkins *et al.* 2002).

D. melanoxylon clarinet bell unfinished (https://reverb.com)

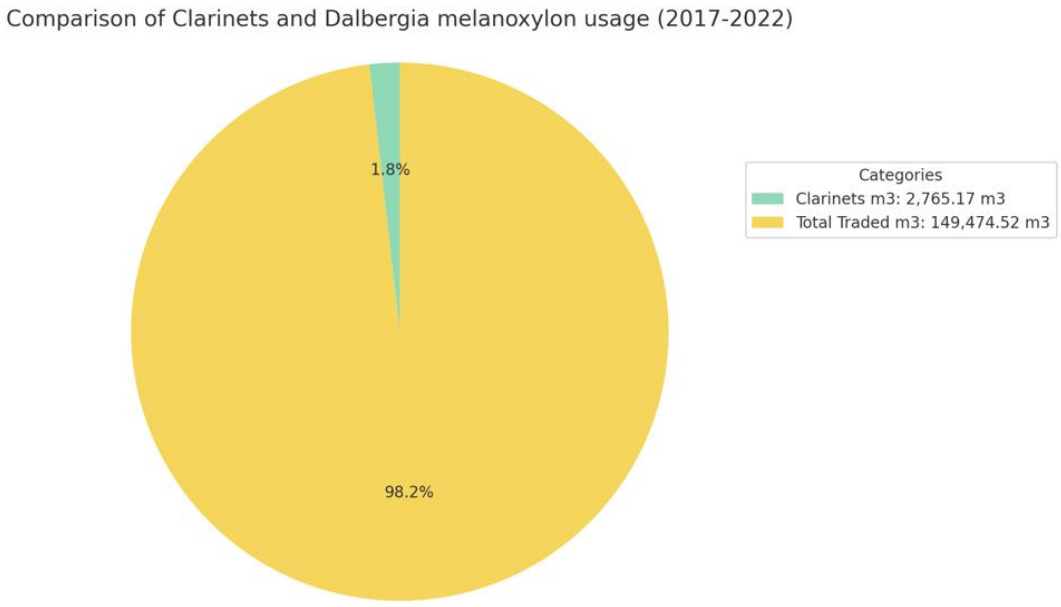
D. melanoxylon clarinet billet unfinished

Table 17. Clarinette Parts Dimensions

Woodwinds (HS6 920590) - Clarinet and variations					
Part [1]	Dimensions in billet form (mm)	Volume (m3) billet form	Weight billet form (kg)	Size finished (mm)	Percent of loss to produce instrument
Barrel	51 x 51 x 80	0.00020808	0.249696		75
Upper Joint	36 x 36 x 245	0.00031752	0.381024		75
Lower Joint	36 x 36 x 320	0.00041472	0.497664		75
Bell	85 x 85 x 125	0.000903125	1.083744		75
Total		0.001843445	**2.212128**		Total finished instrument = 0.00138258 m3

Based on the per instrument total volume of *D. melanoxylon*, the following calculation is presented.

Chart 7.3.1. – Percentage of use of *Dalbergia melanoxylon* in manufacturing clarinets versus the grand totals of species trade (2017-2022)



1.8. Preliminary stakeholder consultations

Initial stakeholder consultation actions were very useful for developing a basic overview of the perception of annotation #15 and Decision 18.321 objectives. The process will be ongoing especially with Parties and NGOs with Output 2 for the case studies and Output 3 regarding draft recommendations and inputs for analysis.

The key goal of the initial consultations was to obtain information on trade for developing the methodology for comparative analysis between species specific trade data and trade data on finished musical instruments, finished musical instrument parts and finished musical instrument accessories.

As mentioned in the trade flows process, the references were the CITES Trade Database and the World Integrated Trade Solution (WITS) database of the World Bank for HS code product declarations.

Consultations	Action	Response	Basic Analysis
Management Authorities and Scientific Authorities	• Sent survey to 15 management teams. • Will send updated version after Plants Committee for further response and notification.	• Received 5 responses. UK, USA, Costa Rica, Mexico and Indonesia	Annotation #15 without exemptions for paragraph (c) increased permit burden. Annotation #15 is complicated but with exemptions is working.
Music Industry	• Direct interviews on #15 and Study. • Requested sourcing and volumes of target species.	• Annotation is working. • Received data on key species purchased and usage.	Annotation #15 is working and the industry does not want to have the case opened at a COP.

Consultations	Action	Response	Basic Analysis
	• Requested data on investments for conservation of target species.	• Received information on dimensions and volumes of parts for a range of finished musical instruments • Received information on several projects and regions including TZ, India and Nicaragua.	Trade in traditional species of critical importance to producing high-end musical instruments. There are cultural and economic benefits for the trade. Woodwind industry is having a difficult time with EU import permits as all *D. melanoxylon* imports into the EU must be reviewed by a scientific review panel, which is adding cost and delays to shipments.
Timber Industry	• Direct interviews on methods of sourcing and volumes. • Requested sourcing and volumes of target species. • Direct interviews of the effects of COVID on supply chains.	• Received data on log purchase volumes at range state level. • Data on yields from log to primary processed products. • Data on types of HS codes used for export and import of materials.	For primary processing companies, annotation #15 is working as they need to apply for CITES export permits for HS codes of any non-finished products such as lumber, semi-processed musical instrument parts and veneer. It is not a heavy burden to apply for CITES export permits, in most cases. COVID had direct effect on trade through shipping disruptions, availability of raw materials and access to obtain permits from Management Authorities. Trade in traditional species of rosewood (*Dalbergia* species is critical to small family businesses that only supply the musical instrument industry. These are multi-generational companies. Species surveys on distribution and conservation have taken

Consultations	Action	Response	Basic Analysis
			place in India for D. latifolia.
Non-Government Organizations	• Requested information on conservation actions.	• Received responses for case the studies on *D. melanoxylon, D. latifolia* and *D. retusa, D. tucurensis*	Responses were used to gauge conservation concerns of targeted species. Responses were used to understand NGO investment in conservation programs at the range state level. There are several initiatives underway for D. latifolia and D. melanoxylon through the investment in species studies and joint investment by private sector in India and Tanzania. There are several joint investments in Nicaragua. Costa Rica and Guatemala for *Dalbergia* species. There were not records from interviews for conservation programs concerning *Guibourtia* species.

1.9. Preliminary conclusions of Chapter 1

The goal of Output 1 of the study was to provide a comprehensive analysis of the trade flows of target species and target commodity groupings that are exempted under #15 paragraph c) Finished Musical Instrument, Finished Musical Instrument Parts, and Finished Musical Instrument Accessories. There was also an analysis of trade trends of target species with 10kg or less under the annotation #15 paragraph b). This was added to increase analysis of exemptions found in annotation #15, although Decision 18.321 did not indicate this as part of the mandate.

The basis of the study under Decision 18.321 is to determine the conservation implications of the outlined exemptions. This required understanding the different sectors use of the species and the time frames of regulated and unregulated trade of finished products outlined in annotation #15 paragraph c).

Consultations with stakeholders indicate that although there are concerns with the implementation of annotation #15, but it works better with the exemptions. This was a stated fact from Management Authorities, private sector companies as well as NGOs that have direct experience in the issues based on participation in the CITES annotations working group and trade.

There was interest from all stakeholders in the outcomes from completing Decision 18.321 (Rev. CoP19) but the responses indicated that there were no major indicators of concerns through the exemptions. Basically, it is working. The major elements that were discussed were that CITES permits are issued for non-exempted materials on time, shipping is taking place without disruptions, which can cause issues for CITES permit expiration, COVID is reduced and at this point is a nonfactor for trade, and there is a stronger sense of knowledge and investment responsibility for conservation by the private sector that is reliant on the raw materials at the range state level and companies producing finished products. These indicators are apparent in programs and studies that are taking place that are directly related to the 2016 CoP 17 genus level listing of *Dalbergia* species and the three *Guibourtia* species.

The methodology for completing Output 1 on trade flows was designed to provide a comparative analysis of the trends of export and import data captured from the CITES Trade Database and inputs from other global databases particularly from World Bank WITS database on HS Code declarations concerning commodities of interest. Stakeholder consultations were also a key component.

The data and trends presented in the histograms and charts of Output 1 provide an overview of the yearly totals of potential *Dalbergia* use in the unfinished form before it is transformed into a finished musical instrument. This data provides the qualitative and quantitative comparison necessary for addressing the goal of this study for conservation implications of the exemptions in annotation #15. This data provides a basis for analyzing the time frames of regulated trade of finished products from 2017 - 2019 and the time frames of un-regulated trade of finished products once the exemptions in annotation #15 entered into effect from 2020 (following CoP18) to date.

There were a number of obstacles for obtaining data that was relevant to the tasks of useful and practical comparative analysis for completing the goals of Output 1 on trade flows. For example: there was a need to convert volumes and metrics of declared data from the CITES Trade Database into cubic meters as there are at least three different metrics that were converted and also a specimen's category that requires a different conversion. These conversions - and the methodology for their use - is a very important aspect of the goal of the study.

It is critical to show where the regulated species originate and when the regulations under annotation #15 change in 2020. This is demonstrated through comparative charts and narrative for analyzing the trends of export and import. The methodology relied heavily on export as this is a more direct link to the range state and conservation implications of trade on the target species groups.

The other critical methodology was to develop a similar presentation of relevant data that demonstrates the most important global areas of manufacture of finished musical instruments. This was developed using HS Codes as there are very few practical methods for obtaining data on trade flows outside of how trade is regulated. There were interviews with manufacturers to gain perspective on volumes and quantities of the instruments produced in different HS Code related scenarios. This is important because HS Codes do not capture individual musical instrument quantities in trade.

In order to overcome the data gap issues around HS Codes, we developed a methodology for volumetric comparisons of sample finished musical instrument groupings that traditionally or potentially could have a *Dalbergia* or *Guibourtia* species component. The three case examples are HS Code 920790 for electric guitars, 920590 for clarinets and 920290 for acoustic guitars.

The overarching comparisons between the species and commodity data show clear trends of regulated and non-regulated timeframes under annotation #15. The data also is very useful in clearly demonstrating that the majority of exports and imports of the target species trends where musical instruments are manufactured.

The data clearly indicates that the trade trends of manufacturing or finishing musical instruments is outside of the range States where the target species would have conservation implications for management. This is an important indicator for conservation impact based on the CITES precedent of annotations striving to regulate the first commodity in trade to gain the most impact for sustainability of a listed species such as *Dalbergia*.

2. Chapter 2: Regionally balanced case studies on annotation #15 for *Dalbergia*/*Guibourtia*

2.1. Overview of Chapter 2

Output 2 case studies on target species of *Dalbergia* and *Guibourtia* provided critical insight into the goal of understanding the conservation impacts from exemptions found in annotation #15 paragraph c) *Finished musical instruments, finished musical instrument parts and finished musical instrument accessories,* and where relevant paragraph b) *Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment.*

The case studies focused on species from four key regions that were identified in the study commissioned by the Secretariat on Decision 19.243 on Rosewood tree species [Leguminosae (Fabaceae)] (CITES Rosewood report) and this study attempts to add data to species specific analysis. The following are the group of target species from Asia – *Dalbergia latifolia* from India, Africa - *Dalbergia melanoxylon* from Tanzania, Central and South America and the Caribbean – *Dalbergia retusa* as well as an overview of rosewood species focusing on the genus *Guibourtia*.

The case studies on the target species highlight a range of conservation, sustainability, and management challenges and opportunities related to their high-value timber found in international trade, particularly for finished musical instruments. The target species for the case studies were found to be directly significant to the global trade and manufacture of musical instruments. The key goal of the case studies was to increase understanding of the management of these species against the exemptions found in annotation #15. It is important to point out that these species have high market demands across a range of products and uses which was underscored by the preliminary conclusions outlined in Output 1 on the trade flows of these species.

The case studies looked at a range of management and trade issues that highlight conservation concerns such as slow growth rates, data deficiencies in data reporting, and a need for stronger scientific inputs for Non-detriment findings (NDFs) particularly for allocation of quotas for trade. The report also highlighted conservation concerns based on the threat due to illegal logging, deforestation, and habitat loss, compounded by high market demand for their timber.

Although there were species specific issues outlined in each case, there were common threads related to needed investments that are recommended for management and conservation risk mitigation processes. The industries using these species have a critical role to play in this process.

The conclusion with regards to conservation impacts of annotation #15 exemptions is that the annotation is working to achieve the goals of regulating trade of *Dalbergia* and *Guibourtia* species and that the conservation impact of the exemptions is low compared to the need to increase investment in building oversight capacity of the trade in the value chain at the range state level. Increasing the capacity to regulate the raw materials of the first commodity in trade and increasing investment in monitoring and reporting would address conservation concerns more directly.

***Dalbergia* species**: The case studies focus on three priority *Dalbergia* species, such as *D. latifolia*, *D. retusa*, and *D. melanoxylon*, all of which have similar conclusions of conservation impact from the annotation #15 exemptions. Even though there are very specific issues that affect the target species in the countries of harvest and ranges, the overarching conclusion is that the conservation impacts from the exemptions for finished musical instruments is determined to be low in comparison with the overall trade impacts from global demand. This was also indicated in Output 1 trade flow trends which showed the

majority of musical instruments are manufactured outside of the range state where the timber was harvested.

This is not to say that there are not impacts from the trade. All these species face overexploitation due to their commercial value. In Nicaragua and Guatemala, *Dalbergia retusa* (cocobolo) is critically endangered, with documented illegal logging and over harvesting despite a CITES Appendix II listing since 2013. Similarly, *D. latifolia* in India is listed as vulnerable by the IUCN, with slow growth and limited artificial propagation. Despite surveys indicating large inventories of "wild" mature trees, as well as very strict harvesting and extraction regulations by the government of India, reports show that there is poor regeneration which needs direct investment.

It is important to put forth the case studies do conclude that there is technically a high conservation impact on the target species to produce finished musical instruments and finished musical parts and finished musical instrument accessories. This is based on the yield and use of specific species as well as the direct demand from the musical instrument trade. *Dalbergia melanoxylon* is one of the target species where there are very few alternatives to manufacture woodwind instruments. The conservation impacts are directly related to producing the instruments. The study found that there are needed investments in mitigating risk in the value chain at the range state level. Developing data and correlated reports to CITES on yield and investments for measures for sustainable forest management such as increasing incentives based on the sharing of the economic returns in the local economy are key recommendations.

The study found that current management measures and data reporting requirements for all the target species of both raw materials and finished products need more investment to monitor and mitigate conservation risks such as overharvesting due to high demand versus a sustainable recovery rate determined in a given NDF. The study found that the most effective measure to mitigate conservation impact would be best completed at the range state level. Investments in NDFs, legal acquisition procedures and efficient processing in the value chain would provide better conservation outcomes than regulating finished products exempted in annotation #15. This was common to each species that was analyzed.

***Guibourtia* species**: The *Guibourtia* species, governed under CITES regulations, are exploited for their valuable wood used in luxury items and high-end musical instruments. Conservation measures are hampered by the species' slow growth and high demand, making sustainable management critical.

Conservation and management initiatives: The case studies found various strategies are being implemented to address these challenges. These include reforestation efforts, forest certification programs, and forensic wood analysis to trace timber origins. Countries like Nicaragua and Guatemala have introduced sustainable management practices, combining conservation with economic development initiatives. The Forest Stewardship Council (FSC) certification, for instance, is promoting responsible forest management, and projects like Hearne Hardwoods and Nicaforest are integrating *Dalbergia* species into agroforestry systems.

The study highlights a number of important investments and partnerships that have developed as a result of the annotation #15 listing and exemptions. Again, there is a need for more direct investment in the value chain and monitoring at the range state level.

Challenges in enforcement and sustainability: Despite these efforts, illegal trade remains a critical issue due to weak enforcement mechanisms and high market demand. The long-term sustainability of these species depends on more robust governance, international cooperation, and enhanced enforcement of CITES regulations.

Completing the mandate for Decision 18.321 (Rev. CoP19) requires a comprehensive assessment of the management practices, at the range state level, of key species of *Dalbergia* and *Guibourtia* species in trade. The following species and regions were chosen based on the outcomes from CITES Rosewood report

(CITES Secretariat, 2024)[12], which identified priority species, levels of trade, key conservation concerns as well as recommendations.

Several of the *Dalbergia* and *Guibourtia* priority species, identified in the CITES Rosewood report are directly related to the key target species proposed for case studies for the Output 2 of Decision 18.321 (Rev. CoP19). They are *Dalbergia latifolia, Dalbergia melanoxylon*, *Dalbergia retusa* and an overview of the three *Guibourtia* species governed by annotation #15. They are also identified as important species in trade for finished musical instruments, finished musical instrument parts and finished musical instrument accessories.

The case studies are meant to integrate the outcomes from analysis of the trade flows from Chapter 1 and to present findings on the conservation impacts at the species level in key countries of primary distribution. This requires presenting findings on legal acquisition requirements for forest and forest product management, permit and quota allocation for sustainable management based on CITES Appendix II requirements for completing Non-Detriment Findings as well as specific private sector trade such as the use for musical instruments.

2.2. Methodology

The review of trade in specimens exempted through annotation #15 used as a baseline document PC26 Doc 37 and its annexes and the CITES Rosewood report to further analyze the target species at the regional and country specific areas of distribution and management.

The methodology for prioritizing species and recommendations, presented in the CITES Rosewood report, will be used to focus in on the target species and specific management issues in the countries presented for the case studies.

Information will be presented using a template to capture key findings and provide a useful data guide to evaluate conservation impact from the exemptions in #15.

The following topics will be used as the template for collecting information:

- Types of products made from the species
- Prevalence of Species to Trade – percent or combination of use as relates to Finished musical Instruments, finished musical instrument parts and finished musical instrument accessories.
- Annotation #15 paragraph b) will be looked holistically when analyzing prevalence of species to trade.
- Distribution in Target Country.
- IUCN Listing
- Non-detriment finding (NDF)
- Key Conservation Concerns
- Illegal Trade
- Management Authority
- Harvest Management Measures
- Legal Acquisition Process
- Value Chain
- Forest Certifications
- Artificial Propagation
- Investment in Conservation (i.e. private or public sector projects) Plantation or Natural forest studies or actions)

[12] Available at: https://cites.org/sites/default/files/documents/E-PC27-27.pdf

- Conservation Impact Analysis

The methodology is to use the key topics to present country level forest and species management processes to ascertain if those management practices are sufficient to regulate the first commodity in trade and if the management practices and policies provide enough protection and oversight for sustainable management at the range state level. This will be compared to the trade of the target species and the exemption of trade of finished products such as musical instruments, their parts and accessories. This process will be used to complete the mandate of Decision 18.321 to understand the conservation impact of the exemptions.

The question as in Output 1 Trade Flows and Supply Chain Mapping is as follows for Output 2 Case Studies:

- Does requiring CITES permits for finished products add any conservation value?
- What is the conservation impact of exemptions found in #15 paragraph c) have on the target species and genus?

The methodology for presenting information on the target species will be to use the CITES Rosewood report, forest management plans – where available, completed NDFs, review of Legal Acquisition processes and forest management regulations, interviews with targeted stakeholders and academic papers to outline the key management processes for each target species and region.

The stakeholder consultation process consisted of interviews. The consultations and Interviews were conducted directly with private sector companies, Non-governmental organizations and government officials including management and scientific authorities. Most of these consultations took place for Output 1 and also apply to Output 2.

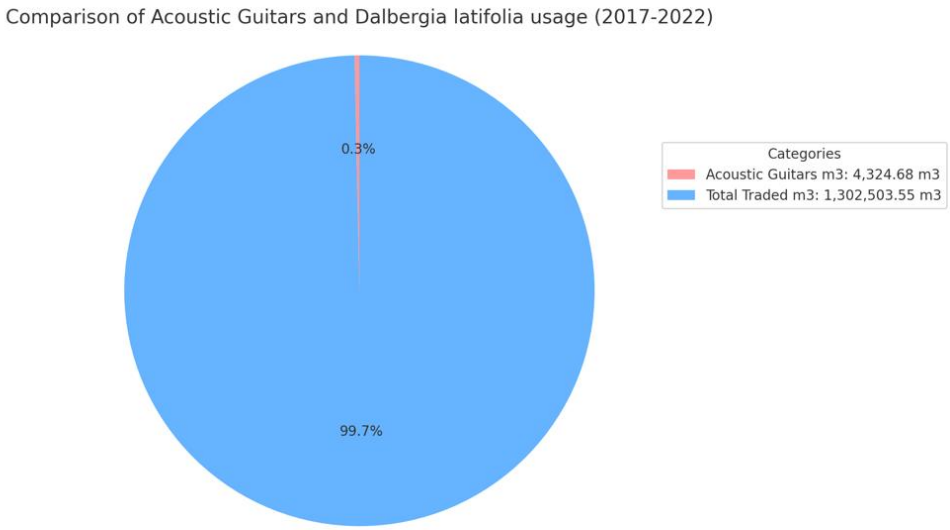
The results and preliminary conclusions from mapping the supply chains and analyzing trade trends from the work in Output 1 is used a key segue to analyze the conservation impact of the annotation #15 paragraph c) exemptions through the case studies. The data on key target species and regions is amplified in the case studies outcomes.

2.3. **Case Studies:**

In each of the following case study examples the goal is to highlight the species and forest management practices to compare with the trade trends from Output 1. The outcomes will be analyzed against Decision 18.321 goal of understanding the conservation impacts from the exemptions found in annotation #15 with a primary focus on paragraph c) *Finished musical instruments, finished musical instrument parts and finished musical instrument accessories*.

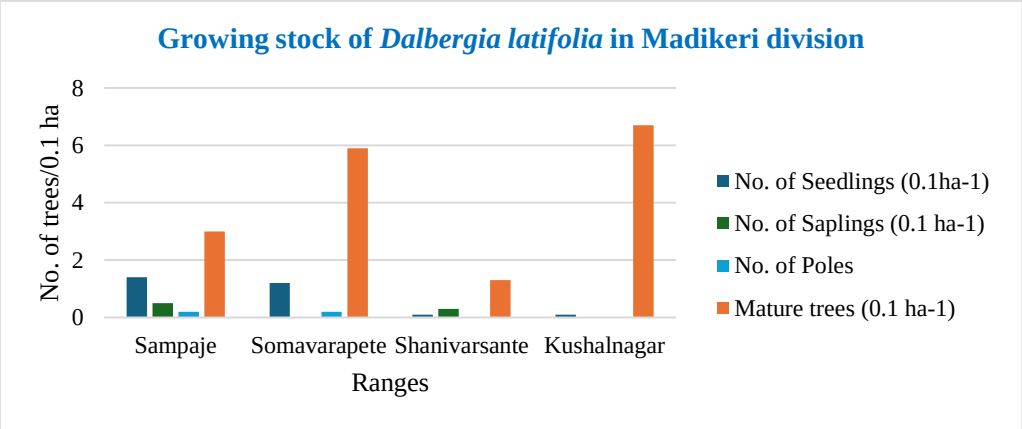
2.3.1. A case study for Asia, focused primarily on *Dalbergia latifolia*/India.

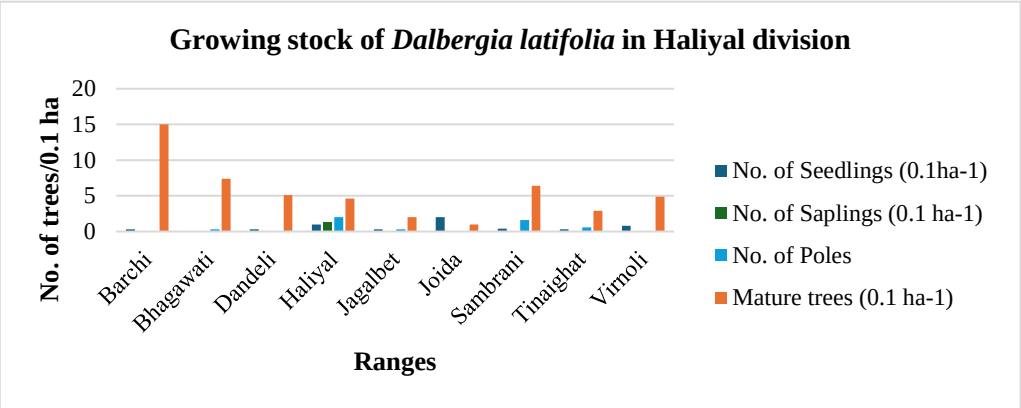
Description	Findings
Types of products made from the species.	In India, *Dalbergia latifolia* is used in a range of products from flooring, furniture, handicrafts and musical instruments. For the purpose of completing Decision 18.321, the *D. latifolia* case study will focus on the direct conservation impacts of exemptions found in annotation #15 paragraph c) finished musical instruments, finished musical instrument parts and finished musical instrument accessories. As described in Output 1 on trade flows, the key musical instruments where *D. latifolia* is most common and would have the majority volumetric use is in acoustic and electric guitars and basses, string instruments played with a bow, such as violins, and potentially some accessories such as a music stand. The most common forms of products exported from India of *D. latifolia* for musical instruments are declared under HS Codes 4408 and 9209 as unfinished musical instrument components. These include

Description	Findings
	fingerboards for guitars, violins and other string instruments as well as veneer for back and sides of acoustic guitars. (Output 1)
Prevalence of Species to Trade – percent or combination of use as relates to Finished Musical Instruments	*D. latifolia* is a significant component of finished musical instruments and finished musical instrument parts. In comparison to overall trade of the species globally, the inputs for musical instruments, primarily guitar parts, is a very small percentage. Chart 3.1 - Percentage of Use of *Dalbergia latifolia* in Manufacturing Acoustic Guitars Versus the Grand Totals of Species Trade (2017-2022)  Although the volume of wood used for musical instruments is relatively low comparatively, the importance of the species for trade and to the livelihoods of the businesses and their employees in the value chain is critical. The businesses in the value chain are often small family businesses that have worked in the trade of *D. latifolia* for musical instruments for multiple generations. (Overseas Traders interview, 2024) There is tradition on all sides of the trade. There is tradition in the use of the species by musical instrument companies and there is tradition in the families supplying the wood. *D. latifolia* is classified as a "heritage tree" in India.
Distribution in Target Country	The CITES study on rosewoods indicates a wide natural distribution throughout South Asia with some discrepancies on references of where the species was introduced.

Description	Findings
	 For the purpose of this case study, the species has historical natural distribution in many states of India. The actual commercial management and key areas of distribution are located in Southwest India in the states of Karnataka and Kerala with the dominant state being Karnataka. There is a small availability in the southern state of Tamil Nadu.  Maps (RBGE 2020. Dalbergia latifolia. The IUCN Red List of Threatened Species. Version 2024-1)
IUCN Listing	*Dalbergia latifolia* has most recently been assessed for The IUCN Red List of Threatened Species in 2020 and is listed as globally Vulnerable under criteria A1cd. (Lakhey et al., 2020)
Non-detriment finding (NDF)	India CITES Management and Scientific Authority have completed an NDF. (Report on Non-Detriment Findings (NDFs) of *Dalbergia latifolia Roxb*. in India; Bhattacharjee et al., 2018).

Description	Findings
	The Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India commissioned a study through Botanical Survey of India (BSI), Kolkata for conducting the Non - Detriment Findings (NDFs) on two tree species namely *Dalbergia latifolia Roxb.* and D. sissoo DC., which was sanctioned (F. No. 4-6/2017/WL dated 7th March 2018) in a project mode during March 2018 and executed by a team of scientific staff/researchers of BSI. The national conservation status of the two species was assessed by following the 'Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0' (IUCN, 2012). The population size, density (wherever possible), DBH (Diameter at Breast Height) of the boles, height, tentative ages of the plants were noted during field visits. (NDF, 2018) The work has been carried out by following 'CITES Non-Detriment Findings Guidance for Perennial Plants' (Wolf & al., 2016). Nine-Step Pathway for making Non-Detriment Findings for Perennial Plant Species listed in CITES Appendix II. The outcome for the NDF was considered negative based on issues of species identification between *D. latifolia* and *D. sissoides*. (NDF, 2018)
Key Conservation Concerns	**1. Distribution:** Based on the NDF, the severity of conservation concern is considered Low. (NDF, 2018) *Dalbergia latifolia* is reported to be scattered in the dry and moist mixed deciduous and semi evergreen forests, mostly in hilly forests up to 1500 m elevation in the areas with 750-5000 mm mean annual rainfall and 8-44°C mean annual temperature. At seedling stage, *D. latifolia* is shade tolerant but sensitive to drought and fire. In maturity, it is tolerant of drought and ground fire, but susceptible to crown fire. The mature tree can thrive in area with up to six dry months with mean monthly rainfall < 40 mm. (IWST. 2022) **2. Population Trends and Growth Rates:** Initially at the seedling stage, the growth rate is slow, and it requires a moderate amount of sunlight, a strong taproot devoid of any secondary root and highly variable growth rate in natural conditions. They can attain a height of 15-40m, with a girth of 2m when it is a single stemmed tree with widespread dome shaped crown. Annual growth of girth can vary depending on the habitat. Growth rate can be comparatively faster in trees growing in moist regions when compared to those growing in dry areas. Girth growth during initial years can range from 4-8cm/year whereas the annual increment is estimated to be 1.8-3.2cm. (IWST, 2022) **3. Regeneration:** Under natural conditions, *D. latifolia* reproduces by seed, root sucker and it is also capable of coppicing. The growth rate of *D. latifolia* in India is slow with long rotations. In India, the average age of reaching a diameter of 60 cm is usually not less than 240 years. The germination percentage of the seed is 65%, germination period is from 7 to 21 days, seedling survival is 45% (http://forests.telangana.gov.in) (NDF, 2018) Based on direct observations and the report, "Studies on Indian Rosewood (*Dalbergia latifolia – Roxb*) - in Karnataka and Kerala States, "conducted by the Institute of Wood Science and Technology 2018-2022 there are more specific concerns on regeneration depending on the forest type and region of distribution. The issue of regeneration was a key outcome from the survey and analysis. In the regions of Karnataka where the species is found in dry deciduous forest the data shows poor regeneration. There was a "J" curve showing mostly mature trees in almost all forest ranges. There are a number of potential causes including planting teak which leaves can cover seedlings of other species as well

Description	Findings
	fire, environmental and man-made disturbance can affect the regeneration. The conclusions reflect a need to prioritize *D. latifolia* in management plans. The different girth class saplings and poles were absent, and this indicates unhealthy sign of regeneration. Growth and development of the seedlings were found affected by grazing and trampling by wild animals, insect-pest attack, ground fire (control fire) and competition from invasive like *Lantana camara*, *Chromolaena odorata* and others. *(*Manohara, 2022) In semi-evergreen forests of southern Karnataka, regeneration was prolific with root suckers forming the majority of natural regeneration. This is also an area of agro-forest intervention with the majority of the *D. latifolia* trees occurring in the coffee estate region of Madekeri. Below are two examples of growing stocks in different forest types that were part of the study. One of the management suggestions is that biotic pressures by grazing, firewood and NTFP collections should be controlled. Madikeri division is in southern Karnataka and is semi-evergreen forest.  Chart 3.2: Growing stocks of *D. latifolia* in Madikeri Division  Photos: R. Garner Haliyal division is in the northwest of Karnataka and is a mix of dry deciduous and evergreen forest.

Description	Findings
	 Chart 3.3: Growing stock of *D. latifolia* in Haliyal Division 4. **Habitat Disturbance:** Impact of Wild harvest for domestic and international trade is considered "Medium" (NDF, 2018). The species is primarily harvested for timber. The majority of exports and domestic use of *D. latifolia* wood and wood products are sourced from the dead/fallen trees of the forests (excluding the Protected Areas) and trees growing in private lands, especially in private coffee and tea estates of Karnataka, Kerala, Tamil Nadu. The tree is well represented. 5. **Legal protections:** It is illegal to cut the species in Protected Areas. The harvest is permitted only from reserve forests, social forestry and private lands, i.e. outside the PAs. Further, the species is also listed as 'restricted species' in the states of Gujarat, Karnataka, Kerala, Tamil Nadu, and permission is required for harvesting (in private lands), transportation and marketing of this species. (NDF, 2018). 6. **Species ID:** *Dalbergia sissoides Wight & Arn.*, a species look-alike that of *D. latifolia* is also reported from Karnataka, Kerala, Tamil Nadu and it has been found that in many parts of these three states *D. sissoides* are misidentified as *D. latifolia* with the same vernacular names 'Itti'/ 'Eetti' or 'Veeti'/ 'Beeti' due to similarities in their morphological characters and uses. The heartwood of these two species is also very similar in appearance and both are highly valued and used for making furniture, musical instruments, cabinet works, etc. (NDF, 2018)
Illegal Trade	Magnitude of illegal trade Trade impact severity: Medium Each Forest Department Division has a segregated timber for Forest Offence confiscations. Illegal trade is documented for the species in India. In Karnataka, as on 31.3.2018, a total of 44 Forest Offence Cases (FOCs) for 'Rosewood' are under the Vigilance Wing, out of which 5 FOCs are detected during the period from 1.4.2017 to 31.3.2018. As per the data received during survey of different timber depots under Karnataka forest department it has been noted that in Narasimharajapura (N.R. Pura), Hassan, Kadur and Thithimathi depots of Karnataka, the quantities of 'Rosewood' received against Forest Offence Cases (FOCs) during 2017-2018 are6.746 m3, 0.681 m3, 0.156 m3, 60 m3, respectively. The year-wise seized/FOCs 'rosewood' timber availability in Narasimharajapura (N.R. Pura), Sangameshwarapete, Hassan depots indicate decreasing trend of illegal trade in certain part of Karnataka. (NDF, 2018) Narasimharajapura depot,
Management Measures	Species specific management is conducted under the regional Ranges and Divisions by the Indian Forest Department.

Description	Findings
	Different Indian States have different laws but *Dalbergia latifolia is* considered a "heritage tree" and is only extracted under supervision of the Forest Department – even from private agroforest operations such as coffee plantations. Management measures include a range of activities including fire prevention, and regional planting and nursery development in forest ranges. (Working Plans of Madekeri, Haliyal and Yellapur) The species is only extracted as "dead and fallen" in the Forest Department Working Plans. Green extraction is only completed for infrastructure projects or under supervision of Forest Department rangers. "PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA" SUBJECT: FELLING OF GREEN TREES IN FOREST. Read: (1) Government Order No. AHFF 164 FDP 90 dated 10-10-1990. (2) Government Order No. FEE 205 FDP 97 dated 23-6-1998
Management and Scientific Authority	As the genus *Dalbergia* is listed under Appendix II of CITES since 2nd January 2017, CITES permit is now required to export/import for any material of *D. latifolia*. The national authority responsible for implementing CITES is called the CITES Management Authority. **3. Management and Scientific Authority:** The Additional Director General (Wildlife), Ministry of Environment, Forest and Climate Change, Government of India, is designated CITES Management Authority of India and the Regional Deputy Directors of Wildlife Crime Control Bureau (WCCB) are designated as CITES Assistant Management Authorities. **4. Legal Procurement Certificate:** To obtain CITES export permit/comparable certificate, copy of the valid export order/irrevocable letter of Credit from the foreign buyer, Legal Procurement Certificate (LPC), copy of Certificate of Physical Verification from the Regional Deputy Director (Wildlife) or from the DCF/ DFO of the concerned division etc. are to be submitted to CITES Assistant Management Authority along with CITES permit application. At the time of import, the CITES Import Certificate is to be surrendered to CITES Assistant Management Authority. However, if a species or specimen has to be re-exported, the CITES Re-export Permit application should be accompanied by a copy of CITES Import Permit/Certificate (for imports outside Customs notified area), in addition to LPC from State Wildlife Authority. (NDF Report, page 58)
Forest Governance	**1. Overview of Forest Governance:** India has a very comprehensive forest management system and strict laws for export of forest products – especially CITES listed *D. latifolia*. The Forest Department regulates all government forests in India. Different laws are applied for different forest applications in different states, but the structure and policies are governed by the national Indian Forest Act. The structure of the Forest Department is divided into different Forest Circles that each have regional directorship and are then subdivided into Divisions, Ranges and Beats for landscape level management. All Forest Department Divisions are required to produce a 10 year "Working Plan" for managing all activities in the Ranges, Beats and Compartments. This includes extraction, replanting, wildlife management etc. Forest product laws and forest management systems differ from state in India. For the purpose of this analysis, this report will focus on Karnataka and Kerala states as well as National legal frameworks in order to present the regulatory requirements for *D. latifolia* and analyze conservation impacts from the exemptions of #15 paragraph c).

Description	Findings

2. Forest Governance Framework

The government regulates all natural forests as Reserve working forests and protected forests. Species such as *D. latifolia* are also regulated from private agro-forest estates which includes coffee estates.

The key year of change was 1980 when the Forest Conservation Act was instituted. From this point no green trees are legal to cut. The extraction of rosewood *(D. latifolia)* can only be done when the tree is designated as "dead" or "fallen." There are some circumstances such as road, train track and power line easements where green trees will be felled. This was referenced in the following document: "PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA" SUBJECT: FELLING OF GREEN TREES IN FOREST. Read: (1) Government Order No. AHFF 164 FDP 90 dated 10-10-1990. (2) Government Order No. FEE 205 FDP 97 dated 23-6-1998

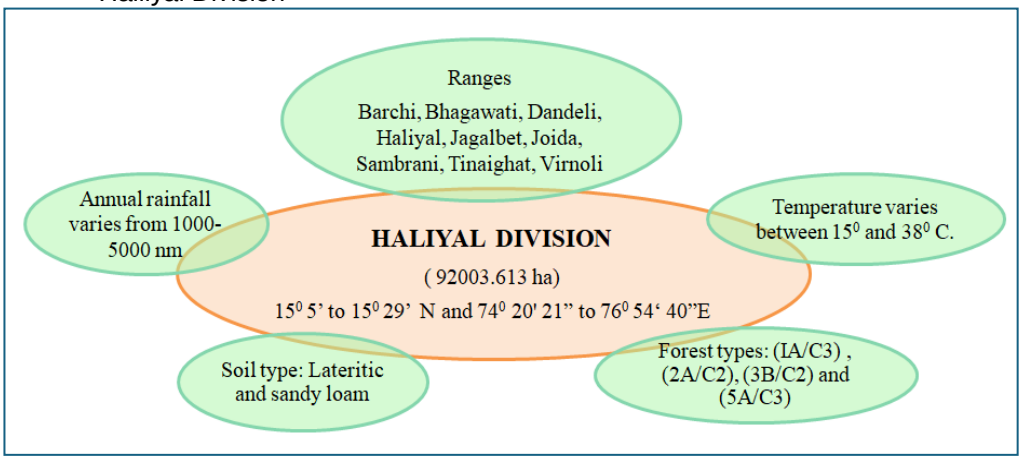
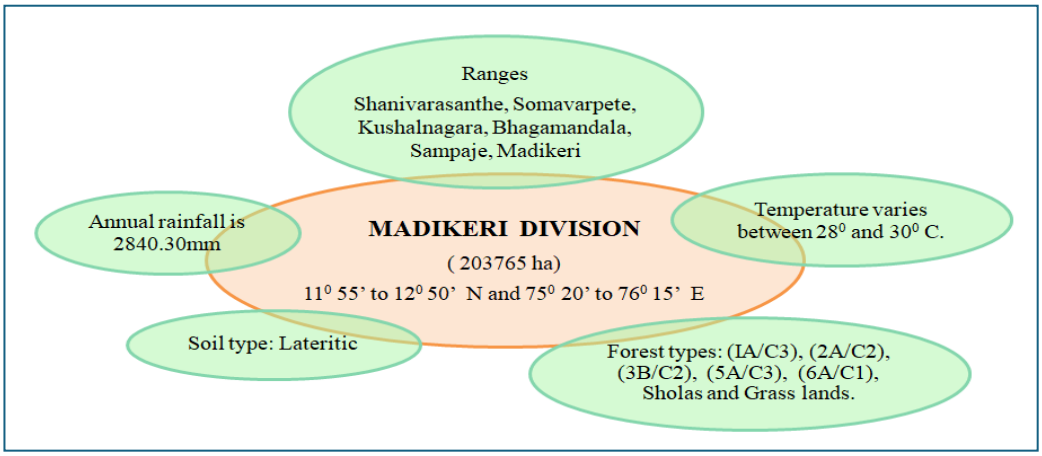
The State Government vide Government order read at (1) above imposed a total ban on felling of green trees in all types of forests (evergreen, semi-evergreen, moist deciduous and dry deciduous) as a conservation measure to protect the forests from biotic pressures.

The ban did not apply to removal of dead trees, extraction of bamboo and cane for medars and artisans, harvest of artificially raised fuel wood plantations and thinning of plantations.

3. Relevant Laws and Requirements:

Table 3.3

Relevant Laws and Requirements	Descriptions
Indian Forest Act 1927	Continues to be the forest law of India. Updated in 2012 Classified all forests as Reserve or Protected
Forest Conversion Act of 1980	Updated in 2003 – stipulates the Central Government role in policy on any changes to forest management at the national regional level outside of designated working forests.
Wildlife Protection Act of 1972	Regulates all hunting and protections of wildlife in forest areas and beyond.
Official Forest Working Plans (wildlife protection act 1972) (W.P (C) No. 202/1995)	Defines the scope of government-controlled forest management areas
Forest Pass (43)	Official Transport document issued by the Forest Department to transport processed forest products to port for export.
Forest Pass (27)	Official document issued by Forest Department to transport timber from auction depot to factory
Legal Procurement Certificate	Issued by Forest Department. It is basically a yield assessment of processed timber and is required before a CITES export permit is issued.
CITES Comparable Permit	Issued by CITES Management Authority
International Export	Only semi-finished products are allowed to be exported under Indian law HS codes Musical instrument parts 9209 and veneer 4408

Description	Findings
Harvest Management Measures	All Forest Department Divisions are required to produce a 10 year "Working Plan" for managing all activities in the Ranges, Beats and Compartments. This includes extraction, replanting, wildlife management etc. (NDF, 2018) The following figures are presented as a sample of regional Forest Divisions where official 10 year Working Plans are created for forest management. It is meant to demonstrate the key areas of extraction for *D. latifolia*. **1. Sample of Forest Working Plans relevant to *D. latifolia*:** • Halliyal Division  Figure 3.4: Schematic representation of Haliyal Division [Note- Jioda range from Karwar Division has been transferred to Haliyal Division by The Principal Chief Conservator of Forests and Head of Forests Force (PCCF-HoFF), Karnataka Forest Department vide Letter No. B1/Others/CR 37/ 2015-16; Dated 29-01-2016]. • Madekeri Division  Figure 3.5: Schematic representation of Madikeri Division

Description	Findings

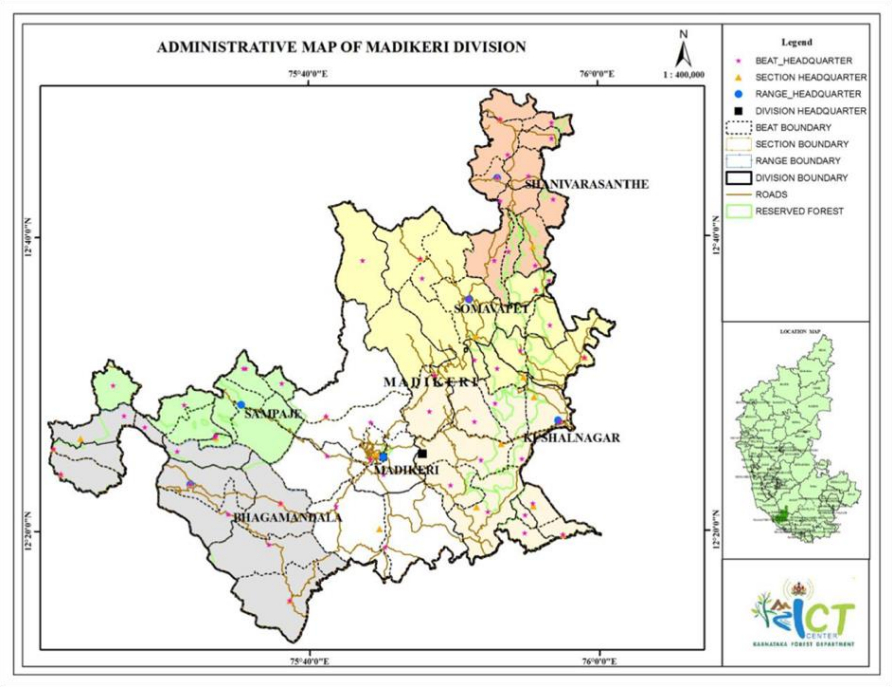


Figure 3.6 – Madekeri Division Region Map

- Yellapur

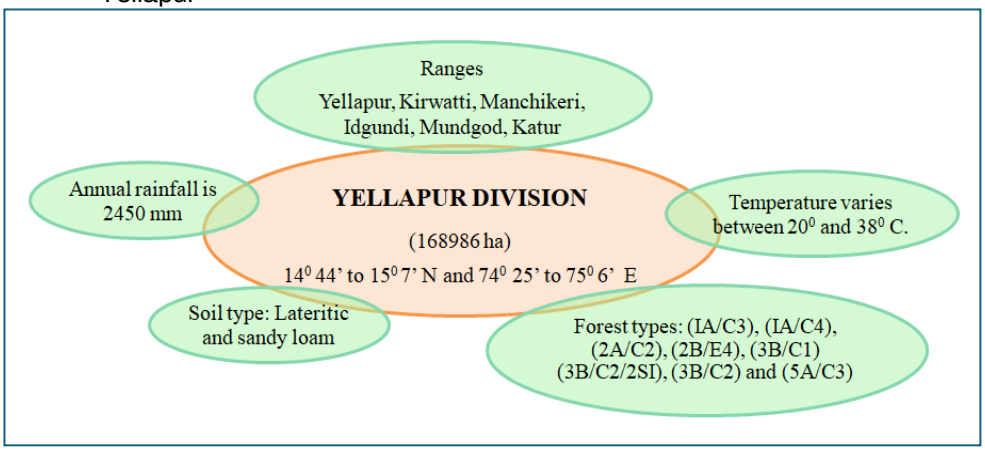


Figure 3.7 – Yellapur Division Map

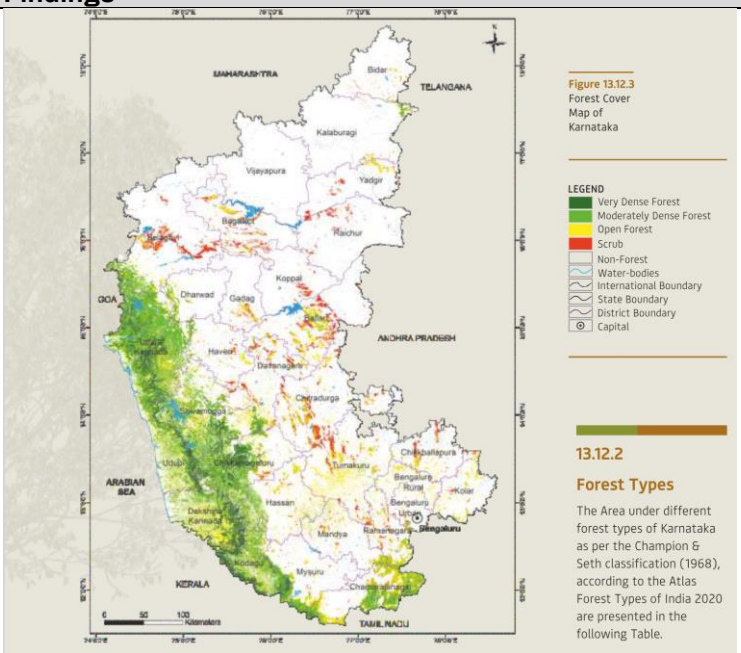
Yellapur division falls under Western Ghats, and it comprises of Yellapur & Mundgod taluks of Uttara Kannada. 90% of the people in the division are farmers, who grows Arecanuts, paddy and other field crops. Geographically Yellapur comes in ridge zone of the district and Mundgod in the flattern eastern zone, because of this there is a huge variation in the climatic factors, i.e. with regard to temperature & Rainfall coupled to this, it shows variety of forest type also, as Mundgod is having dry deciduous, Katur is dry & moist deciduous type, Yellapur is Semi Ever green & moist deciduous type, Kirwatti is Moist deciduous and dry deciduous type.

There were eight working plans covering the total area under Yellapur forest division. This ([2013-14 to 2022-23] By B. Venkatesh. I.F.S Deputy Conservator of Forests, Yellapur Division), working plan integrates all the areas covered in earlier said d plans.

Description	Findings
	In order to assess the growing stock in the Division, inventory was carried out using Stratified Random Sampling method. The forest was divided into Block and Compartments as the different strata. The Sample Plots of size 0.1 ha each (31.62m x 31.62m) were distributed randomly in the Compartments. The Sample Plots were laid down on the ground as per the procedure given in Field Inventory Manual (1994) of the Karnataka Forest Department. The forest area of the Division has been divided into Blocks and Compartments. There are a total 34 Blocks and 543 compartments in the Division. Blocks are present in both High forest area and low forests Sampling was done in both types of Blocks.
Legal Acquisition Process	**1. Overview of Legal Acquisition Process:** All *D. latifolia* logs are required to be taken to regional Forest Department Depots where they will be auctioned. All auctions are now online, and the additional requirements of an official Legal Procurement Certificate adds a level of oversight for exporting D. latifolia that was not previously required prior to the CITES listing. (NDF, 2018) All non-finished or semi-processed products such as semi-processed musical instrument parts and veneer products require a CITES export permit to be exported. Only semi-finished products HS code 9209 and 4408 are allowed to be exported under Indian law. **2. Legal Acquisition Forms and Procedures:** All harvest and transports are governed by official permits and transport documents must be officially issued from auctions from a government forest or a private forest transaction. A "Forest Pass" must be issued to the purchaser as well as a landowner to move the logs to the contracted buyer's facilities.[13] The following documents and forms are required for legal procurement by private companies and for traceability through the legal acquisition process set out by the national legislation of the Forest Act and the Indian CITES Management Authority. (Forest Act) • At auction – Forest Department issues Form #43 Forest Pass to transport the timber from auction. The form shows the Forest unit number, depot number, date of harvest, log number and cubic meters. • Once the timber is processed another Form #27 is issued to show that the timber has been transformed and the volume. • With CITES Appendix II species a Legal Procurement Certificate (LPC) is required to apply for the CITES permit in the state. • A new Forest Pass is issued to transport the timber to export. • All documents must be resubmitted to the Forest Department. **3. The two most relevant states for *D. latifolia* harvest and official auction sales are Karnataka and Kerala.** **3.1 Karnataka State Overview:**

[13] Studies on status of *Dalbergia latifolia* Roxb. – high valued Indian rosewood in Karnataka and Kerala States. Reference Abstract from Kerala Forest Manual pg 171.

Description	Findings



Map - Karnataka State Forest Types (Indie 2021 – State of the Forest Report)

In Karnataka state all *D. latifolia* logs extracted from government forests regardless of the designation of "Reserve or Protected" are required to be taken to the "range" depot for preparation for sale. This is required for all logs extracted from government forests – including teak, laurel and even firewood. (Karnataka Forest Law)

All *D. latifolia* logs extracted from private coffee estates in Karnataka are required to be delivered to local government depots for preparation and sale. Studies on status of *Dalbergia latifolia Roxb*. – high valued Indian rosewood in Karnataka and Kerala States. Reference Abstract from Karnataka Forest Manual pg. 168.

All logs are stamped at forest level along with stump. All logs are measured for dimensions and grade and are inventoried at the Government Forest Department Depot.

Stamped logs

Inventory check.

Logbook

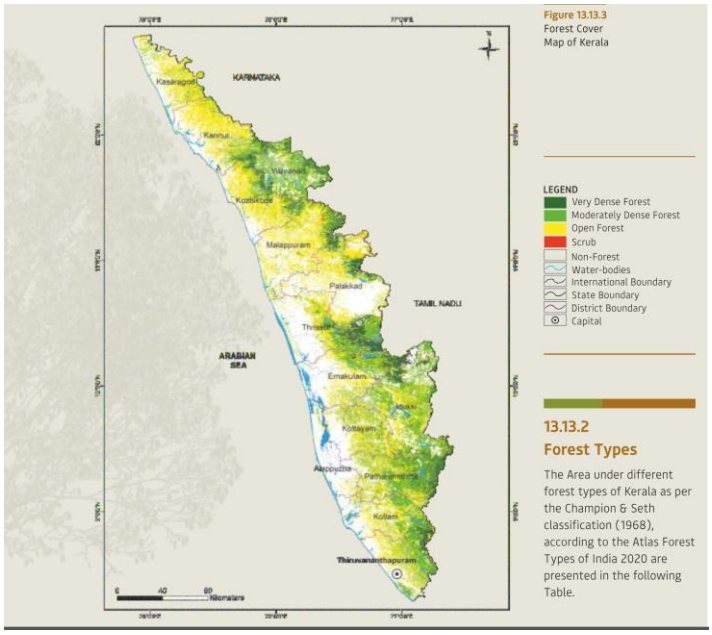
Photos: R. Garner

In Karnataka, all logs are tracked from forest compartment or coffee estate origin using a universal coding system that stamps the Lot number, Date of entry, Log number, Volume and Dimensions. These entries are used to track for legality and for sale through the auction system.

Description	Findings
	

Figure 3.7 - Photo diagram of a log and the information stamped and printed on for traceability of forest compartment as well as for auction management.

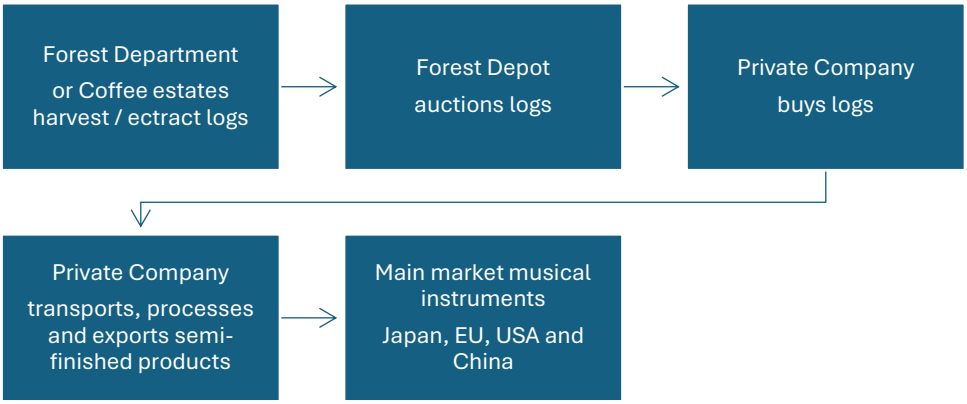
3.2 Kerala State Regulations:



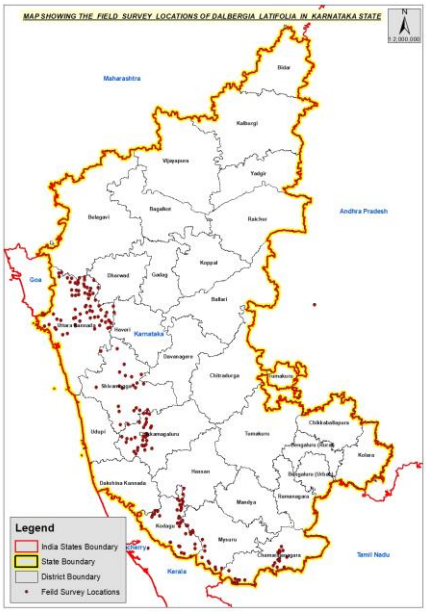
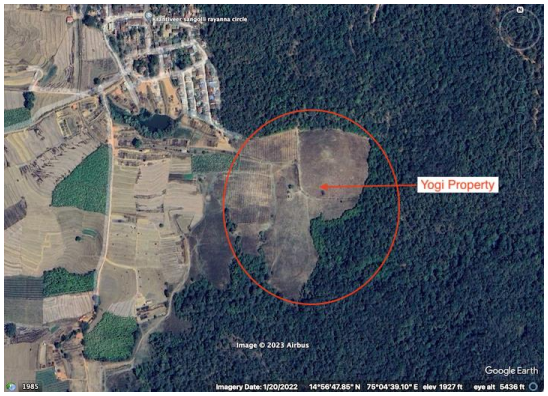
Map - Kerala State Forest Types (Indie 2021 – State of the Forest Report

Kerala state has similar laws to Karnataka state governing government forests and *D. latifolia*. All public Forest Department forests must present logs extracted, regardless of designation, for public online auction.

The major regulatory difference between the two states is Kerala allows for private landowners to harvest and sell *D. latifolia* and other species through private contracts. The regulations require the private

Description	Findings
	landowner to apply for a harvest permit and approval from the government Forest Department official in their region. Inspections must take place before the harvest and all documents such as the "Forest Pass" must be issued to move any of the logs between parties.
Value Chain	The domestic value chain for *D. latifolia* is a short and almost direct supply chain. (Interview with Overseas Traders, August 2024). The regulations and laws governing the management and purchasing *D. latifolia* are outlined above. The regulations set the foundation for the value chain. Moreover, *D. latifolia* markets are mainly high value international export markets which require expert processing, mainly for musical instruments. (Interviews Overseas Traders, August 2024) There are only six or seven key companies that have the milling skill and infrastructure, in India, to produce the quality parts for international export. This significantly reduces the size of and number of stakeholders in the value chain. Diagram 3.8 - Below is the basic value chain:  As described in the prevalence of trade, the value chain consists of a short supply chain where quality management, milling capacity and traditional specifications are the key drivers of the trade for *D. latifolia* for producing semi-finished parts in India and finished musical instruments in key countries where the manufacturing takes place. As the trade flow in Output 1 demonstrate, the major flows of *D. latifolia* from India for musical instruments is to the USA, EU, Japan and China. All exports of semi-finished parts for musical instruments must have a Legal Procurement Certificate and CITES export permit.
Processing and Export	In India, the wood is highly preferred for making musical instruments and at least nine major companies (along with a few smaller companies) are the legal active exporters of rosewood from India, viz., Overseas Traders (Karnataka), Gemwood (Kerala), Atheena Exports (Kerala),Tony Wood Industries (Kerala), Hi-Tech Wood Industries (Kerala), Overseas Timbers (Kerala), Malabar Timber Company (Kerala), Associated Timber Traders (Kerala), C. Jacob and Company(Kerala). (NDF, 2018) Processing is required to be completed in India before export. Indian law requires products of *D. latifolia* be processed into semi-finished or finished products before export. Lumber and primary processed products under HS codes 4407 are not allowed to be exported. Veneer and semi-finished parts for musical instruments are allowed to be exported based definitions under HS codes 4408 and 9209.

Description	Findings
	All unfinished products that contain D. *latifolia* or any *Dalbergia* species are required to have a Legal Procurement Certificate detailing yield and a CITES comparable certificate before export is granted. (NDF, 2018) As a key component of regulating legal acquisition, the Legal Procurement Certificate (LPC) is used to monitor volumes and yields at the state and mill level and is checked for log conversion yields through processing to products. India permits the export of cultivated varieties of plant species included in Appendices I and II and has indicated that all products, other than the wood and wood products in the form of logs, timber, stumps, roots, bark, chips, powder, flakes, dust and charcoal, produced from wild sourced (W) Dalbergia sissoo and Dalbergia latifolia and authorized for export by a CITES Comparable Certificate issued by the competent authorities of India are exempted from the general ban. Such *Dalbergia sissoo* and *Dalbergia latifolia* specimens are harvested legally as per the regional and national laws of India and as per the prescribed management (working) plans, which are based on silvicultural principles, and all are covered under Legal Procurement Certificate; all the material are sold from the Government timber depots through auction or are legally procured and can be exported legally. (25 March 2018 NOTIFICATION TO THE PARTIES No. 2018/031)
Forest Certifications	Forest certification is not a prevalent methodology in India as the main forest owner is the government, managed by the Forest Department. The team visited several of the key suppliers listed below which play a significant role in the commercial trade of Indian rosewood (*D. latifolia*). These companies continue to hold Forest Stewardship Council Controlled Wood (FSC CW) certification. This is a benefit for companies that are producing an FSC mixed product but not for companies seeking to produce a product that is 100% FSC certified. The main benefit for a company is that these companies are being audited against the rigor of the FSC CW standard which provides an oversight of labor practices, material yields and sourcing.
Artificial Propagation	Artificial propagation is possible both by direct sowing and by planting seedlings, root suckers and sections of lateral roots. Stump planting is the best method for raising the species, though direct sowing and planting out entire seedlings are also successful. (NDF, 2018).
Investment in Conservation (i.e. private or public sector projects) Plantation or Natural forest studies or actions)	The cultivation/plantation of this species has not been very popular mainly due to its very slow growth rate. However, presently there is encouraging trend in introducing the species under cultivation/ plantation. (NDF, 2018) As a result of the *Dalbergia* genus level listing in 2016, a private contract was initiated in 2017, between the Association of Rosewood traders and the Institute of Wood Science and Technology in Bangalore India, to complete a survey / study on the status of *Dalbergia latifolia* in India. The focus was on distribution and population status in Karnataka and Kerala states. The outcome of this 2017-2022 study was a large amount of data that has been used by the India Scientific Authority as well as the private sector to initiate conservation and sustainability projects to address outcomes. Several private sector companies have provided funding and oversight for the integrated survey.

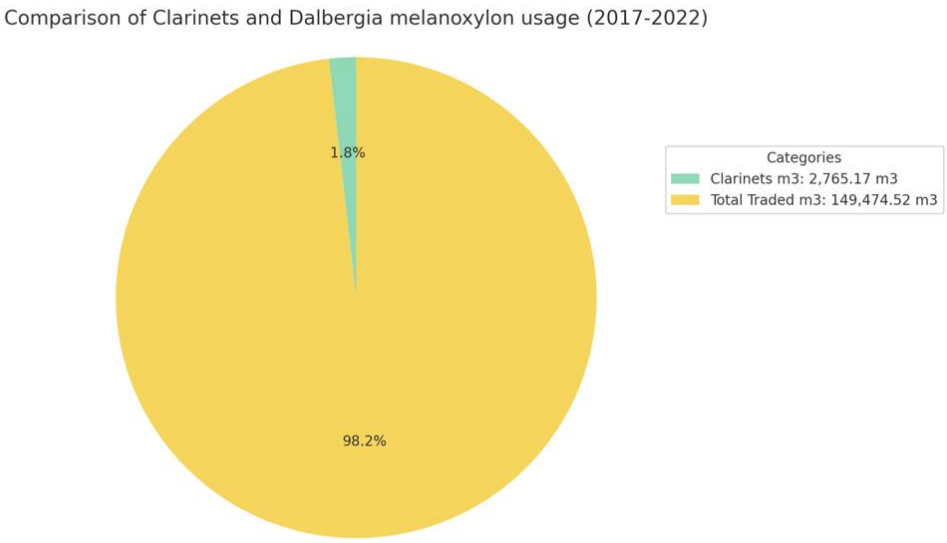
Description	Findings
	 Figure 3.9: Field survey locations of *Dalbergia latifolia* in Karnataka (IWST *D. latifolia* survey, 2017-2022) Overseas Traders, one of the main rosewood exporters to the musical instrument industry for three generations, has developed a model for planting, research and monitoring. They have formed a foundation Aranya Niran, located in Mundgod India.   Google Earth: Mungood They have planted over 2500 seedlings from different areas of distribution with traceability of provenance. The goal is to use their land and foundation to increase research on key traits and trends from growth rate to genetic differences.
Conservation Impact Analysis	*Dalbergia latifolia* is a key resource to produce finished musical instruments globally. Based on the outcomes from the trade trends in Output 1 and the case study, it is the most widely traded in volume in comparison to all other *Dalbergia* species. Therefore, it is a key focal point for understanding the conservation status at the range state level in India and the conservation impacts from the exemptions in annotation #15.

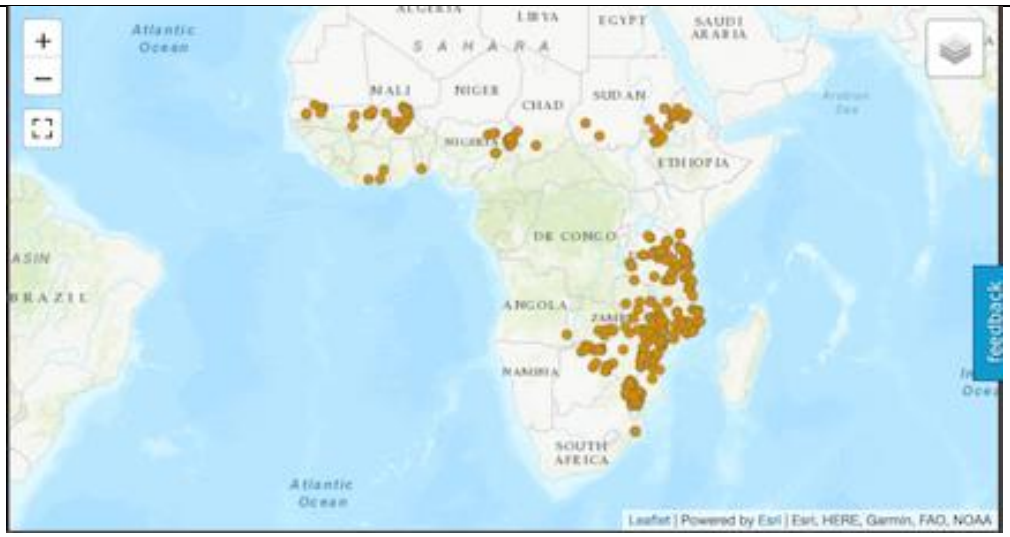
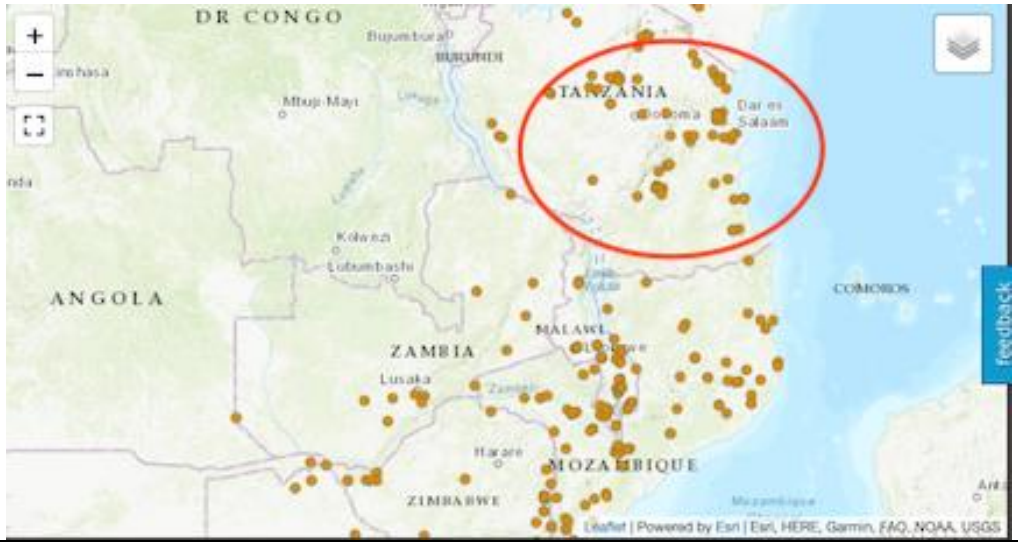
Description	Findings
	There has been considerable investment in studies as a result of the CITES Appendix II listing from 2016 CoP 17. The investment was initiated by private sector companies in India that are supplying the musical instrument industry and companies that are producing finished musical instruments in the United States. The initiatives were to undertake a study and survey the distribution to understand the conservation status in partnership with the Institute of Wood Science and Technology (IWST) based in Bangalore, India. Investments were also made to increase communication between private companies and the Indian Management and Scientific Authorities to help increase the sharing of knowledge on the industries that rely on *D. latifolia* in India and internationally. The results have been very positive for potential joint program investments for sustainable management of the species. Based on the results from the 2018 NDF and outcomes from the *D. latifolia* study, by IWST, this is a necessary process. Although India has one of the most regulated forest management structures in the world, the NDF and studies shed important light on species specific issues that require more direct interventions. One of the key outcomes from the IWST study was the fact that regeneration of *D. latifolia* is poor based on a number of issues from invasive understory, fire and mortality rates in the wild. The study also indicated that there are many more mature trees than saplings and poles which can eventually lead to a tipping point for the health of the species. These outcomes have led to actions for nursery development, genetic mapping and species identification initiatives between the public and private sector. The goal from interviews is to "act before it is too late." The conservation concerns highlighted in the case study focus on poor regeneration and that *D. latifolia* is a very slow growing species. These factors are extremely important based on the importance of the species to the musical instrument industry. However, the actual volumes traded for musical instruments is comparatively low as the charts in the prevalence of trade section indicate. The case study highlights the institutional and forest management systems India has in place to regulate all *Dalbergia* species and control the harvest extraction and selling of the wood. These systems are comprehensive and have strong traceability mechanisms to manage commercial log origin. India has very strict export controls on the form and processing of *D. latifolia* that adds oversight protections. Based on this capacity, it is critical to increase species specific investment to address the identified issues in the NDF and IWST study particularly on species identification between *Dalbergia* species and to address the regeneration issues. The conclusion is that the annotation #15 paragraph c) exemption for finished musical instruments and finished musical instrument parts is having a low conservation impact. There are several points to this conclusion. Based on interviews with private and public parties, annotation #15 with the exemption is working to regulate the trade as permits are required for all exports of unfinished materials. There are also strict legal requirements to process the wood to an almost finished form before export. To gauge conservation impacts it is also necessary to understand the total value chain. A single musical instrument that has specification that includes a CITES listed species is technically a high conservation impact. It is necessary to analyze this based on the volume of the resource needed and the yield of the processing can create a very high impact on the actual resource as the finished product like a guitar fingerboard made from *D. latifolia* is directly affecting the harvest of the tree. The most effective mitigation of this relatively high impact is to create as much value where the resource is primary processed and managed. With regards to CITES permitting and regulation of traded species, investment and actions would be more beneficial at the range state level to ensure strong NDFs and species-specific interventions such as building capacity for species identification and completing needed field work would have more conservation impact than regulating and requiring permits for finished musical instruments.

Description	Findings
	The musical instrument industry, from the supply chain to producing a finished product, has a very important role to play to invest in the prescribed conservation interventions to ensure the long-term sustainability of the species. Main points for recommendations include: • Address the data gaps on the species. • Increase correlated reporting on finished products to management and conservation prescriptions from the NDF and IWST study.

2.3.2. A case study for Africa, focused primarily on *Dalbergia melanoxylon*/United Republic of Tanzania.

Description	Findings
Types of Products made from the species	The species is in international demand for musical instruments, for reproduction furniture in China, and for African wood carvings often exported by tourists (Cunningham, 2016). Timber from the species has a high durability against termite and fungal attacks based on experimental data (Nakai and Yoshimura, 2020). For the purpose of this case study, the focus will be applied to the international trade of woodwind instruments such as clarinets, oboes, as well as carvings.
Prevalence of Species to Trade – percent or combination of use as relates to Finished Musical Instruments	*Dalbergia melanoxylon* is considered one of the most important species to the trade and tradition of producing high end professional wood wind instruments. The alternatives are almost negligible in volumetric use. In comparison to global trade, the sample of the most common musical instrument use in the global clarinet production is very small. (Interview with Michael Jousserand, Buffet Crampon, 2024) Although the species is a traditional wood for making musical instruments, the sector uses a very small volume comparatively as the chart below indicates. This is a very important aspect of determining conservation impact from the annotation #15 paragraph c) exemptions from the finished product. Chart 4.1 - Percentage of Use of *Dalbergia melanoxylon* in Manufacturing Clarinets Versus the Grand Totals of Species Trade (2017-2022)

	 Forestry is one of key economic sectors in driving the national industrialization agenda and livelihood improvement. The sector has relatively great potential on promoting both rural and urban development. In addition, it has significant contribution to employment creation, Gross Domestic Product (GDP) and fiscal revenues. REVIEW OF SIGNIFICANT TRADE IN SPECIMENS OF APPENDIX II SPECIES [(RESOLUTION CONF. 12.8 (REV.COP 18)] RESPONSE FROM THE UNITED REPUBLIC OF TANZANIA ON DALBERGIAMELANOXLON OSYRIS LANCEOLATA, August 2023 *Dalbergia melanoxylon* Guill. & Perr. being among the tree species harvested within the natural forests has also significant contribution to the national economy. (RST, 2023) From the perspective of conservation impact, it appears that the trade for D. melanoxylon, based on the exemptions for finished musical instruments, finished musical parts and finished musical instrument accessories related to the species have a low impact. It is also determined that the harvest and processing of trees for a high-end use is the most beneficial to the value chain. Having said this, there is a relatively high conservation impact of that process to produce an individual instrument such as a clarinet. It is determined that there are benefits for conservation from the trade which are outlined in the RST, 2023 as well as in interviews throughout the value chain. Without the trade there would be less value in conserving the species. The raw materials or unfinished products still require a CITES export permit, and based on this study, the focus and investment should be increased to build capacity at the range state level.
Distribution in Target Country	The species is widespread and occurs in multiple sub-Saharan countries (Barstow, 2020).

	 Despite its wide distribution, it is only in East Africa that the tree reaches harvestable sizes in abundance great enough to be commercially viable; this has led to exhaustion of commercial stocks in Kenya, with most timber from the species now coming from Mozambique and Tanzania (Ball, 2004). (CITES report on rosewoods, 2023) For the purpose of the Decision 18.321 case study, the focus will be on the aspects of distribution in Tanzania. 
IUCN Listing	*Dalbergia melanoxylon* has most recently been assessed for The IUCN Red List of Threatened Species in 2020 and is listed as globally Near Threatened under criteria A2cd+3cd+4cd (Barstow, 2020)
Non-detriment finding (NDF)	A Non-detriment finding (NDF) was presented in 2023 as part of *REVIEW OF SIGNIFICANT TRADE IN SPECIMENS OF APPENDIX II SPECIES [(RESOLUTION CONF. 12.8 (REV.COP 18)] RESPONSE FROM THE UNITED REPUBLIC OF TANZANIA ON DALBERGIA MELANOXLON OSYRIS LANCEOLATA, AUGUST 2023, DODOMA*

	The outcome of the NDF was considered positive for *D. melanoxylon*. (TZ Response RST, 2023)
Key Conservation Concerns	**1. Distribution:** A series of studies on the distribution of the species between 2001 and 2016 show the majority have unstable populations, unsustainable harvest, and poor recruitment in both protected and unprotected areas (a reference to studies collated by Winfield et al., 2016 in UNEP-WCMC, 2017). The data from the Response from Tanzania to Review of Significant Trade (TZ Response RST, 2023) counters this assumption that the "population is unstable."

Table 4.2 Distribution of number of stems and volume (m3) of *Dalbergia melanoxylon Guill & Perr*, in Tanzania (TZ Response RST, 2023)

SN	Dbh Classes (cm)	Number of Stems	Volume (m^3)
1	0-9.9	1,215,080,157.55	6,240,975.36
2	10-19.9	81,840,477.37	6,798,682.73
3	20-29.9	16,799,976.82	4,624,834.12
4	30-39.9	3,293,232.19	2,146,496.06
5	40-49.9	1,350,005.68	1,469,865.33
6	50-59.9	389,156.79	638,362.44
7	60-69.9	106,572.53	279,113.41
8	70-79.9	74,178.58	283,968.02
9	80-89.9	92,250.28	458,698.80
Total		**1,319,026,007.79**	**22,940,996.28**

Table 4.3 – DBH of *Dalbergia melanoxylon Guill & Perr*, in Tanzania (TZ Response RST, 2023)

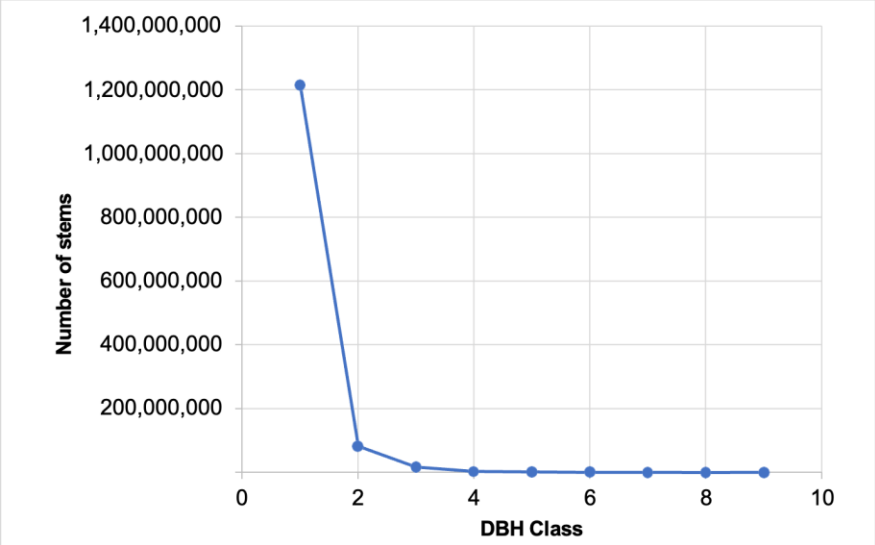
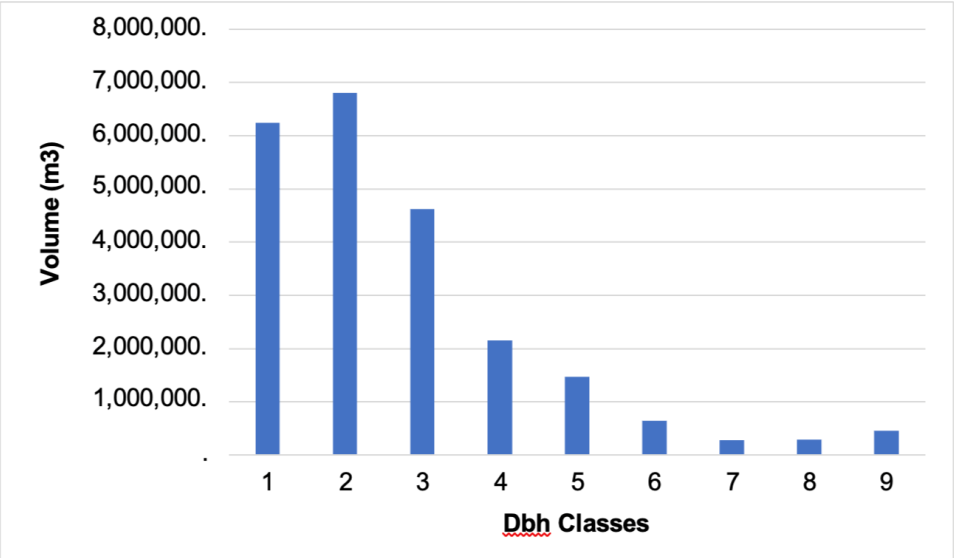


Table 4.4 – Volume m3 *Dalbergia melanoxylon Guill & Perr*, in Tanzania (TZ Response RST, 2023)



According to the National Forest Regulations (URT, 2004), minimum harvestable tree diameter is 24 cm, therefore referring to (Table 2.5. from the RST), diameter class from 20 - 29.9 cm and above are recommended for harvesting. This depicts that there is enough harvestable wood in Tanzania.

However, the Medium Diameter Exploitable (MDE) of 24cm is probably too low and there is no annual quota assigned to the data. The inventory might be overestimated for larger diameter trees which are becoming rarer based as the trade demand increases versus the ability of the species to have a sustainable recovery period.

2. **Growth Rates:**
   The species is generally slow-growing, and it's been estimated it would take 70-100 years for the tree to be large enough to yield a fair amount of heartwood (Lemmens, 2008). Rotation rates are said to be up to 200 years in unmanaged forests, and 50-80 years under intensive management (Malimbwi et al., 2000) (CITES report on rosewoods, 2023)

3. **Diseases and Environmental Threats:**
   Threats documented by Winfield et al (2016) from various sources include diseases (specifically the heartwood being susceptible to fungal rot after fire damage), forest fires and predation (specifically from beetles and herbivores). (CITES report on rosewoods, 2023)

4. **Over Exploitation:**
   The IUCN Red List assessment states the species shows poor regenerative abilities, is subject to high rates of exploitation (particularly in Mozambique and Tanzania) and is also threatened by habitat decline across its range. It is thought likely to continue declining at a rate of 20-30% in the next 100 years, although some 'unmerchantable' trees will remain in the species' habitat, making declines greater than this unlikely.

5. **Legal Protections:**
   Legislation of the species-protected status is poorly enforced in some countries, with the species illegally harvested. Logging of commercial-sized trees can impact regeneration due to the loss of mature trees, and although the natural rotation is said to be 100 years, most rotations used are thought to be shorter than this e.g., 60-80 years (Barstow, 2020). (CITES rosewood report, 2023)

Illegal Trade	Illegal trade in Tanzania is considered to be low. (RST, 2023)

<table>
<tr><td></td><td>The infrastructure to process D. melanoxylon is very limited. (Nakai, 2021) This would be considered hard to bypass to export illegal timber but there are reports of illegal harvesting in hard to monitor common forest areas where no permit is required for subsistence activities. The wood from these illegal harvests is destined for export markets.</td></tr>
<tr><td>Management Authority and Scientific Authorities</td><td>Tanzania Forestry Research Institute (TAFORI) is the Scientific Authority for Plant Species as provided for under the Wildlife Conservation (CITES Implementation) Regulations of 2018 is responsible for leading development of NDFs and other reports for CITES Appendix II species.</td></tr>
<tr><td>Forest Governance</td><td>In accordance with the National Forestry Policy of 1998, the Forest Act No. 14 of 2002 provides the legal framework to implement the National Forest Policy. Together with other objectives stipulated in the Act, the Forest Act (2002) aims to encourage the principles of sustainability in connection with the harvesting of forest produce. The Act obliges the establishment of forest management plans for all types of forests to ensure sustainable management in the long term.

The legal bases under the Forest Regulations (2004) and the Government Notices made under Section 106(1) of the Forest Act, regulate harvesting and export of some tree species including Dalbergia melanoxylon except Osyris lanceolata which was banned since 2004 through Government Notice Number 335 of 10/09/20283 (Annex I). (RST, Ministry of Natural Resources and Tourism (MNRT) 2023)

Table 4.5: Forest tenure arrangements in Tanzania

<table>
<tr><th>Tenure Holders</th><th>Area (ha) * 1000</th><th>Percentage (%)</th></tr>
<tr><td>Central Government</td><td>16,610.60</td><td>34.5</td></tr>
<tr><td>Local Government Authorities</td><td>3,107.40</td><td>6.5</td></tr>
<tr><td>Village Governments</td><td>21,975.10</td><td>45.7</td></tr>
<tr><td>Private Sector</td><td>3,515.90</td><td>7.3</td></tr>
<tr><td>General land (unreserved forests)</td><td>2,881.70</td><td>6</td></tr>
<tr><td>Total</td><td>48,090.70</td><td>100</td></tr>
</table>

Table 4.6 – Relevant Laws and Requirements
<table>
<tr><th>Relevant Laws and Requirements</th><th>Descriptions</th></tr>
<tr><td>National Forestry Policy of 1998, the Forest Act No. 14 of 2002</td><td>provides the legal framework to implement the National Forest Policy

PART II
Felling, removal and transportation of timber or other forest produce.

PART V
Procedures and conditions for the application, grant, variation, refusal, extension or cancellation of licenses, permits or certificates.

PART VI
Procedures for application and grant of concessions

PART VII
Fees for any license, permit or certificate.

PART VIII
Sale and disposal of forest produce by tender, public auction, private agreement or otherwise.</td></tr>
</table>
</td></tr>
</table>

	PART X Restriction of entry of persons, animals or vehicles into a forest reserve. PART XII Compulsory Use of Registered Marks by Authorized officer and License Holders PART XV Regulation on the Export of Forest Produce PART XVIII Provisions for the Registration and Payment of Fees of All Dealers of Timber and Forest Produce (sawmills)
Forest Regulations (2004) and the Government Notices made under Section 106(1) of the Forest Act	regulate harvesting and export of some tree species including Dalbergia melanoxylon.
Form No. FD 1 (made under regulation (3))	FORM OF APPLICATION OF A LICENCE TO FELL AND COLLECT FOREST PRODUCE IN A FOREST RESERVE
Form No. FD 2 (made under regulation (3))	LICENCE TO FELL AND COLLECT FOREST PRODUCE IN A FOREST RESERVE
Form No. FD 3 (made under regulation 13)	**TRANSIT PASS FOR FOREST PRODUCE**
Form No. FD 11 (made under regulation 24 (1))	APPLICATION OF CONCESSION OF LAND WITHIN A FOREST RESERVE
FOURTEENTH SCHEDULE (made under regulation 29 (1))	SCALE OF FEES FOR PERMIT OR LICENCE OR CERTIFICATE FOR FELLING TREES AND COLLECTING FOREST PRODUCE PART I pg. 41 CLASSIFICATION OF TREE SPECIES Class 1 Botanical Name Trade or Vernacular Name Dalbergia melanoxylon - E.A. Blackwood, mpingo, mugembe PART II pg.42 FEES, TREE VOLUME TABLES AND TARIFF TABLES Item 1: Logs Classes Fees per cubic meter (True measure over bark) Class I = 70,000.00 Shs.

TWENTY FIFTH SCHEDULE (made under regulation 50 (2))	HARDWOOD TIMBER GRADING pg. 56
Form No. FD 22 **(Regulation 50 (12) (a))**	TANZANIA CERTIFICATE OF GRADING TIMBER
Form No. FD 23 **(Regulation 50 (12) (d))**	APPLICATION FOR TIMBER EXPORT CERTIFICATE
Form No. FD 24 **(Regulation 50 (12) (e))**	TANZANIA EXPORT CERTIFICATE
Form No. FD 28 **(made under regulation 53 (3))**	LICENCE FOR TIMBER DEALING
Form No. FD 29 **(made under regulation 53 (9))**	APPLICATION OF A LICENCE TO ERECT OR OPERATE A SAWMILL OR BOTH
Form No. FD 30 **(made under regulation 53 (9))**	LICENCE TO ERECT/OPERATE A SAWMILL/TIMBER TREATMENT PLANT
Form No. FD 32 **(made under regulation 53 (11))**	QUATERLY RETURNS OF ACTIVITIES AT LICENSED SAWMILL/TREATMENT PLANT Name of Produce Opening Stocks on …… Materials Received Materials used Stocks used/ Sold Stock balance
Form No. FD 34	CERTIFICATE OF REGISTRATION OF FOREST PRODUCE DEALER/TRADER

Harvest Management Measures

The National Forest Policy of 1998 and the Forest Act No.14 of 2002 together with associated regulations guide the forest sector in Tanzania. These two important forest governance instruments recognize Participatory Forest Management (PFM) as a strategy to achieve sustainable forest management through encouraging the management or co-management of forest and woodland resources by the communities living closest to the resources. (RST, 2023)

1. **Forest Management Plans:**
   PFM in Tanzania comes in two main types of namely Joint Forest Management (JFM) and Community-Based Forest Management (CBFM). Whereas JFM involves the co-management of Forest Reserves between government, which may be either the TFS or District Councils, and forest adjacent villages, CBFM is realized where local villages, or sub-groups within the village, are the sole forest owners and managers by virtue of establishing various forms of communally or privately reserved forests on village lands.

   Forest management plans and harvesting plans are the documents used to monitor harvesting/trade of the species. The Forest Harvesting Plan is where the allowable cut (harvesting quota) is indicated for each year. (RST, 2023)

2. **Village Land Reform Reserves (VLFR):**

There are different types of land resource management with Village Land Reform Reserves (VLFR) playing an important role in socio-economic development and natural resource conservation. This includes access for villagers to collect Non-timber Products (NTFP) and subsistence wood for firewood. The management of commercial timber is a key role for the VLFR purposes.

A sample forest management plan from the Kilwa District Council was reviewed for the case study.

Forest Management Plan for Ngea Village Land Forest Reserve**,** TAREHE 08 JANUARI 2017.

The plan has been developed by the Village Natural Resource Committee of Ngea, with the technical support of forest officers and other facilitators from Kilwa District Council working under the national PFM Programme and the Mpingo Conservation Project. This is a five-year plan. (FM Plan Ngea VLFR, 2017)

The forest reserve was created for the purposes of harvesting sustainably timber, non-timber products and other forest resources with an overall goal to maintain the forest in its present condition and improve community livelihoods for current and future generations.

Basic goals and description of forest are - *Natural forest subject to non-intensive selective logging with enrichment planting.*

This is a five-year plan. It will be reviewed by the Village Natural Resources Committee during the end of its 2nd year of operation or at any time when there is a need to do so. No significant changes to this plan are permitted unless they are approved by a meeting of Kilwa District Council.

Here and below a list of forest resources to be managed.

- A large number of tree species are present in the VLFR. Valuable timber trees include Mpingo (*Dalbergia melanoxylon),* Mtondoro (*Julbernardia globiflora*), Mninga Jangwa (*Pterocarpus angolensis*), Mpangapanga (*Millettia stuhlmannii*), Mkongo (*Afzelia quanzensis*), Mpingo (*Dalbergia melanoxylon*), Mtanga, Mnepa, Mwembeti and Msonobari. (FM Plan Ngea VLFR, 2017) Statement of Participatory Forest Resource assessment of the Kisangi Forest.

Table 4.7 - Species inventory (FM Plan Ngea VLFR, 2017)

Species	**No of green trees**	**No of blue trees**	**Volume for harvest(m^3)/5 year**	**Volume for harvest(m^3)/1 year**
Mchenga	184	0	269	54
Miombo	194	0	259	52
Mninga jangwa	260	0	374	75
Mpingo	341	0	140	28
Mtondoro	896	0	1904	381
Mseni	96	0	249	50
Mkongo	41	0	82	16

Legal Acquisition Process	Tanzania has a documented legal acquisition process, outlined through the official laws and acts above. The procedures include permit approval for management, harvesting, transporting, processing and exporting forest products, including *D. melanoxylon.* The enforcement tools available includes check points on roads, log trucking systems, Antipoaching Unit, as well as the Joint Port Control Unit (JPCU). There is also Forest Surveillance Unit (FSU) that oversees enforcement of forest and beekeeping policy, law and regulation within TFS jurisdictions as per Agency Establishment Order of 2010 CAP 245 R.E.2022. (RST Pg. 6, 2023)

Value Chain	The value chain for *D. melanoxylon* is similar to other high value species being produced for musical instruments. The value chain is critical for the economic well-being of the participants and quality management. Value chain of *Dalbergia melanoxylon Guill. & Perr*. includes different people within different social groups who are directly or indirectly involved including youths, women, marginalized and disabled social group of which all of them earn income within the value chain of *Dalbergia melanoxylon Guill. & Perr.* (RST, 2023) For *Dalbergia* species, it is usually a short supply chain from log harvest, processing to export. Like India, there are only a few participants in the supply chain before the materials are sold directly to the importer and manufacturer of the instrument. Tanzania has a very structured set of applications that are required for these supply chain steps. There are only a few sawmills with the equipment and knowledge to cut the logs into high value semi-finished parts. The value of the wood and the expertise needed to mill it creates value Tanzania, but the finished product is produced outside of the country in the country of import for example France or the United Kingdom. (Makala, 2024) Diagram 4.7 – Sample Value Chain 
Processing and Export	Based on interviews with Executive Director of the Mpingo Conservation and Development Initiative, Jasper Makala, there are only two major mills that have the capacity to process *D. melanoxylo*n with the quality management skills for export. The two mills are Mahmood International and Mingoyo Sawmill. (Makala, 2024) The general characteristics of *D. melanoxylon* trees have been reported: average height, 5–7 m; multi-stemmed with a bole circumference normally < 120 cm; and irregularly shaped crown [5, 20]. Small trees tend to cause serious problems in the operation of sawmills due to lateral twists, deep fluting, and knots including cracks [21]. Such defects may affect the general performance of musical instruments. For example, the internal surface condition of the wood can impact acoustic attenuation in the cylindrical resonators of woodwind instruments [22]. As a result, sawmills can generate only a small amount of timber of the necessary quality, with an actual timber yield of 9% [23]. Meanwhile, intensive harvesting has induced a social concern about the sustainability of D. melanoxylon resources. This inefficient utilization has made *D. melanoxylon* one of the most highly priced timbers in the world, with a market rate of US$14,000–20,000 per m3. (Nakai and Yoshimura, 2020)

	C: Other fees payable on services provided in forest reserves pg.45 Item 1: License to establish and operate other businesses in forest reserves and plantations. (i) Sawmill capacity of up to 5,000 m3/yr. shall be sh. 100,000/- per unit as establishment fee and 50,000/= per year as operation fee. (ii) (ii) Sawmill capacity of between 5,001 – 10,000 m3/yr. shall be sh. 150,000 per unit as establishment fee and 75,000/= per year as operation fee. (iii) (iii) Sawmill capacity of more than 10,000 m3/yr. shall be 200,000/= per unit establishment fee and 100,000/= per year as operation fee.
Forest Certifications	Sustainable forest management is a primary goal of the 2022 Forest Act. Third party forest certification is voluntary. Forest certification under the Forest Stewardship Council (FSC) has been achieved by Mpingo Conservation & Development Initiative (MCDI). https://www.mpingoconservation.org/
Artificial Propagation	Currently, there is no commercially available wood from artificial propagation. Key conservation and research programs are underway to understand key traits and properties that might be replicated through genetic and anatomical trials. There are programs for planting trees which are explained in the following section but as the tree is slow growing, it will take concerted efforts to develop a commercial plantation for *D. melanoxylon* that would relieve pressure from “wild” harvest. We think that sustainable and healthy forest should be based on sustainable wood utilization. As mentioned earlier, *D. melanoxylon* is an endangered species, and thus plantations with proper management must be undertaken in near future, together with novel approaches for the effective utilization of currently unused parts of the trees. The results obtained in this study may contribute significantly to the sustainable production and utilization of this precious timber resource. (Nakai and Yoshimura, 2020)
Investment in Conservation (i.e. private or public sector projects) Plantation or Natural forest studies or actions)	There are several NGOs that have direct investment in conservation and forest management programs in Tanzania. **1. Mpingo Conservation and Development Initiative (MCDI)** Currently, the local NGO, MCDI, is working for sustainable forest conservation based on a Forest Stewardship Council (FSC)-certified forest in the southern part of Tanzania, Kilwa district, Lindi. (Makala, 2024)



Photos courtesy of MCDI of nursery, planting and harvesting.

MCDI focuses on a Participatory Forest Management system (PFM), which acts as a basic legal facilitator for Reducing Emissions from Deforestation and forest Degradation, plus the sustainable management of forests, and the conservation and enhancement of forest carbon stocks (REDD +). It gives local communities control and ownership of their local forest resources, including timber, through demarcated village land forest reserves (VLFRs), which would otherwise be controlled by the government [13, 14]. Its contribution to controlling illegal logging can also lead to improved local community forestry.

D. melanoxylon has become one of MCDI's most important species, not only in terms of historical utilization [15–17], but also for income generation. (Nakai and Yoshimura, 2020)

MCDI has been supported by multiple sectors from research for PhDs, Environmental NGOs World Wildlife Fund (WWF) as well as private sector companies working to build capacity for commercial market access for a range of species.

2. African Blackwood Conservation Project

African Blackwood Conservation Project (ABCP) is another program and has been an active NGO promoting and planting African blackwood (*Dalbergia melanoxylon*) in Tanzania. (Harris, 2024)

The ABCP was founded in 1996by Sebastian Chuwa (now deceased), a botanist from the Kilimanjaro Region of Tanzania, and James Harris, a woodturning artist from the USA. They were brought together by a television program produced by the BBC in 1992 entitled "Mpingo-The Tree that Makes Music."

	 Photos courtesy of ABCP website: www.blackwoodconservation.org/the-project/ The NGO is supported by multiple companies as well as musical instrument associations, including Buffet Crampon, CSFI, Henri Selmer and others to increase support for conservation education and planting programs of *Dalbergia melanoxylon*.
Conservation Impact Analysis	The case study focused on the management structures in the Republic of Tanzania in order to analyze the conservation impacts from annotation #15 exemptions. *D. melanoxylon* is used in traditional carvings and parts for musical instruments and Tanzania has been a traditional source for both. The exemptions in annotation #15 for paragraph b) and c) are important regulatory factors for the trade from Tanzania and the other range states, primarily Mozambique. *Dalbergia melanoxylon* is one of the most valuable timber species in the world per cubic meter. The value to the musical instrument industry and the analysis from the trade trends in Output 1 and the case study indicate the economic importance of the species throughout the value chain. The use of the species traditionally for woodwind musical instruments and for carvings is unique as there are few alternatives to the aesthetic and technical properties that are inherent in *D. melanoxylon.* The case study highlights the importance of *D. melanoxylon* throughout the value chain, the low-density distribution and the slow growing nature of the species collectively are fundamental challenges to conservation and sustainability. Taking the challenges of single species importance and conservation challenges into consideration, there have been very specific concerns indicated by international conservation organizations such as WWF and by CITES Parties on the sustainability and management structures that regulate the species at the range state level. These concerns include yield from commercial processing, overharvesting to meet international demands and weak governance to manage the species as CITES requires. Tanzania produced an NDF in its Response to Significant Trade review that outlines the legal and management structures for regulating *D. melanoxylon.* The report was very useful when reviewing and comparing an actual Village Land Reform forest management plan. The NDF report outlines the inventory management process for creating a quota for harvest but does not actually set a national annual quota. The NDF does comprehensively detail the national inventory which indicates a healthy population and volume of *D. melanoxylon*. The NDF report outlines the inventory management process for creating a quota for harvest and sets the MDE at 24cm and expresses the harvestable volume based on a national inventory. There needs to be a more specific regional or concession based annual quota similar to the forest management plans required for commercial and community concessions. The MDE of 24cm or even the recommended 29cm is probably too low to have a sustainable recovery rate compared to the pace of demand for the species for the musical instrument industry.

	The VLFR management plan does include an annual harvesting quota and the legal procedures for following the plan. This was reviewed as a key tool to examine harvest areas and inventory management systems for this case study. The CITES Rosewood report raises a number of conservation concerns but does not evaluate the NDF for growth rates and inventories. Nevertheless, the concerns are fairly universal that management practices need clarity and there needs to be more transparency on data reporting particularly for yield calculations from harvesting and processing. Interviews and literature reviews for the case study show that the volume for producing finished musical instruments is fairly low in comparison for total trade. But is necessary to compare this with regards to yield at 10-20% from the primary processing. The volumes might be low, but the yield is very low as well. There is a need to increase investment into a range of conservation programs including continuing to review the NDF and close information gaps. There is a need to increase correlated reporting on finished products and exports of raw materials or semi-processed parts. There is also a need to increase reforestation, traceability and sustainable forest management programs directly in areas of harvest. The conclusion from the trade trends of Output 1 and the case study from Output 2 is that exemptions in annotation #15 paragraph c) *Finished musical instruments, finished musical instrument parts and finished musical accessories*, are fairly low impact on conservation of the species. Regulating the finished product would not add a significant benefit to managing the species sustainably. As with any of the other species being analyzed through these case studies, it is important to understand that where the product is finished and the total value chain. Output 1 and Output 2 demonstrate that finished musical instruments with inputs of CITES listed species are not typically finished in the range state country. The point that a single finished musical has a high impact on the conservation of the species is quantified through the volume of wood that making one instrument requires. This is particularly relative to the need to address conservation impact mitigation in the value chain and the demand for a single species. This conclusion is determined with the consideration that more reporting on finished product volumes and yields would be helpful to increase capacity for CITES and the range state to regulate the management with better data. The conclusion takes into consideration that the producers and market for high end finished musical instruments are in a unique position to have an almost direct supply chain and that this provides an opportunity to increase investment in direct areas where D*. melanoxylon* is being harvested in concessions, by permit or in a VLFR. These opportunities are being developed through a few of the outlined investments in the case study, but it is critical to increase incentives for sustainable management from the private sector that is benefiting from using the resource.

2.3.3. A case study for Central South America and the Caribbean, focused primarily on *Dalbergia retusa* from Nicaragua, including background or reference information on *Dalbergia stevensonii* and *Dalbergia tucurensis.*

Description	Findings
Types of Products made from the species	*Dalbergia retusa*, commonly known as "cocobolo," is a tropical hardwood species native to Central America. This species is valued for its dense, hard, and visually striking wood, which is highly sought after in various industries. The types of products made from *Dalbergia retusa* include:

	- **Musical Instruments**: Due to its tonal qualities and durability, cocobolo wood is often used in the crafting of high-end guitars, clarinets, and other woodwind instruments (Smith et al., 2015). - **Luxury Furniture**: The rich color and natural luster of cocobolo make it a popular choice for high-end, handcrafted furniture (Gilman, 2013). It is one of the most valued species for manufacturing Hongmu furniture. - **Woodturning and Fine Handcrafts**: *Dalbergia retusa* is frequently used for making fine bowls, handles, and other artisan products that emphasize the aesthetic grain of the wood (Tropical Timber Atlas). - **Cutlery Handles**: The durability and finish of the wood also make it ideal for luxury knife and cutlery handles. - **Jewelry and Small Decorative Items**: Its rarity and beauty have led to its use in small, detailed items like jewelry and inlays (Clark et al,, 2012). - **Firearms Grips**: Its strength and aesthetic qualities make it a favored wood for crafting grips for firearms (Jones, 2014). Specific products made from *Dalbergia tucurensis* and *Dalbergia stevensonii* are the following> ***Dalbergia tucurensis*:** 1. **Musical Instruments***: D. tucurensis* is very similar to *D. retusa* in tonal and aesthetic characteristics that are desired for high end guitars. (Hearne, 2024) 2. **Furniture and cabinetry**: This species is known for its use in fine furniture and cabinetry, owing to its attractive grain patterns and durability (Richter et al., 1996). 3. **Veneers**: *Dalbergia tucurensis* is also used in veneers due to its high workability and decorative appearance (Richter et al., 1996). ***Dalbergia stevensonii*:** 1. **Musical Instruments**: This wood is highly valued for making musical instruments, particularly marimbas and xylophones due to its tonal quality and resonance (Espinoza et al., 2015). It is also popular in very small volumes of high-end guitars. 2. **Fine Woodturning**: Due to its density and strength, *Dalbergia stevensonii* is often used in woodturning for creating high-end decorative items (Donnelly et al., 1973). 3. **Inlays and fine crafts**: The wood's fine grain makes it a popular choice for inlay work in high-end furniture and decorative objects (Espinoza et al., 2015).
Prevalence of Species to Trade – percent or combination of use as relates to Finished Musical Instruments	The prevalence of *Dalbergia retusa* (cocobolo) in trade is primarily driven by its highly valuable and figured wood, which has led to significant exploitation. It is considered an endangered species, and its trade is regulated under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), particularly due to concerns of overharvesting for luxury products - not just musical instruments as the lists of Dalbergia spp. from Central and South America and the Caribbean indicate above. Due to the rarity and regulatory controls on *Dalbergia retusa*, the total trade is considerably limited, and much of it occurs in high-end, artisan markets. While a significant percentage goes toward high-end furniture - The species is recognized as a Hongmu species in China's National Hongmu Standard (Zhang and Kin Keong, 2022) and fine handcrafted objects, including bowls, sculptures, and inlays, in a more limited percentage, the species is used also for manufacturing musical instruments. From the data correlations made for species such as *Dalbergia latifolia* and their prevalence in the manufacture of musical instruments, such as guitars, or the percentage of volume of *Dalbergia melanoxylon* used in the production of clarinets, with very small weights compared to the volumes traded globally, we found that the Mesoamerican *Dalbergia spp.* also have a low share of use in the manufacture of musical instruments,

compare to uses in other industries. The use in musical instruments compared to other *Dalbergia* species use such as *D. latifolia*, is very low. (Platts, 2024)

Stakeholder consultations indicate that volumes of *Dalbergia spp.* from the region destined for musical instruments are very low:

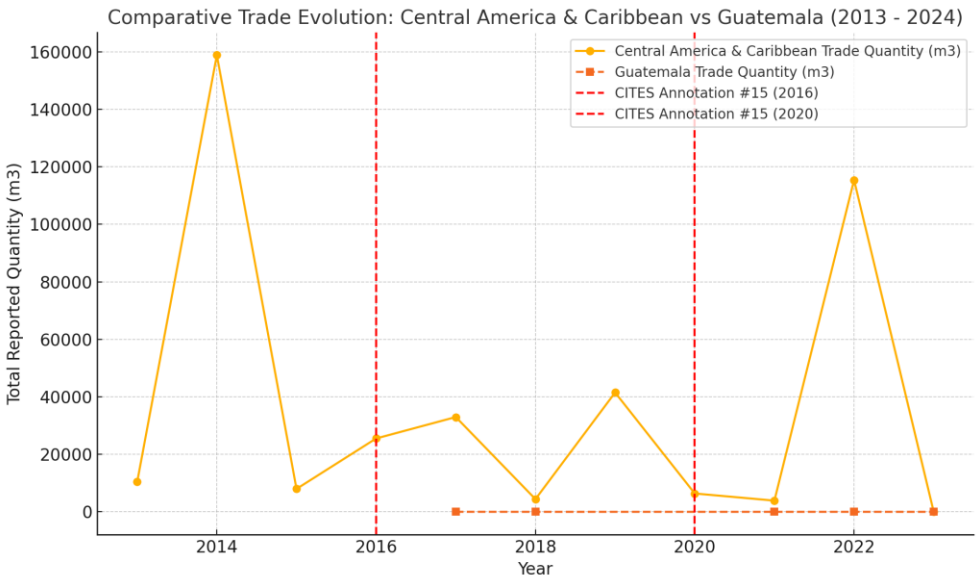
- Hearne Hardwoods imports into the United States on average three forty-foot containers of lumber a year from Nicaragua of *Dalbergia retusa and Dalbergia tucurensis* which = 80m3 per year. Most of this wood is destined for guitar making. (Hearne interview, 2024)
- CF Martin purchased and used the following volumes of *Dalbergia retusa and Dalbergia tucerensis - since 2012.* The purchases would be for veneer level processed Back and Side material. This would be considered 6mm and lower and ready for sanding for a finished product.

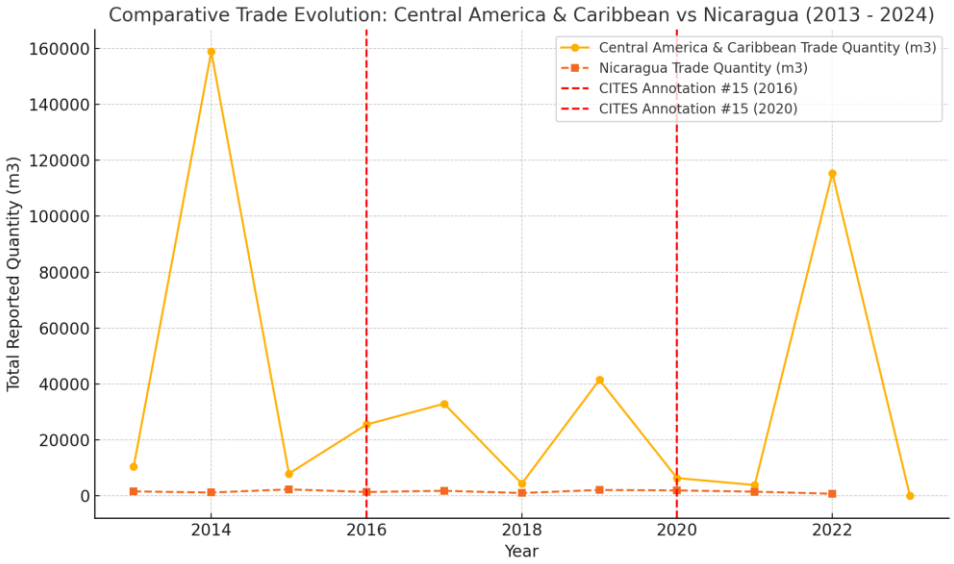
Dalbergia retusa since 2013	
Purchased	3.965 Cubic Meters
Used	3.248 Cubic Meters
Inventory	0.717 Cubic Meters

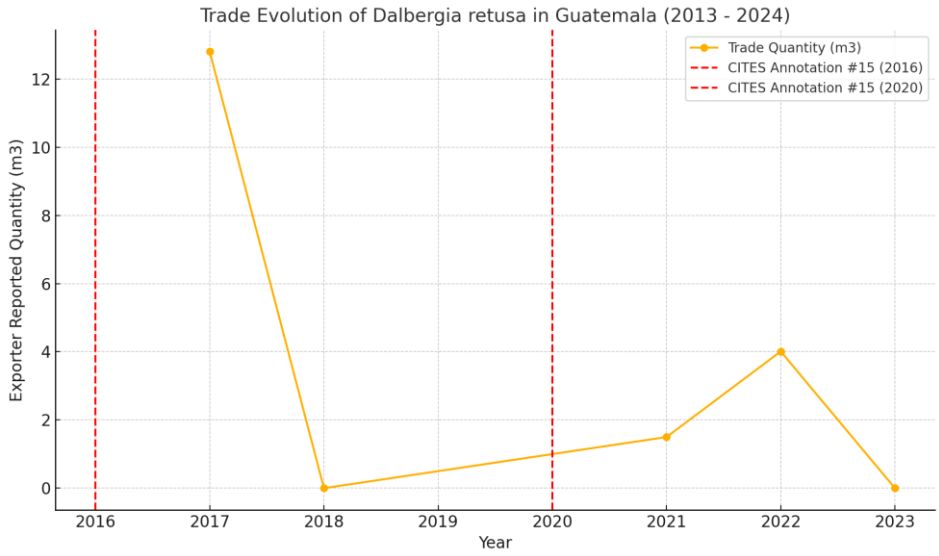
Dalbergia tucurensis since 2012	
Purchased	11.255 Cubic Meters
Used	3.446 Cubic Meters
Inventory	7.809 Cubic Meters

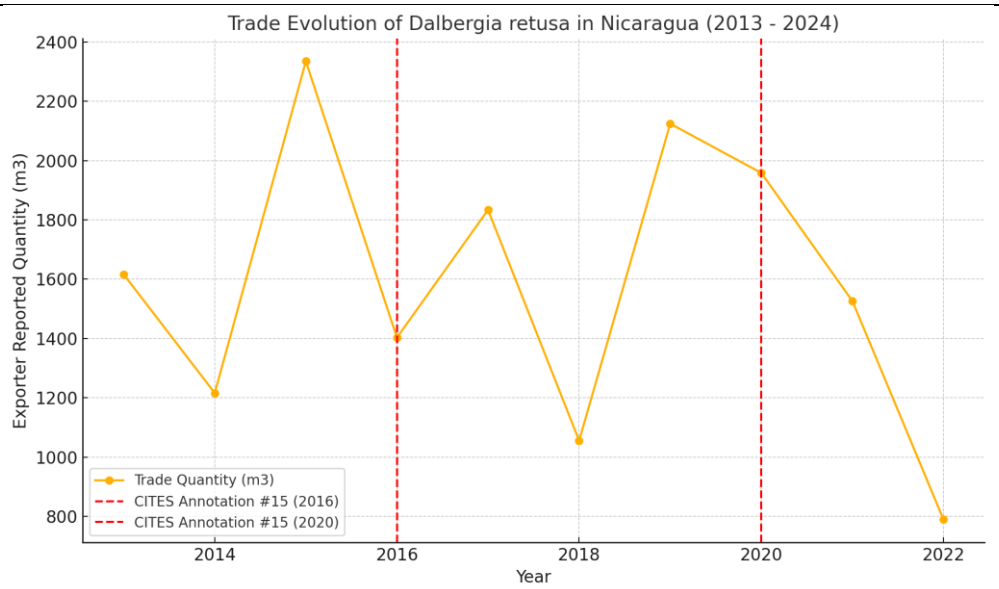
The examples are not the total volumes exported of wood from the regions under study but provide a necessary look at what the volumes of the timber and musical instrument industry use in a year.

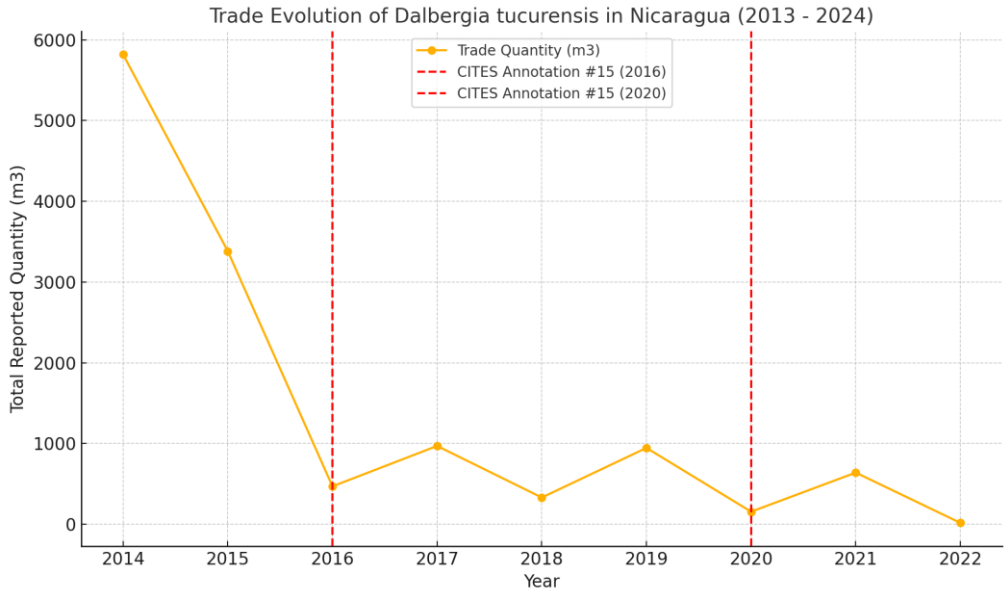
The following charts are derived from the CITES Trade Database for the trade trends from 2013 – 2024 and for the time frames of annotation #15 CoP 17 in 2016 and after the amended annotation #15 CoP 18 in 2019. The goal is to show the comparison for analysis.




Comparative Trade Evolution: Central America & Caribbean vs Nicaragua (2013 - 2024)
Central America & Caribbean Trade Quantity (m3)
Nicaragua Trade Quantity (m3)
CITES Annotation #15 (2016)
CITES Annotation #15 (2020)
Total Reported Quantity (m3)
Year


Trade Evolution of Dalbergia retusa in Guatemala (2013 - 2024)
Trade Quantity (m3)
CITES Annotation #15 (2016)
CITES Annotation #15 (2020)
Exporter Reported Quantity (m3)
Year



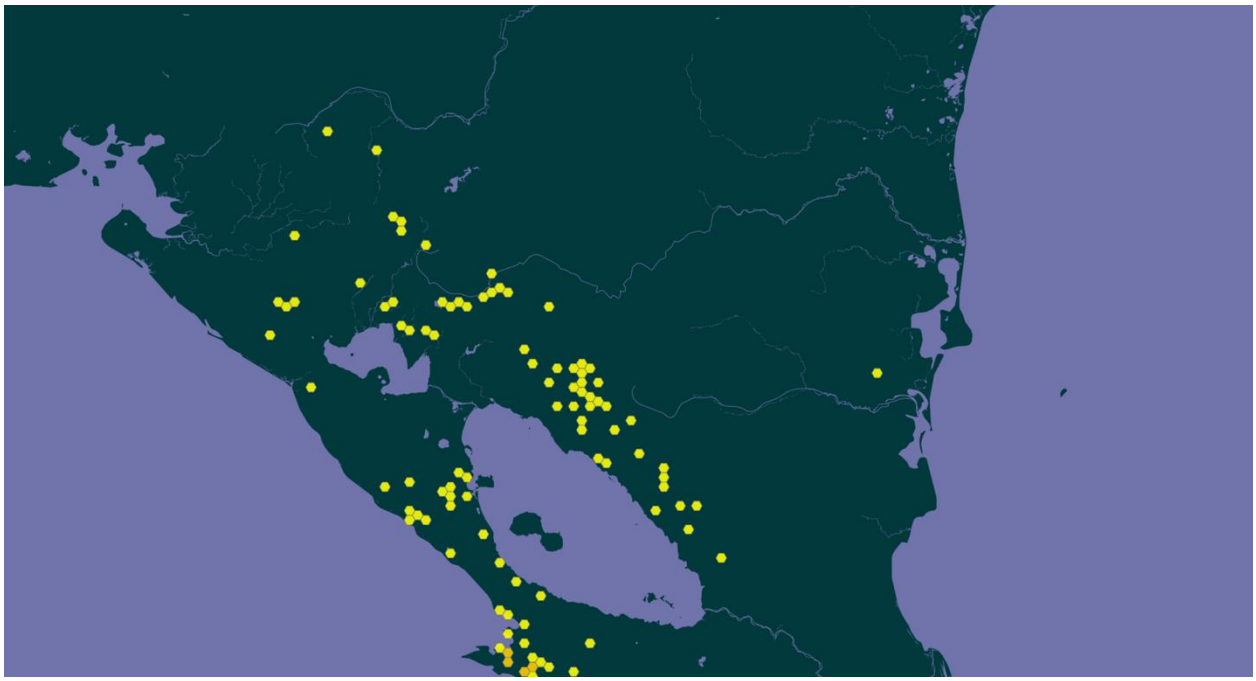


Distribution in Target Country	**<u>Central America and Caribbean</u>** The species Dalbergia retusa is native to Belize, Colombia, Costa Rica, Guatemala, Honduras, Nicaragua, Panama and el Salvador (CITES *Dalbergia* Checklist, 2022). These countries are part of its natural range, typically growing in dry tropical forests, lowland areas, and at elevations below 500 meters. The species thrives in areas with well-drained soils and is typically found near rivers or along hillsides in these regions. --- **<u>Nicaragua</u>**

The distribution of *Dalbergia retusa* in Nicaragua is primarily in semi-evergreen forests, humid and dry forests, savannas, gallery forests, seasonally flooded areas, and on rocky, dry slopes in both the Pacific and Atlantic regions, at elevations between 20 and 800 meters above sea level (Stevens et al., 2001).

Specific areas where it is known to grow include regions near the **Río San Juan**, **Chinandega**, and **Rivas**, which are known for drier climates compared to the Atlantic coast. The species is considered vulnerable due to overexploitation for its valuable wood, making its presence more limited in Nicaragua compared to previous decades.

In Nicaragua, this species is typically found in a variety of environments Although it is frequently associated with riparian habitats, floodplains, inter-riparian areas, and wetlands, this suggests the species can thrive in diverse climatic conditions, experiencing precipitation levels between 900 and 4,000 mm and temperatures ranging from 24 to 32°C. It also tolerates a wide range of soil types, varying in texture, drainage, and fertility, with pH levels from neutral to very acidic, adapting to environments from flat plains to rocky slopes.

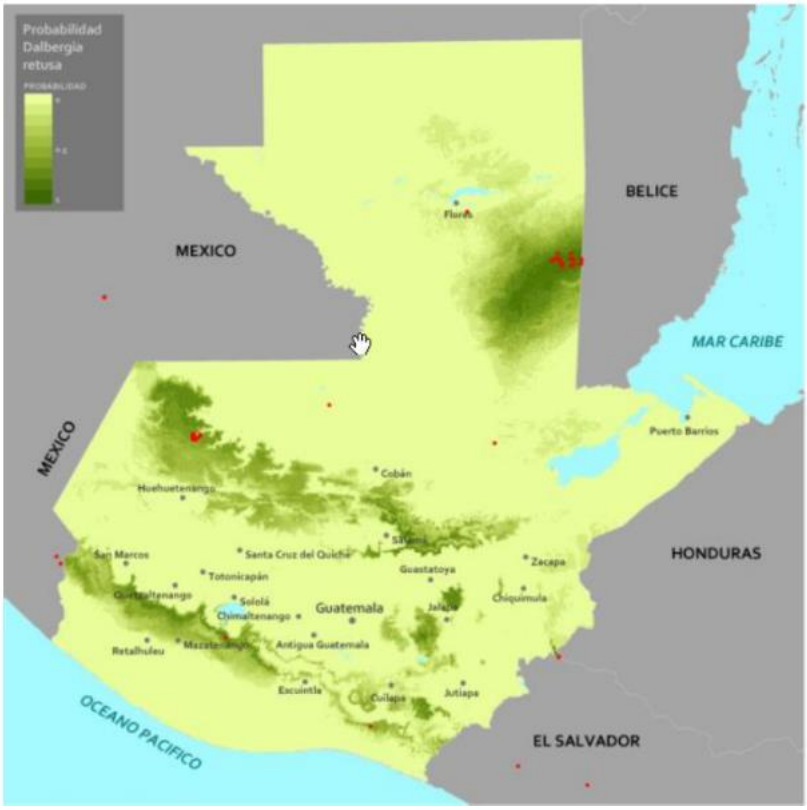


Map of Distribution of *D. retusa* in Northern Mesoamerica (Source: https://www.gbif.org/species/2968539)

Guatemala

The species is distributed in the Pacific coastal plain of Guatemala - the Boca Costa region, which is filled with alluvial deposits composed of andesite and sands. It is also found in the departments of Santa Rosa, Escuintla, and Suchitepéquez, in the life zones of Subtropical Very Humid Forest (warm) and Subtropical Humid Forest according to Holdridge modified by De la Cruz (1982) at altitudes ranging from 200 to 500 meters above sea level, in topographies ranging from flat to very steep. In general, it is very difficult to locate due to the logging it has suffered (Herrera Sosa, M. E. et al., 2016).

In Guatemala, a comprehensive research project was conducted between 2014 and 2016, titled "Inventory of Dalbergia species in natural occurrence areas of Guatemala." The project focused on natural occurrence models based on presence and absence, with forest cover stratification. It included plot surveys, botanical sample collection, and data analysis, following a logical order to understand all necessary parameters of distribution and abundance, revealing the main results. Isolated trees are found in pasture areas and fragmented forests in the southern zone of the Petén department and in the northern transversal strip in the departments of Alta and Baja Verapaz. According to the National Forest Institute (INAB), *D. retusa* has been

	referenced as isolated trees within the forest. INAB has authorized forest management plans that include the species at the management unit level, but no pure plantations of the species have been recorded yet.  Model of potential distribution of *D. retusa* in Guatemala (Source: INAB, 2016)
IUCN Listing?	*Dalbergia retusa* has most recently been assessed for *The IUCN Red List of Threatened Species* in 2019. *Dalbergia retusa* is listed as Critically Endangered under criteria A2bcd. IUCN Red list https://www.iucnredlist.org/species/32957/67799410
Non-detriment finding (NDF)	**<u>Nicaragua</u>** Nicaragua produced an NDF report for the species *Dalbergia retusa*, dated December 2020. The NDF Report contains information to that presented within the framework of the Significant Trade Review of Specimens, Appendix II Species (Resolution Conf. 12.8 (Rev. CoP18)), where the National Forestry Institute (INAFOR) and the Ministry of Natural Resources and Environment (MARENA) present scientific and technical foundations to demonstrate that the extraction and export of the species Dalbergia retusa is not detrimental to its survival, in accordance with Article VI of the Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES. **<u>Guatemala</u>** Guatemala produced an NDF report for *Dalbergia retusa* in July 2021 within the framework of the project: "Building Capacities and Technical Management Guidelines for the Development of Non-detriment Findings Focused on Species of the Genus *Dalbergia* in Guatemala, El Salvador, and Nicaragua." In Guatemala, the institutions legally responsible for the elaboration of Non-Detriment Findings (NDFs) are:

	1. **Consejo Nacional de Áreas Protegidas (CONAP)** - The National Council for Protected Areas is the main authority responsible for the conservation and sustainable use of biodiversity, including the preparation of NDFs for species listed under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2. **Instituto Nacional de Bosques (INAB)** - The National Forest Institute is responsible for the sustainable management and conservation of Guatemala's forests. INAB plays a role in the elaboration of NDFs for forest species, especially those that are commercially traded, such as timber species within the Dalbergia genus. These institutions work together, often in collaboration with other stakeholders, to ensure that the NDF process complies with international and national regulations, ensuring that species trade does not negatively impact their conservation status. In the case of the *Dalbergia retusa* NDF in Guatemala, it was done in collaboration with FNPV (Fundación Naturaleza para la Vida).
Key Conservation Concerns	The key conservation concerns regarding *Dalbergia spp.* and particularly *Dalbergia retusa* in Central America in general are as follows: 1. **Deforestation and Habitat Loss**: Due to agricultural expansion, timber extraction, land-use changes and climate changes eff tropical on dry forests—where *Dalbergia retusa* is found— the specific habitat is rapidly diminishing. These activities reduce the habitat available for the species, threatening its population (Castro-Marin, 2005). 2. **Illegal Logging and Overharvesting**: *Dalbergia retusa*, highly valued for its timber, has been subject to overharvesting, often driven by illegal logging activities. This pressure severely impacts the species, given its slow growth rate and the difficulty in natural regeneration (Espinoza et al., 2015). In all Central American countries where the species occurs, the size of natural forests are severely reduced, making it critically endangered. 3. **Regeneration Challenges**: Natural regeneration of *Dalbergia retusa* is hindered by deforestation and human activity. The limited protection for dry forests and fragmentation of remaining habitats contribute to these difficulties (Sabogal, 1992). 4. **Slow Natural Regeneration**: The growth rate of *Dalbergia retusa* is described as initially rapid, particularly in open growing conditions where it can take advantage of nitrogen fixation, which gives it a competitive advantage. However, the growth rate typically slows after a few years, particularly in shaded or less optimal conditions (Craven et al., 2015). Although is not extensively studied in direct scientific experiments in the available literature, like other *Dalbergia* species, *D. retusa* might exhibit slow to moderate growth during maturation period, often influenced by factors such as soil quality, water availability, and conservation policies (Vardeman et al., 2020). 5. **Impact of International Trade**: The high demand for *Dalbergia retusa* in the international market, especially for luxury items like musical instruments and furniture, has led to its inclusion in the CITES (Convention on International Trade in Endangered Species) Appendix II, which regulates its trade. However, enforcement challenges remain (Cervantes et al., 2019). The high market demand for *Dalbergia retusa* (cocobolo rosewood) stems from its use in the manufacturing of luxury furniture, particularly traditional Chinese *hongmu* furniture. The demand for *hongmu* furniture has surged in recent decades, driven by increasing interest in classical Chinese rosewood furniture, particularly items inspired by Ming and Qing dynasties. This rising demand for luxury products has placed significant pressure on species like *Dalbergia retusa*, contributing to its overexploitation (Runk, 2022). 6. **Low Levels of Artificial Propagation:** Unfortunately, there are no specific references directly addressing the artificial propagation of *Dalbergia retusa*, but there is a general consensus that the species has a very low level of artificial propagation in nurseries and plantations, with low germination, pests occurrence affecting saplings. All these factors do not incentivize land and forest owners to take part of national reforestation and plantation programs. **References:**
Illegal Trade	Despite the inclusion of various Central American rosewoods—such as *Dalbergia granadillo* (granadillo), *Dalbergia retusa* (cocobolo), and *Dalbergia stevensonii* (Honduran rosewood)—in CITES Appendix II, illegal logging and trade continue unabated. The UNODC (2016) reports that most CITES-listed rosewood targets

	the Chinese market. Moreover, there are indications that timber trafficking is facilitated by the issuance of counterfeit permits (INTERPOL 2015, Moya, S. 2021). High-value tropical timbers are facing escalating levels of exploitation. This heightened demand has led to the emergence of a black market for certain tree species. Restrictions on species classified as threatened by the IUCN Red List and/or listed under CITES may have shifted demand to other timber species, potentially putting them at risk. A significant rise in the demand for rosewood species, including cocobolo (*Dalbergia retusa*), further intensified the pressures on hardwood species. (Gluszek et al. 2021)
Management Authority	**Nicaragua**: In Nicaragua, the CITES Management Authority responsible for dealing with Non-Detriment Findings (NDFs) and permitting the exploitation of *Dalbergia retusa* and other species within the *Dalbergia* genus is the Ministerio del Ambiente y los Recursos Naturales (MARENA) — the Ministry of Environment and Natural Resources. MARENA is the authority that ensures compliance with CITES regulations and oversees the sustainable management and conservation of species listed under the convention. It is responsible for issuing permits for the exploitation and trade of *Dalbergia* species and ensuring that these activities do not threaten the species' conservation status in Nicaragua. MARENA works in coordination with other national bodies involved in forestry and biodiversity management to regulate the use of forest resources and ensure that any trade in CITES-listed species complies with the NDF requirements. ----------**Guatemala**: The Management Authority in Guatemala responsible for dealing with Non-Detriment Findings (NDFs) and permitting the exploitation of *Dalbergia retusa* and other species within the *Dalbergia* genus is the **Consejo Nacional de Áreas Protegidas (CONAP)** — the National Council for Protected Areas. CONAP is the CITES Management Authority in Guatemala, tasked with ensuring compliance with the regulations regarding the trade and conservation of species listed under the CITES Convention. It is responsible for issuing permits for the exploitation of CITES-listed species, including the *Dalbergia* species, and ensuring that these activities do not negatively impact their survival in the wild.
Management Measures	**Nicaragua**: In Nicaragua, the management and regulation of Dalbergia species, particularly *Dalbergia retusa*, are governed by several frameworks and measures at both the national and international levels. These regulations aim to ensure sustainable harvesting, protect biodiversity, and comply with international conservation efforts, particularly under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Below are the main management measures in place: **1. CITES Regulations** - *Dalbergia retusa* is listed under **Appendix II** of CITES, meaning that international trade is regulated to ensure that the species is not threatened by overexploitation. Nicaragua, as a party to CITES, must issue permits for any export, import, or re-export of Dalbergia species, ensuring that the trade does not harm the survival of the species in the wild. - **Non-Detriment Findings (NDFs)**: These are assessments required by CITES to determine that trade will not be detrimental to the survival of the species. Nicaragua must provide these NDFs when granting export permits.

2. National Legislation

- Nicaragua has enacted various laws and regulations that address forest management, including the **Ley No. 462** on the Conservation, Promotion, and Sustainable Development of the Forest Sector. This law mandates the sustainable management of forest resources, including Dalbergia species, and requires forest management plans to be approved before harvesting.
- **Forestry Regulation (Decree 73-2003)**: This decree outlines the specific procedures for the sustainable harvesting and management of forests, including inventory requirements, quotas, and selective logging practices aimed at preventing overexploitation of valuable hardwood species like Dalbergia retusa.
- More concretely, the NTON 18 001 – 12. SECOND REVISION. NICARAGUAN MANDATORY TECHNICAL STANDARD ON SUSTAINABLE MANAGEMENT OF NATURAL BROADLEAF AND CONIFEROUS FORESTS, **p**ublished in *La Gaceta* No. 155 on August 16, 2013, specifies that INAFOR (Nicaraguan Forestry Institute) may establish minimum cutting diameters for forest species, according to the legal framework in force. At 5.1.4 of this legal provision the Minimum Cutting Diameters (DMC) are defined - **5.1.4.1** Commercial and potential species – this includes *Dalbergia spp.* - must be classified based on a Minimum Cutting Diameter (DMC), starting from **40 cm DBH (Diameter at Breast Height, measured at 1.30 meters)**.

3. Forest Management Plans

- Harvesting of Dalbergia species requires the submission of **forest management plans** that must be approved by the relevant forestry authority, typically the **Instituto Nacional Forestal (INAFOR)**. These plans must include an inventory of the forest, detailing the species and number of trees, and must outline sustainable logging practices.
- **Reforestation obligations**: In some cases, the plans also include reforestation or regeneration requirements to ensure the sustainability of the species after harvesting.

4. Harvesting Quotas and Permits

- Nicaragua imposes **harvesting quotas** for Dalbergia species, including Dalbergia retusa. These quotas are based on the sustainable yield of the forest and are determined by the forest management plans.
- **Harvesting permits** must be obtained from INAFOR for any commercial extraction of Dalbergia wood. These permits are issued only after ensuring that the planned extraction is in line with sustainable management practices.

5. Monitoring and Control

- Monitoring of harvesting activities is carried out by INAFOR and other environmental authorities to ensure compliance with management plans and quotas, but it is not done by use of integrated monitoring and traceability solutions, making it highly inefficient.
- There are also **sanctions** for illegal logging, including fines and legal penalties, to discourage unauthorized harvesting of Dalbergia species. However, problem the enforcement of these penalties according to the legislation in place remains an issue.

6. Protected Areas and Restrictions

- Certain populations of *Dalbergia retusa* may be located in **protected areas** where harvesting is either restricted or prohibited. Nicaragua has designated various protected areas under its national system that aim to conserve biodiversity, and logging in these areas is heavily regulated or banned, but as in the case of sanctions for illegal logging, there are still very critical steps to be done in improving enforcement, traceability and transparency to ensure effectiveness of protection.

7. Certification and Traceability

- Some Dalbergia species may be harvested under **sustainable certification schemes**, such as the **Forest Stewardship Council (FSC)** and the **Programme for Endorsment of Forest Certification (PEFC)**, which promote certain levels of responsible management of forests, but no clear data could be found on the. Nicaragua has also been exploring the implementation of **traceability systems** to track the origin and legality of timber products, including Dalbergia wood, but nothing tangible is in place.

8.Strategy for the Conservation and Sustainable Management of the Dalbergia Genus

- This document has been adopted in Guatemala, El Salvador, and Nicaragua for 2021-2031, developed within the framework of the project: "Capacity Building and Technical Management Guidelines for Developing Non-Detrimental Findings for Species of the Dalbergia genus in Guatemala, El Salvador, and Nicaragua" (https://cites-tsp.org/sites/default/files/project_files/2023-04/1.%20Estrategia_Dalbergia_GT_SA_NI.pdf) . Within the same framework Nicaragua commits to the implementation of the following actions related to norms and legislation:
    - Review of methodological guidelines for the development of management plans.
    - Promotion of the management of Dalbergia species through incentives, promotion, streamlining of procedures, and encouragement to stakeholders.
    - Legal compliance for the enforcement of the law, such as: - Strengthening of control and surveillance actions, complaints, legal compliance; - Coordination with enforcement authorities regarding the requirements that authorized traders must meet; - Development of training on legislation for the involved stakeholders; -Implementation of control, surveillance, complaints, legal compliance, and administrative and criminal proceedings against violators.

Guatemala

In Guatemala, the *Dalbergia* genus, especially *Dalbergia retusa*, faces significant management challenges due to its overexploitation for its valuable timber. Management measures for *Dalbergia* species, including *D. retusa*, generally focus on conservation, regulation of trade, and control of illegal logging. The following management measures have been identified:

1. CITES Regulations: Both *Dalbergia* species and *D. retusa* are listed under various appendices of the Convention on International Trade in Endangered Species (CITES), which regulates the international trade of these species to ensure sustainability.

2**. National Legal Framework for the Utilization of *Dalbergia retusa* Hemsl.**

For forest use outside protected areas, the criteria and technical guidelines are based on the following regulations:

Decree 101-96. Forestry Law.

7. **ARTICLE 48. Sustainable Use and Management of the Forest.** The use and sustainable management of the forest will be directed through the Management Plan approved by INAB (National Institute of Forests). This is a fundamental instrument for monitoring forest use and the silvicultural techniques applied to the forest stand.

   The most important aspects to be considered when elaborating Management Plans in Guatemala are:
    - Georeferencing of the management unit and areas under management for proper monitoring and traceability.
    - Carry out a forest inventory.

- Determination of the Annual Allowable Cut - it will be estimated based on the abundance of each diameter class in the inventory, the cutting cycle (CC), the minimum cutting diameter (MCD), and the cutting intensity (CI), while taking into consideration growth and mortality rates.

8. **ARTICLE 49. License.** The license will be the authorization to implement the Management Plan. Any forest use of wood or other woody products, except for family consumption, voluntary plantations, and voluntarily planted agroforestry systems, can only be carried out with a license issued by INAB (National Institute of Forests) within the period indicated in the previous article. This license will be granted exclusively to the owner or legitimate possessor of the land or forest area in question and will remain under their responsibility and supervision for the duration required by the Management Plan, as specified by the regulations.
9. **ARTICLE 50. License Application.** The forest exploitation application must comply, where applicable, with the provisions of the Civil and Commercial Procedural Code, but it will not be admitted if it is not accompanied by the Management Plan and if it does not meet the technical requirements established by the regulations.
10. Other laws and regulations related to the exploitation of *Dalbergia retusa* Hemsl. in Guatemala include:
    - **Law for the Promotion of the Establishment, Recovery, Restoration, Management, Production, and Protection of Forest in Guatemala (Probosque).**
    - **Decree 68-86: Law for the Protection and Improvement of the Environment.**
    - **Law Regulating the Registration, Authorization, and Use of Chainsaws.**
    - **Regulation of the Forestry Law.**
    - **Regulation for the Supervision of Forestry Companies.**
    - **Regulation for the Transport of Forest Products.**
    - **Regulation of the Protected Areas Law.**
    - **Regulation for Environmental Evaluation, Control, and Monitoring.**
    - **INAB Criteria and Parameters Manual.**
    - **Manual for Forest Management in Protected Areas.**
    - **CITES Timber Flora Trade Manual.**
    - **National Strategy Against Wildlife Trafficking.**

3. Protected Areas Network

For forest use within protected areas, the criteria and technical guidelines are regulated based on the following legal framework:

Decree 4-89. Law of Protected Areas

11. **ARTICLE 33. Exploitation.**
12. **ARTICLE 35. Authorization.** For the exploitation of products protected by this law, its regulations, and related laws, the interested party must have the corresponding authorization, issued by CONAP (National Council of Protected Areas).

4. Forest Certification

- Forest Stewardship Council (FSC) Certification: The FSC is one of the primary certifying bodies for sustainable forest management worldwide. Certification ensures that forests are managed in a way that conserves biodiversity, maintains ecosystem functions, and benefits local communities. Forests in Guatemala, including areas where *Dalbergia* species are found, can be certified under FSC standards. The FSC emphasizes the importance of protecting high-value timber species such as *Dalbergia* while promoting sustainable harvesting practices. Certification also requires regular monitoring of forest impacts and community benefits (Schulze et al., 2008).

- Non-Timber Forest Products (NTFP) Certification: Certification also applies to non-timber forest products and can provide economic alternatives to logging. For instance, in the Petén region of

	Guatemala, community forest concessions have received certification for sustainable palm leaf harvesting. This model shows potential for integrating conservation and development, which could be adapted to include *Dalbergia* species in forest management plans (Wilsey & Radachowsky, 2007). - Dalbergia and Illegal Trade Monitoring: Forest certification, coupled with technologies like DNA barcoding, is increasingly used to ensure that timber products, including *Dalbergia*, comply with international trade regulations such as those under the CITES convention. These methods help trace the origin of timber and combat illegal logging of endangered species (Hartvig et al., 2015). **5. Strategy for the Conservation and Sustainable Management of the *Dalbergia Genus*** - A document adopted in joint collaboration by Guatemala, El Salvador, and Nicaragua for 2021-2031, developed within the framework of the project: "Capacity Building and Technical Management Guidelines for Developing Non-Detrimental Findings for Species of the Dalbergia genus in Guatemala, El Salvador, and Nicaragua". (https://cites-tsp.org/sites/default/files/project_files/2023-04/1.%20Estrategia_Dalbergia_GT_SA_NI.pdf)

Legal Acquisition Process	**Nicaragua**
	
	In Nicaragua, the Legal Acquisition process for species listed under CITES—particularly those like *Dalbergia retusa* —involves several national procedures aimed at verifying that the harvesting and trade of the species are in compliance with Nicaraguan laws and international agreements. The process is overseen by the country's relevant environmental authorities, ensuring that the species is legally sourced before any trade, especially export, can occur. Below is a detailed breakdown of how this process happens in Nicaragua.
	
	1. Application for Export or Trade Permit
	
	• Any individual or entity wishing to export or trade a CITES-listed species (like *Dalbergia retusa*) must apply for an **export permit** from **INAFOR (Instituto Nacional Forestal)**, Nicaragua's **CITES Management Authority**.
	• The application must include details about the species (such as quantity, origin, and the purpose of trade), the specific forest management plan under which the wood was harvested, and any other necessary legal documentation (e.g., logging permits).
	
	2. Verification of Legal Harvest and Acquisition
	
	INAFOR must conduct a verification process to ensure that the specimen (timber, wood, or other derivatives) was harvested legally. The steps include:
	
	• **Review of Forestry Management Plans**: *Dalbergia retusa*, as a valuable hardwood species, can only be harvested under a **forest management plan** approved by INAFOR. These plans are designed to ensure sustainable forest management and should typically include:
	  ○ Detailed forest inventories with number of specimens per ha and diameter class distribution, specifying the number and species of trees to be harvested that meet the minimum diameter legal requirement.
	  ○ Selective logging guidelines, quotas, and other sustainable harvesting measures.
	  ○ Reforestation or regeneration obligations.
	• **Review of Harvesting Permits**: The applicant must provide a copy of the **harvesting permit** issued by INAFOR, which is granted only after the forest management plan is approved. This permit authorizes the selective logging of *Dalbergia retusa* trees in a specified area and includes conditions that the logging company must follow.
	• **Verification of Logging Activity**: INAFOR may send inspectors to the logging site to verify that the harvesting activities were conducted according to the approved management plan and that no illegal

logging occurred. This inspection ensures that the quota and species identified in the plan were respected.

- **Documentation of Legal Origin**: If the timber or specimen was harvested from a legally established forest concession, the applicant must provide all necessary documents demonstrating legal ownership and control of the forest area, such as land tenure documents or contracts with forest concessionaires.

3. Non-Detriment Finding (NDF)

As part of the legal acquisition verification, INAFOR's **Scientific Authority** also ensures that a **Non-Detriment Finding (NDF)** is issued for the species. This assessment is crucial for determining whether the export of *Dalbergia retusa* will be detrimental to the survival of the species in Nicaragua.

The NDF typically considers:

- Population data and conservation status of the species in the wild.
- The impact of the planned harvest and trade on the species' populations.
- Existing management measures, including forest regeneration plans.

Only if the NDF confirms that the trade will not harm the species' conservation status will the process continue.

4. Issuance of CITES Export Permit

After successfully completing the legal acquisition and NDF processes, INAFOR issues a **CITES export permit**. This permit verifies that the Dalbergia retusa specimen was legally acquired and that its trade complies with both Nicaraguan law and CITES regulations.

The permit includes:

- Details of the species (scientific name, quantity, and form—whether logs, sawn wood, or finished products).
- The legal source of the timber, such as "W" for wild origin or "A" for artificially propagated.
- The approved management plan number and the harvesting permit reference.
- Information on the importing country and the specific transaction (purpose of export).

This permit is required for the shipment to be cleared through Nicaraguan customs, and it must accompany the specimen during its export process.

5. Customs Control and Shipment Inspection

- The **Nicaraguan Customs Authority** is responsible for ensuring that all timber exports comply with the necessary CITES documentation. Customs officers check that the CITES permit issued by INAFOR matches the details of the shipment (e.g., quantity, species, origin).
- Customs officials may also inspect the shipment to ensure that the specimen being exported corresponds to the details in the permit. Any discrepancy (e.g., more timber than permitted or species not listed) could result in fines, penalties, or seizure of the shipment.

6. Traceability and Control Measures

- Nicaragua has been exploring **traceability systems** to further ensure the legality of forest products, including Dalbergia species. Traceability may involve tagging or marking individual logs or shipments to trace their origin back to the legally harvested area.

- **Digital databases** may be used to track permits, management plans, and harvesting quotas, helping authorities to monitor compliance and prevent illegal logging.

- A digital traceability solution has been explored by **INAFOR** in 2014, but it is apparently deactivated. This is the link to the webpage that should host the traceability platform: https://www.sircoftraza.gob.ni/SIAF/Index.aspx.
- There is also a Resolution No. 33-2013 mandating the use of the above-mentioned traceability system – Administrative procedure for the implementation of the forest traceability process. This Resolution approves the administrative procedure aimed at establishing the necessary mechanisms for the implementation of forest traceability in Nicaragua. To this end, the Forest Operations Registration and Control System (SIRCOF) is the unique system for the registration, issuance, and tracking of information regarding transportation guides for forest products derived from utilization permits, plantations, or auctions of forest products duly authorized by the National Forestry Institute (INAFOR).
- The registration of the transportation information for each dispatch of forest products in the SIRCOF must be done electronically, by accessing it through the INAFOR website or using the designed Provisional Shipping Module that allows the transfer of information through barcode readers that INAFOR will operate at various control points and municipal delegations. Once the information from the guide requests has been transferred to the application server database, INAFOR, through the established control points or municipal delegations, will issue a transportation guide for forest products to the forestry manager. Every transportation guide will be accompanied by a certificate of origin. The Provisional Shipping System that INAFOR will provide to each forestry manager for use in cases where there is no Internet access in the utilization areas will be installed on a single device, and the manager will not be able to make duplicates or installations on other devices without prior authorization from INAFOR.

7. Record Keeping and Reporting

- Nicaragua is required to maintain accurate records of all CITES-listed species traded internationally and report this information to the **CITES Secretariat**. This reporting ensures transparency in trade and helps monitor compliance with international conservation efforts.
- These records include:
    - The number of permits issued for each CITES-listed species.
    - Details of the trade (quantity, importing/exporting countries).
    - The management plans and NDFs under which the trade took place.

8. Monitoring and Enforcement

- Nicaragua has strict penalties for violations of CITES regulations and illegal logging. INAFOR and other environmental agencies, such as the **Ministry of Environment and Natural Resources (MARENA)**, work together to monitor forests and enforce regulations.
- Enforcement includes fines, cancellation of permits, and legal action against companies or individuals involved in illegal trade or logging. If illegal logging of Dalbergia species is detected, the responsible parties may face both national penalties and international sanctions under CITES. However, as previously stated, the enforcement of these legal provisions remains a critical issue to solve in Nicaragua.

Guatemala

The Legal Acquisition process in Guatemala, particularly concerning natural resources like timber (such as species from the Dalbergia genus) or wildlife, follows several key steps in order to comply with both national and international regulations like CITES. Here's a detailed outline of how this process generally works:

1. Application and Permitting

- **Initial Application:** The process begins when an individual, community, or company applies for permission to extract, trade, or utilize a specific natural resource.
- **Legal Documents Required:** Applicants must provide proof of land ownership or rights to the resource, identification documents, and a description of the planned extraction or use (e.g., volume, location, duration).
- **Environmental Impact Assessment (EIA):** For larger projects, an Environmental Impact Assessment is mandatory to evaluate the potential ecological effects of the extraction or use. This report is usually reviewed by the Ministry of Environment and Natural Resources (MARN).

2. Verification by National Authorities

- **Field Inspection:** Government agencies, such as the National Council of Protected Areas (CONAP) and the Institute of Forestry (INAB), conduct field inspections to verify the availability and status of the resource.
- **Sustainable Management Plan:** Applicants must submit a management plan that demonstrates sustainable use practices, ensuring the resource will not be over-exploited. This is particularly important for timber species like *Dalbergia*.

3.Non-Detriment Finding (NDF)

- In Guatemala, the process of Non-Detriment Findings (NDF, or Dictamen de Extracción No Perjudicial - DENP) involves several key steps aimed at ensuring that the trade of species listed in CITES Appendix II does not threaten their survival. This process is particularly critical for species such as *Dalbergia* (cocobolo), which are highly sought after for their valuable timber.
- In Guatemala, the **Consejo Nacional de Áreas Protegidas (CONAP)**, or the National Council for Protected Areas, is the **Management Authority** responsible for overseeing the Non-Detriment Findings (NDF) process under CITES. CONAP works closely with the **Scientific Authority** and various stakeholders, such as environmental researchers, local communities, and NGOs, to assess species and ensure that any trade in wildlife or plant species is conducted sustainably and does not harm their populations.

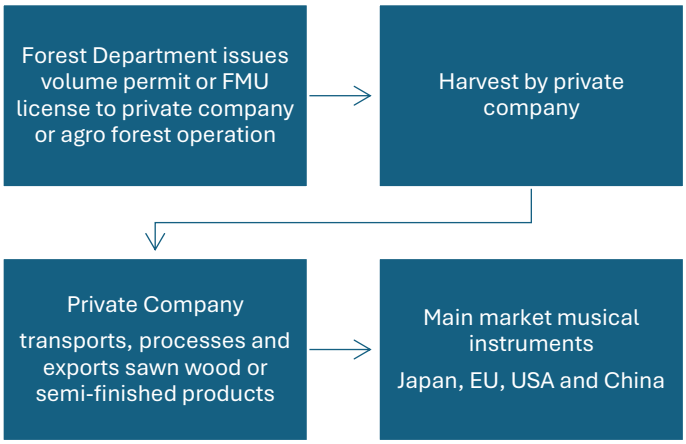
3. Issuance of Legal Documents

- **Legal Acquisition Certificate:** Once the application is approved, a Legal Acquisition Certificate is issued. This document proves that the resource was legally obtained in compliance with Guatemalan laws and regulations.
- **CITES Permit (if applicable):** For species listed under the Convention on International Trade in Endangered Species (CITES), a CITES permit is required for the export of the resource. CONAP is responsible for issuing CITES permits in Guatemala.

4. Registration and Traceability

- **Registration in National Systems:** The legal acquisition and extraction data are registered in the national forest information system or wildlife database to track resource management.
- **Traceability Mechanisms:** Specific mechanisms such as tagging, documentation, and electronic tracking systems are used to ensure traceability of the resource from the source to the final product. This helps authorities monitor compliance and prevent illegal trade.
- The primary system in place is the **Electronic Forest Enterprises Information System (SEINEF)**, which is managed by the **National Forest Institute (INAB)**. SEINEF is used to register, monitor, and control the flow of legally harvested forest products through authorized companies. This system allows for better enforcement of forestry regulations and ensures that only legally sourced timber is exported. https://seinef.inab.gob.gt/Logon.aspx

5. Monitoring and Enforcement

	• **Periodic Inspections:** Authorities like INAB and CONAP carry out regular inspections to ensure that extraction is carried out according to the approved plan and that there is no overharvesting. • **Enforcement Actions:** If violations are detected (e.g., illegal logging, unreported volumes), authorities can impose sanctions, including fines, revocation of permits, or criminal charges. **6. Export Procedures (if applicable)** • **Customs and Border Control:** If the resource is meant for export, it goes through customs procedures, where authorities verify the legal acquisition and the CITES permit (if required). This ensures that only legally acquired and authorized resources leave the country. • **Documentation Review:** Exporters must present all necessary documentation, including the Legal Acquisition Certificate, export license, CITES permit (if applicable), and proof of origin. **7. Compliance with International Obligations** • **CITES Reporting:** Guatemala is required to report to CITES on the legal trade of species listed under the convention. This ensures international accountability and helps track global trade in endangered species. **Certification (optional):** For timber exports, companies may also seek certification from the Forest Stewardship Council (FSC) to further demonstrate sustainable and legal sourcing.
Value Chain	**<u>Nicaragua</u>** The value and supply chains for *Dalbergia retusa* in Nicaragua are shaped by a combination of local forest management practices, regulations (both national and international), and market demands, particularly due to its inclusion in CITES Appendix II, which regulates international trade. Diagram of Basic Value Chain in Nicaragua:  **1. Harvesting & Extraction:** *Dalbergia retusa*, known for its high-quality timber, is primarily extracted from forests, either through selective logging or sometimes through illegal logging. In Nicaragua, the extraction process is governed by forestry laws, but enforcement is often limited in remote regions, leading to concerns about illegal logging. • **Community or Private Land**: In some cases, local communities or private landowners manage forest areas and may legally harvest *Dalbergia retusa* under sustainable management plans. These plans are designed to ensure that the harvest does not deplete the species.

- **Illegal Harvesting**: Due to the high value of the wood, illegal logging is also a significant issue. Timber may be extracted from protected areas or without permits, bypassing local regulations.

2. Processing:

After extraction, the timber is typically processed into logs, slabs, or finished products like veneers, furniture, or musical instruments. There are local processing facilities in Nicaragua, but much of the high-value processing occurs abroad, especially in countries with advanced woodworking industries.

- **Local Mills**: Timber may be cut into rough-sawn lumber in local mills before being exported. There is limited infrastructure for advanced processing in Nicaragua, meaning that much of the value-add happens outside the country. This is true for most processing for forms destined for musical instruments. The value of the wood and the machinery necessary to process to the specification of a high-end guitar company would typically be completed in Spain, the United States in a facility with capacity to produce a high-value musical instrument part.
- **Sustainability Certification**: In some cases, wood may be processed through certified sustainable supply chains, ensuring that the timber comes from legal and well-managed sources (i.e. FSC, PEFC). However, this is not always the case due to challenges in enforcement.

3. Export:

Nicaragua exports *Dalbergia retusa* timber, especially to markets in North America, Europe, and Asia, where there is significant demand for exotic hardwoods. However, since the species is listed under CITES Appendix II, international trade requires CITES permits, and the process is heavily regulated to prevent unsustainable or illegal trade.

- **Challenges in Traceability and Transparency**: One of the major challenges is ensuring the traceability of timber from the forest to the final consumer, especially in light of illegal logging. Poor traceability and transparency can lead to illegal wood being laundered through legal supply chains. It is hard to verify if the traceability system developed and regulated in 2013-2014 is still working in Nicaragua, as the official web platform where data should be available is not functioning. Even if the digital traceability system, developed and implemented in 2014 (SIRCOF), were functional, it would need, after 10 years, an update of the technology and a review to ensure it meets current traceability needs in accordance with national legal regulations and international conventions, as well as forest certification systems (e.g., CITES, EUDR, FSC).
- **Compliance with International Regulations**: Exporters in Nicaragua must comply with both national forestry regulations and international CITES requirements, as well as EUDR and Lacey Act which complicates the export process but is essential for legal trade.
- **Musical Instrument Markets**: The wood most likely destined for a musical instrument supply chain is often an almost direct relationship. Musical instrument manufacturers have taken a proactive role in visiting and requiring transparency to the supply chain. Due diligence processes have matured since the implementation of the **United States Lacey Act** in 2009 and the **European Union Timber Regulation (EUTR)** in 2013. The new **European Deforestation Regulation (EUDR)** will require even more attention to value chain and supply chain due diligence requirements.

4. Value Addition & International Markets:

The real value of *Dalbergia retusa* lies in its finished products, such as high-end furniture, musical instruments, and luxury goods. Most of the value is added in international markets, where the processed wood fetches premium prices. Nicaragua benefits from the initial stages of the supply chain, but much of the profit is realized in downstream markets. Again, specifications and capacity to produce the level product that fetches premium price is often in the importing country where manufacturing will ultimately take place. This is very true for processing raw materials destined for musical instruments.

- **Pricing**: Due to its rarity and quality, *Dalbergia retusa* commands a high price, particularly in international markets. However, those involved in the earlier stages of the supply chain, such as local

loggers and sawmills, often receive a smaller portion of this value compared to international participants in processing the materials outside of Nicaragua. This is a common thread throughout this study of where conservation impact is assessed and addressed. Increasing incentives in the value chain and data reporting at the range state level could increase positive conservation outcomes from the impact of high-end trade such as for musical instruments.

5. Governance and Enforcement:

Enforcement of forestry laws and CITES regulations in Nicaragua is crucial but challenging. Corruption, weak institutional capacity, and limited resources hinder effective enforcement. This creates opportunities for illegal logging and trade to flourish.

- **Local Communities**: There is an ongoing effort in some regions to involve local communities in sustainable forestry management, providing them with economic incentives to protect forests and manage resources sustainably. However, illegal activities can undermine these efforts.

Guatemala

The value chain of ***Dalbergia retusa*** and other species within the ***Dalbergia genus*** in Guatemala encompasses several stages, from forest resource management to international markets. These species, prized for their high-quality, durable, and aesthetically appealing wood (commonly known as rosewood), are heavily exploited for timber, furniture, and musical instruments. Here's an overview of the key steps and stakeholders in the *Dalbergia* value chain in Guatemala:

1. Forest Resource Management & Harvesting

- **Legal Framework and Land Ownership**: The value chain starts with the management of forests where Dalbergia species are found, often in both public (national forests or protected areas) and private lands. Local forest owners or concessionaires are responsible for managing these resources. Harvesting is regulated by **CONAP** (Consejo Nacional de Áreas Protegidas) and other governmental bodies, ensuring compliance with CITES.
- **Forest Management Plans**: Legal harvesting of Dalbergia species requires the development of forest management plans that outline sustainable extraction methods. These plans include forest inventories and specific quotas approved by CONAP to avoid overexploitation.
- **Illegal Logging**: Despite regulations, illegal logging is a significant problem due to the high market value of Dalbergia wood. This often occurs in remote areas, making enforcement difficult.

2. Harvesting and Primary Processing

- **Felling and Extraction**: After the forest management plan is approved, trees are harvested either manually or with mechanized equipment. In some cases, extraction is done selectively to minimize environmental impact.
- **Sawmilling**: The timber is transported to local sawmills where it undergoes initial processing, such as cutting logs into planks or beams (sawn wood). Smaller-scale, informal sawmills may not always adhere to best practices, which can affect the quality of the wood and contribute to waste.
- **Initial Processing by Communities**: In some cases, local communities are involved in processing, particularly in regions where community-based forest management is promoted. This step can contribute to local livelihoods but often lacks the sophisticated technology found in larger sawmills.

3. Secondary Processing and Manufacturing

- **Value-Added Processing**: Dalbergia wood is highly valued especially musical instruments like guitars and pianos. At this stage, woodworkers and manufacturers transform the raw timber into semi-finished products. If the processing is completed at the range state level for semi-finished forms such as back and sides or blocks for electric guitars, this is almost always completed in direct relationship

	with a particular supply chain and is rare due to the quality of machinery. These forms require a CITES export permit. • The majority of value-added processing takes place after it is exported, as sawn wood HS code 4407, from the country of harvest or range state. Countries such as Spain, United States, China, and Japan are typical importers where the wood is processed to specifications of semi-finished parts for musical instruments. **4. Trade and Export** • **Export Licensing and CITES Compliance**: Given that Dalbergia species are listed under CITES Appendix II, export requires compliance with CITES regulations. This includes obtaining the appropriate permits from CONAP, proving that the timber was harvested legally and in a non-detrimental manner (via the NDF process). • **International Market Demand**: Dalbergia retusa, also known as Cocobolo, is especially sought after for high-end musical instruments, fine woodworking, and luxury furniture. This demand drives much of the value chain, with prices increasing significantly as the wood moves up the chain from raw logs to finished products. • **Challenges with Illegal Trade**: Despite these legal frameworks, Dalbergia wood is also subject to illegal trade, which is fueled by its high market value. This poses challenges for enforcement agencies and often undermines conservation efforts. **5. Governance and Oversight** • **CONAP and CITES**: The Guatemalan government, through **CONAP**, oversees the legal aspects of the Dalbergia trade, ensuring that both harvest and export comply with sustainable management requirements. CITES plays a major role in setting international guidelines, limiting trade to levels that don't harm the species' survival. • **NGOs and International Organizations**: Several NGOs and international organizations are involved in promoting sustainable forest management and combatting illegal trade. This includes initiatives to improve traceability, monitor species populations, and enforce logging regulations. **Value Chain Challenges:** • **Traceability**: One of the major issues in the value chain is ensuring traceability from forest to end-product, which is crucial for verifying legal origin and ensuring sustainable practices. • **Illegal Logging**: The high international demand for Dalbergia wood has led to illegal harvesting and trade, undermining conservation efforts and harming local communities dependent on forest resources. • **Sustainability**: The long-term sustainability of Dalbergia species depends on effective forest management, enforcement of legal frameworks, and international cooperation to combat illegal logging and trade.
Processing and Export	Processing is covered in the value chain description The export form in Nicaragua and Guatemala in most cases is a raw material such as sawn wood HS 4407 or a veneer form HS 4408 which requires significant transformation before a piece of these raw materials are finished for a musical instrument. The export of raw materials or unfinished forms require a CITES export permit and in regions such as Europe a CITES import permit is required.
Forest Certifications	**<u>Nicaragua</u>**

	In Nicaragua, forest certifications primarily include the **Forest Stewardship Council (FSC)** and **Rainforest Alliance/UTZ** certifications. These certifications promote sustainable forest management, ensuring that forest products are harvested in an environmentally and socially responsible manner. • **FSC Certification**: One of the leading certifications in Nicaragua is the FSC, which certifies both natural forests and plantations. A significant example is the **MLR Forestal** project, which manages about 4,204 hectares of forest, with 2,567 hectares dedicated to teak and cocoa agroforestry systems, and 1,456 hectares reserved for natural forest conservation. The MLR Forestal project emphasizes biodiversity conservation and sustainable land use while providing economic opportunities to local communities. • **Nicaforest Project**: Another notable FSC-certified project, Nicaforest, focuses on reforestation and sustainable teak production. The project covers thousands of hectares and also holds the **Gold Standard certification**, which highlights its contribution to carbon capture and climate action. As of recent data from Forest Trends (Forest Trends) and MLR Forestal and Nicaforest projects (Treevive, CSAF, Nicaforest), **approximately 815,607 hectares** of forest in Nicaragua are under some form of protection or certification, including FSC and other local conservation efforts. These initiatives are crucial in balancing economic development with forest conservation, especially in the context of pressures like illegal logging and deforestation. **Guatemala** In Guatemala, certified forests are largely concentrated in the Maya Biosphere Reserve (MBR), which holds most of the country's Forest Stewardship Council (FSC) certifications. Approximately 450,000 hectares in the MBR are certified, including both community and industrial forest concessions (Carrera et al., 2006). Certification ensures that these forests are managed sustainably, which includes controlling timber extraction and promoting conservation efforts. In the Maya Biosphere Reserve, 16 forest management units have been certified, covering both community-managed and industrial concessions. These units implement sustainable practices, particularly for high-value species like *Dalbergia*, including *Dalbergia retusa* (Cocobolo) and *Dalbergia stevensonii* (https://www.rainforest-alliance.org/). These species are particularly vulnerable to illegal logging due to their commercial value in international markets. To strengthen the management of *Dalbergia* and other endangered species, Guatemala also engages in forensic wood analysis through the CITES Timber Species Programme. This effort supports the identification of *Dalbergia* species and helps enforce CITES regulations regarding their trade.
Artificial Propagation	**Nicaragua** Artificial propagation is possible for the *Dalbergia* genus in Nicaragua, including *Dalbergia retusa.* **Research and Reforestation Programs**: Current artificial propagation efforts for *Dalbergia retusa* include research into optimal growing conditions, such as soil types, shade requirements, and resistance to pests. These programs often collaborate with universities, government agencies, and NGOs to study the best methods for large-scale propagation and sustainable use. Artificial propagation efforts for the have been shaped by both conservation needs and economic demands. These efforts aim to address over-exploitation due to the high value of the wood, especially for international markets, while promoting sustainable management of these species.

As will be presented in the Investment section of this case study, there are successful outcomes from plantation and reforestation planting programs that have produced commercially viable timber particularly in Costa Rica and efforts in Nicaragua.

Introduction of Conservation Regulations (1990s-2000s): In response to over-exploitation, Nicaragua began implementing forestry regulations aimed at curbing the illegal trade and promoting the sustainable use of *Dalbergia*. However, these regulations initially had limited success due to weak enforcement and the high demand for cocobolo wood in international markets. There were some early efforts to propagate the species, but these were largely experimental and did not yet have widespread implementation.

Current Efforts:

CITES Regulations and Impact on Propagation: The listing of *Dalbergia retusa* under CITES Appendix II (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in 2013 was a significant turning point. This regulation requires that international trade in *Dalbergia* species, including *retusa*, be closely monitored and only conducted with appropriate permits. Since then, efforts have increased to promote artificial propagation as a way to reduce pressure on wild populations.

CITES regulations have prompted the Nicaraguan government and international partners to encourage the establishment of plantations for sustainable harvesting. These plantations aim to produce high-quality wood for commercial purposes while reducing illegal logging from natural forests.

Challenges and Opportunities:

- **Illegal Logging and Land Use Conflicts**: Despite the advancements in artificial propagation, illegal logging of *Dalbergia retusa* continues to pose a challenge. High international demand for cocobolo wood creates economic incentives for illegal harvesters, undermining conservation efforts (Forest Trends).
- **Potential for Agroforestry Models**: Integrating *Dalbergia* species into agroforestry systems presents a promising approach. These systems can offer both ecological benefits, such as improving biodiversity and soil quality, and economic benefits by providing high-value timber and non-timber products.

Guatemala

The efforts to artificially propagate *Dalbergia retusa* and other *Dalbergia* species in Guatemala have faced significant challenges and limitations. While there have been initiatives to promote sustainable management, the reality on the ground often reveals a more complex and less optimistic picture (Quesada-Ávila et al., 2021). These are the main issues artificial propagation efforts are facing in Guatemala:

1. **Limited Success in Large-Scale Propagation:** Despite efforts to propagate *Dalbergia* species in nurseries, the survival rates of seedlings in large-scale projects have often been low. *Dalbergia* species, especially *Dalbergia retusa*, have specific ecological requirements that make their propagation difficult. Many plantations struggle with poor soil quality, pests, and diseases, reducing the success of reforestation and agroforestry efforts.
2. **Lack of Financial Incentives for Farmers and Landowners:** While there are policies promoting reforestation, the economic incentives for landowners to plant *Dalbergia* species are often insufficient. These trees grow slowly, and landowners may prefer fast-growing species for short-term financial returns. This lack of immediate benefits has led to low participation in voluntary planting programs, limiting the potential of artificial propagation to alleviate pressure on wild populations.
3. **Inadequate Enforcement of Forestry Regulations:** Although regulations exist to promote sustainable management, enforcement remains weak. Illegal logging continues to be a significant issue, and many plantations that were established under reforestation initiatives have been subject to unauthorized harvesting. The gap between policy and enforcement has hampered efforts to establish reliable, artificial sources of *Dalbergia* timber.

	4. **Insufficient Capacity in Local Nurseries:** Many nurseries in Guatemala lack the resources, expertise, and infrastructure needed to properly propagate *Dalbergia* species. The technical knowledge required for seed collection, genetic diversity maintenance, and optimal growth conditions is often limited, resulting in suboptimal outcomes for propagation projects. 5. **Challenges in Genetic Conservation:** The genetic diversity of artificially propagated *Dalbergia* trees is another concern. If not managed carefully, artificial propagation could lead to a narrow genetic pool, making the species more vulnerable to diseases and climate changes. In many cases, seed sources are limited, and there's insufficient tracking of genetic lineage in propagation projects. 6. **International Pressure vs. Local Realities:** CITES regulations have placed significant pressure on Guatemala to manage *Dalbergia* species sustainably, but local realities often complicate these goals. The economic and social contexts in which these efforts occur—such as rural poverty and the high value of Dalbergia wood on international markets—drive illegal logging and undermine conservation efforts. The propagation initiatives are often insufficient to meet the demands, and many remain symbolic rather than transformative
Investment in Conservation (i.e. private or public sector projects) Plantation or Natural forest studies or actions)	**Nicaragua** **Private Sector and Agroforestry Initiatives**: Several private sector and agroforestry projects have integrated *Dalbergia* species into their planting programs. These projects, such as **Hearne Hardwoods, MLR Forestal** and **Nicaforest**, often focus on the sustainable cultivation of high-value timber species alongside other crops. While *Dalbergia retusa* is not the primary species in many of these initiatives (which tend to focus on teak or other fast-growing species), efforts to propagate *Dalbergia* are increasingly becoming part of sustainable forestry models in the region (Treevive, Nicaforest). **Hearne Hardwoods, a longtime musical instrument wood supplier,** owns a sawmill in Madriz near Jinotega, Nicaragua and are "planting native species of cedro, mahogany, rosewood, mango and avocado." They started a planting program in 2012 with local bean farmers to change to coffee and focus on planting *Dalbergia* species over a five-year transition period in partnership with the three farmers. The total land in the program is about 200ha. They have a nursery and are planting at least five thousand Dalbergia species a year. They geolocate the positions and give the coordinates to MARENA for the ministry to monitor.    Photos courtesy of Hearne Hardwoods www.hearnehardwoods.com **Guatemala** The investment in the conservation of *Dalbergia retusa* and other *Dalbergia* species in Guatemala primarily involves public and private sector projects, with a combination of plantation and natural forest conservation efforts. Below are relevant studies and actions that provide insight into these initiatives:

	1. **Public and Private Sector Efforts**: Various efforts, including government-driven initiatives, have been aimed at promoting the sustainable cultivation and conservation of *Dalbergia* species. For instance, there have been public investments in forest and agroforestry plantations in the northern humid lowlands of Guatemala, involving multiple valuable timber species. These efforts focus on establishing plantations and developing diversified systems like coffee, cacao, and cardamom agroforestry (Mendez-Paiz & Serech-Van Haute, 2018). 2. **Plantation Studies**: Research into the growth and productivity of *Dalbergia* species in plantations, particularly mixed species plantations, indicates that *Dalbergia retusa* shows promise when grown alongside other species. These plantations have shown potential for sustainable management in terms of both ecological and commercial value (Piotto et al., 2004). 3. **Ecological Challenges and Management**: A significant portion of the research emphasizes the need for careful management in these efforts. For example, ecological challenges such as insufficient knowledge about species' silvicultural requirements and the impact of herbivory on young plantations have been identified as barriers to success (Paul et al., 2011).
Conservation Impact Analysis	The conservation efforts surrounding the *Dalbergia* genus, particularly *Dalbergia retusa* (cocobolo), in Nicaragua and Guatemala are a mixed picture of both challenges and progress. In both countries, *D. retusa* faces significant threats from illegal logging and land-use changes, driven by high demand for its valuable wood. This has led to a marked reduction in its natural populations. However, international protection measures like CITES listings, local reforestation projects, and sustainable management initiatives are gradually taking hold. For instance, Guatemala has been involved in projects to assess *D. retusa* populations and develop sustainable harvesting techniques. Similarly, Nicaragua is focusing on integrating sustainable forest management practices with poverty alleviation strategies. These programs aim to balance environmental protection with economic needs. Despite these efforts, illegal trade remains a major issue, and many of the existing initiatives are in early stages, requiring further development. Therefore, while the conservation impact is positive in terms of planning and legal frameworks, its long-term effectiveness remains to be fully realized due to ongoing challenges like enforcement and illegal activities (CTSP). Based on the outcomes from the trade flows and case examples in this study, the indicators are that the exemptions in annotation #15 paragraph c) *Finished musical instruments, finished musical instrument parts and finished musical instrument accessories* are having a low conservation impact on the species in the form of finished products. It is important to emphasize that finished products of musical instruments with *Dalbergia* inputs from Central and South America and the Caribbean are not primarily manufactured for export from the range states, such as Nicaragua, Guatemala, Costa Rica, El Salvador, Honduras or Belize, where the volumes of these products originate. The finished product using these high value woods is being made place in factories or lutheries in the United States, Europe, Japan and China. The export form in most cases is a raw material such as sawn wood HS 4407 or a veneer form HS 4408 which requires significant transformation before a piece of these raw materials are finished for a musical instrument. The export of raw materials or unfinished forms require a CITES export permit and in Europe a CITES import permit. In the six years of implementation and amendments to annotation #15, it is apparent that the trade trends for finished musical instruments and finished products required a significant amount of investment and capacity building, by the musical instrument industry, to improve as well as share their knowledge of the issues species that are used traditionally. There are indicators that this sector has been willing to share data and to increase transparency and participation in the CITES process to increase sustainable use and conservation in the range state areas.

	The conclusion is that the investment for regulatory improvement and traceability is best served at the range state level. The key recommendation is to increase data from the exempted products to continue to correlate with management practices on the ground for improving conservation and trade outcomes.

2.3.4. A cross-cutting case study on volumes of exempted products in international trade and supply chains, using as a reference point examples from rosewood tree species of the genus *Guibourtia*.

Description	Findings
Types of Products made from the species	For the purpose of completing Decision 18.321 (Rev. CoP19), this case study will be a survey of a range of products including musical instruments. *Guibourtia* species were very common inputs for musical instruments over the last several decades. But according to key musical instrument wood suppliers this has changed. The CITES Appendix II listing as well as a range of consumer preferences has reduced the demand for *Guibourtia* species for finished musical instruments and their parts. The sales of *Guibourtia* species for musical instruments are very low, currently. (Maderas Barber, 2024) *Guibourtia* species are known for producing a variety of products, primarily due to their timber and extractive properties. These species offer a broad range of applications from fine woodworking and luxury goods to potential medicinal uses. Here is a summary of the types of products made from *Guibourtia demeusei*, *Guibourtia tessmannii*, and *Guibourtia pellegriniana*: 1. **Timber and Wood Products**: Both *Guibourtia demeusei* and *Guibourtia tessmannii* are commonly marketed under the commercial name Bubinga. These species are renowned for their high-quality hardwood, which is thick, stable, and aesthetically appealing. Bubinga wood is used in making luxury furniture, musical instruments, veneers, and fine woodworking projects due to its durability and appearance (Mpele & Theophile, 2014). 2. **Resins and Extractives**: Extracts from *Guibourtia tessmannii* and *Guibourtia demeusei* have been reported to contain high levels of tannins, polyphenols, and anthocyanidins. These chemical compounds can be used in producing dyes and other extractive products. Some species also produce resins with potential applications in wood preservation and fine chemicals (Roux, 1959) 3. **Medicinal Applications**: Extracts from *Guibourtia tessmannii* have shown antimicrobial, antioxidant, anti-inflammatory, and cytotoxic properties. These properties make it useful in traditional medicine and as a potential source of therapeutic compounds for pharmaceutical applications (Obiang et al., 2021). 4. **Anti-termite and Aphrodisiac Properties**: Extracts from *Guibourtia tessmannii* have demonstrated anti-termite activities, which may be developed into wood protection agents. Additionally, the plant is traditionally used as an aphrodisiac, with scientific studies supporting its pro-ejaculatory effects in animal models (Defo et al., 2017).
Prevalence of Species to Trade – percent or combination of use as relates to Finished Musical Instruments	The *Guibourtia* genus, comprising several species such as *Guibourtia tessmannii*, *Guibourtia coleosperma*, and *Guibourtia demeusei*, has significant commercial value, particularly for timber. These species are highly exploited for various purposes, mainly as sources of fine wood, commonly known as "bubinga," which is prized for its durability, aesthetic appeal, and high mechanical strength (Mpele & Theophile, 2014). Due to these characteristics, *Guibourtia* species are extensively used in the furniture, flooring, and luxury goods industries. As mentioned, It is reported that the prevalence of trade for musical instruments has diminished.

	In terms of prevalence in trade overall, *Guibourtia* species are subject to overexploitation by both local communities and forest companies due to their high economic value. This has led to concerns about their conservation, as their population density is generally low (Tosso et al., 2015). Specific species like *Guibourtia tessmannii* have been heavily logged for their timber, leading to significant commercial activity (Chichinye et al., 2020). The timber trade involving *Guibourtia* species is internationally regulated due to concerns about sustainability. Their use has expanded globally, but the low population density and overexploitation continue to pose challenges for conservation efforts.
Distribution in Target Countries	The *Guibourtia* genus comprises about 15 species, predominantly found in **Africa** and **South America**, with a few species in **Cuba** and **Brazil**. Here is a general breakdown of their distribution: 1. **Africa**: Guibourtia species are primarily distributed across tropical regions. For instance, *Guibourtia coleosperma* and *Guibourtia demeusei* are common in southern and central Africa, including Namibia, Botswana, Angola, Cameroon, Equatorial Guinee, Gabon and the Democratic Republic of the Congo (Tosso et al., 2018). 2. **South America**: In the Neotropics, Guibourtia species such as *Guibourtia chodatiana* are found in Bolivia, Brazil, and other regions of South America (Pinto et al., 2017). 3. **Cuba**: *Guibourtia hymenaeifolia* is found in Cuba (Pinto et al., 2017). These species generally thrive in tropical moist forests or savanna biomes, with some species being highly valued for their timber (e.g., *Guibourtia tessmannii*). The demand for their wood has led to their spread and trading in other parts of the world, although they remain geographically restricted to these regions.
IUCN Listing?	The species ***Guibourtia demeusei*** and ***Guibourtia tessmannii*** are currently listed as Vulnerable (VU) on the IUCN Red List. This listing is due to overexploitation, mainly because of their high demand for timber, commonly referred to as bubinga wood, and habitat loss. Overharvesting has contributed to population declines, particularly in its natural habitat in Central Africa, including countries like Cameroon, Gabon, and the Republic of Congo.
Non-detriment finding (NDF)	NDFs were not available for review for this study. It is unclear whether NDFs have been completed for the three *Guibourtia* species under review.
Key Conservation Concerns	The key conservation concerns for Guibourtia species, including ***Guibourtia tessmannii***, ***Guibourtia pellegriniana***, and ***Guibourtia demeusei***, focus primarily on overexploitation, habitat destruction, and the low population densities of these species. Here is a detailed breakdown of the conservation concerns: **General Concerns for Guibourtia Species:** 1. **Overexploitation for Timber**: Guibourtia species are highly sought after for their timber, especially the "bubinga" wood, which is prized for its durability and aesthetic properties. This has led to extensive logging and significant pressures on their populations. Local and international trade contributes heavily to their exploitation (Tosso et al., 2018). 2. **Habitat Destruction**: Shifting agriculture, forest fires, and urban expansion are key contributors to habitat degradation, further threatening the already low-density populations of *Guibourtia* species (Gnoumou et al., 2012). 3. **Low Population Densities**: Due to their slow growth and regeneration rates, *Guibourtia* species face challenges in maintaining viable populations under intense logging pressure. The low population densities make these species more vulnerable to extinction (Tosso et al., 2015). **Specific Concerns for *Guibourtia tessmannii*:** 1. **Overexploitation for Timber**: *Guibourtia tessmannii* is heavily logged due to its valuable wood, especially in **Gabon** and other parts of **Central Africa**. This has significantly reduced its natural populations (Tosso et al., 2016).

	2. **Chemical and Industrial Uses**: The phytochemical properties of *G. tessmannii* are of interest for medicinal and industrial applications, which adds to the pressure of unsustainable harvesting (Nkogo et al., 2022). 3. **Habitat Fragmentation**: The conversion of forests for agriculture and infrastructure development further fragments the habitat of *G. tessmannii*, limiting its natural range and regeneration capacity (Obiang et al., 2021). **Specific Concerns for *Guibourtia demeusei*:** 1. **Logging and Trade**: *G. demeusei* is also targeted for its valuable timber, contributing to its vulnerability. Like other *Guibourtia* species, its low population densities make it susceptible to overexploitation (Roux, 1959). 2. **Climate Change**: Changes in climate patterns have the potential to alter the habitats of *G. demeusei*, particularly in tropical and subtropical regions where it is found. Shifts in rainfall and temperature could affect the growth and reproduction of this species (Tosso et al., 2018). **Specific Concerns for *Guibourtia pellegriniana*:** Unfortunately, there is less specific research available on *Guibourtia pellegriniana*, but it likely faces similar threats as other *Guibourtia* species due to overharvesting and habitat loss. The lack of detailed ecological data makes it challenging to assess its conservation status precisely, but its rarity increases its vulnerability (Tosso et al., 2015).
Illegal Trade	The illegal trade of *Guibourtia* species, including *Guibourtia demeusei*, *Guibourtia tessmannii*, and potentially *Guibourtia pellegriniana*, is primarily driven by the high demand for their valuable timber, particularly known as bubinga wood. These species are highly prized for their aesthetic qualities and mechanical strength, which makes them targets for both legal and illegal logging activities. Here are some key points about their illegal trade status: **General Illegal Trade of Guibourtia Species:** 1. **Overexploitation for Bubinga Timber**: Guibourtia species are harvested for their wood, which is used in luxury furniture, flooring, and musical instruments. Due to overharvesting, many populations are now at risk. Illegal logging is rampant, especially in countries like **Gabon**, **Cameroon**, and the **Democratic Republic of Congo** (Tosso et al., 2015). 2. **Lack of Enforcement and Regulation**: Although some efforts have been made to regulate trade through organizations like **CITES** (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), enforcement remains a challenge. The illegal timber trade continues to be a major issue, especially as demand from global markets remains high (Nkogo et al., 2022). **Illegal Trade Concerns for *Guibourtia tessmannii*:** 1. *Guibourtia tessmannii* is one of the most heavily exploited species in this genus due to its timber value. Despite being protected under CITES Appendix II, illegal logging continues to be a significant issue, particularly in **Gabon**, where enforcement of logging regulations is weak (Nkogo et al., 2022). **Illegal Trade Concerns for *Guibourtia demeusei*:** 1. Like *G. tessmannii*, *Guibourtia demeusei* is also exploited for its wood. The illegal timber trade in *G. demeusei* threatens its natural populations in **Central Africa**, particularly in **Cameroon** and **Gabon**. Efforts to regulate its trade under CITES have not completely stemmed the illegal activities (Tosso et al., 2018).

	Illegal Trade Concerns for *Guibourtia pellegriniana*: 1. Specific information on the illegal trade of *Guibourtia pellegriniana* is limited, but it likely faces similar pressures due to its timber value. This species is less studied, but its rarity and exploitation suggest that it is vulnerable to illegal logging.
Management Measures	Management measures for **Guibourtia demeusei**, **Guibourtia tessmannii**, and **Guibourtia pellegriniana** are primarily focused on sustainable forestry practices, conservation efforts, and regulation of their trade. These species are widely exploited for their high-value timber, known as **bubinga**, and are found in **Central Africa** (mainly **Gabon**, **Cameroon**, and the **Democratic Republic of the Congo**). **Key Management Measures:** 1. **Inclusion in CITES (Convention on International Trade in Endangered Species)**: o Guibourtia species, including *G. tessmannii* and *G. demeusei*, have been included under **Appendix II** of CITES to control and regulate their international trade. This appendix lists species that are not necessarily threatened with extinction but may become so if trade is not strictly regulated (Tosso et al., 2015). o The listing under CITES has made it mandatory for logging companies to obtain permits for legal logging and export of these species. This measure aims to curb illegal logging and ensure that harvesting is done sustainably. 2. **National Logging Regulations**: o In **Gabon**, specific logging quotas and permits are enforced to manage the exploitation of Guibourtia species. The government monitors forestry operations, ensuring adherence to sustainable practices and promoting the replanting of Guibourtia species in harvested areas (Nkogo et al., 2022). o Additionally, **Gabon** has set up protected areas to conserve populations of *G. tessmannii* and *G. demeusei* to prevent overharvesting in critical habitats. 3. **Community-Based Forest Management**: o In some areas, local communities have been involved in the management of Guibourtia forests. In **Cameroon** and **Gabon**, local communities have developed strategies to reduce illegal logging and to sustainably harvest Guibourtia wood for local and international trade. This includes using traditional knowledge to monitor forest health and regeneration rates (Tosso et al., 2018). 4. **Research and Silvicultural Practices**: o Scientific studies are underway to better understand the regeneration capacity and population dynamics of Guibourtia species. This research helps inform forestry policies and management plans to ensure that logging does not exceed the natural regeneration capacity of these trees (Tosso et al., 2016). **Specific Measures for *Guibourtia tessmannii*:** • *G. tessmannii* is one of the most exploited species for its timber. Measures in **Gabon** include stricter enforcement of logging regulations, with periodic monitoring of logging operations to ensure compliance. Protected areas have also been established to conserve critical populations (Nkogo et al., 2022). **Specific Measures for *Guibourtia demeusei*:** • *G. demeusei* is subject to similar regulatory controls as *G. tessmannii* under CITES and national laws. Sustainable forestry initiatives are in place in **Cameroon** and **Gabon**, with the establishment of protected areas and community-managed forests (Tosso et al., 2015).

Legal Acquisition Process	**1. Regulation under CITES (Convention on International Trade in Endangered Species):** • Both *Guibourtia demeusei* and *Guibourtia tessmannii* are listed under **CITES Appendix II**, which means their international trade is regulated. For legal acquisition, companies must obtain permits for the export of timber from these species, and the process involves ensuring that the timber was harvested sustainably, and that trade will not further threaten the survival of these species. This applies to **Gabon**, **Cameroon**, and **Democratic Republic of Congo** (Nkogo et al., 2022). **2. National Forestry Regulations:** • In **Gabon**, the government enforces quotas and logging permits to control the exploitation of *Guibourtia* species. Legal acquisition involves adhering to national forestry laws, obtaining proper logging permits, and ensuring compliance with quotas established by the Ministry of Forests (Obiang et al., 2021). • **Cameroon** similarly has laws governing logging operations. To legally acquire Guibourtia timber, companies need to operate under approved concessions, with permits required for harvesting and trade. Monitoring is conducted by government agencies to ensure sustainability. **3. Monitoring and Enforcement:** • Enforcement of these legal processes can be a challenge due to weak monitoring capacities. However, efforts are underway in these countries to improve the tracking of timber sources, especially through collaboration with international organizations and initiatives to improve forest governance.
Value Chain	The value chain for Guibourtia species, including ***Guibourtia demeusei***, ***Guibourtia tessmannii***, and ***Guibourtia pellegriniana***, follows a series of steps that include harvesting, processing, and exporting the timber mostly in lumber form as log bans in Gabon and Republic of Congo have changed the processing requirements. For musical instrument uses, the timber is usually exported as lumber and processed into semi-finished musical instrument parts in countries like Spain before being sold directly to musical instrument manufacturers in key markets such as Europe, United States, China and Japan. There is no processing to parts in the countries where these species originate. CITES permits are required for the export of the semi-finished parts from countries like Spain. (Maderas Barber, 2024) Here are some insights based on research and the dynamics of the value chain in **Cameroon**, **Gabon**, and the **Democratic Republic of the Congo (DRC)**: **1. Harvesting:** • **Harvesters** are typically local communities or logging companies who exploit the timber for commercial purposes. Logging is done both legally and illegally, with heavy exploitation leading to concerns about sustainability. • In areas like **Cameroon** and **Gabon**, harvesting is subject to quotas and permits, especially since the wood is listed under CITES Appendix II (Tosso et al., 2015). **2. Processing:** • After harvesting, processors prepare the timber for export. This may involve basic milling or more advanced treatments to increase the wood's value for international markets. In Gabon and Cameroon, this process is mostly controlled by industrial players due to the infrastructure needed for such operations.

	• Small-scale processors also exist, but they tend to focus on local markets. **3. Transportation:** • The transportation of timber involves loggers moving the wood from remote forests to either processing plants or directly to export hubs. Due to the remote locations of *Guibourtia* species, transportation costs are high, and it involves significant logistical challenges. **4. Export:** • The export process for *Guibourtia* timber is a major part of the value chain, especially for high-end markets in Europe and Asia where demand for **bubinga** wood is strong. The export of *Guibourtia tessmannii* and *Guibourtia demeusei* is regulated under CITES to prevent over-exploitation, requiring exporters to obtain the necessary legal permits before shipping. • Many of the exporters are large multinational companies who dominate the market, although smaller players also participate. **5. Revenue Distribution:** • The distribution of revenue along the value chain tends to be skewed, with exporters and traders capturing the majority of the value, leaving harvesters with a smaller share of the profits (Nkogo et al., 2022). **Conclusion:** The value chain for Guibourtia timber involves multiple stakeholders, from harvesters and processors to exporters. Despite the high value of this timber, revenue distribution is uneven, with most profits going to traders and exporters. Regulatory measures, especially under CITES, aim to balance economic benefits with sustainability efforts.
Processing and Export	The processing and export of raw materials or semi-finished parts for potential inputs destined for finished musical instruments are required to have a CITES export permit whether they are exported directly from the country of harvest / range state or if they were processed into the unfinished product in Spain or any other country in the value chain. The processed form of export is typically considered unfinished and is exported around the world as sawn wood / lumber for making necks and bodies of musical instruments under HS code 4407, veneer processed from sawn wood in the form of back and sides for musical instruments, primarily guitars, under HS code 4408 or as an unfinished part of a musical instrument under HS code 9209. All unfinished forms would require a CITES permit for Export. Reexport or potentially to import depending on the country. Finished musical instruments, finished musical instrument parts and finished musical instrument accessories, exempted under annotation #15 paragraph c), would rarely be completed in the Congo Basin or in the range states presented for this study.
Forest Certifications	The forest certification of *Guibourtia* species, particularly *Guibourtia demeusei*, *Guibourtia tessmannii*, and *Guibourtia pellegriniana*, in their countries of distribution—such as Cameroon, Gabon, and the Republic of the Congo—is primarily governed by the Forest Stewardship Council (FSC). Certification efforts in these countries aim to promote sustainable forest management and limit environmental damage while also contributing to socio-economic benefits for local populations.

	Key Points on Forest Certification: 1. **FSC Certification in Gabon and Cameroon**: o The FSC-certified concessions in **Gabon** and **Cameroon** are regulated to ensure sustainable timber extraction, with reduced environmental impacts such as lower damage to tree species and forest biomass compared to uncertified concessions (Medjibe et al., 2013). o Certified Forest Management Units (FMUs) in **Cameroon** and **Gabon** have demonstrated improvements in social relations between logging companies and local communities, highlighting better conflict resolution and benefit-sharing mechanisms (Cerutti et al., 2014). 2. **Legal Compliance and Monitoring**: o Certification requires compliance with **CITES** regulations and national forestry laws. In Gabon, the government collaborates with international partners to regulate certified logging concessions and ensure compliance with environmental standards (Lescuyer et al., 2021). 3. **Socio-Economic Impact**: o In the **Congo Basin**, FSC certification has contributed to better living and working conditions for workers in certified concessions compared to uncertified ones. It has also improved governance and stakeholder participation in forest management (Cerutti et al., 2017).
Artificial Propagation	While there is limited specific research on the artificial propagation efforts for Guibourtia species (including *Guibourtia demeusei*, *Guibourtia tessmannii*, and *Guibourtia pellegriniana*), there are significant general propagation initiatives in countries like Cameroon, Gabon, and the Democratic Republic of Congo, focusing on tropical tree species. Below is a summary of findings and relevant research related to artificial propagation and domestication efforts in these regions: **General Propagation Initiatives:** 1. **Vegetative Propagation**: Various vegetative propagation methods have been used successfully for valuable tree species, such as air layering (marcotting), cuttings, and grafting, particularly in tree domestication programs across West and Central Africa. These methods are applied in a low-tech, cost-effective manner to promote the propagation of high-value species and ensure sustainable use (Mbile et al., 2004). 2. **Tree Domestication Programs**: The **World Agroforestry Centre** has led tree domestication programs aimed at enhancing the propagation of indigenous species. These programs promote the use of local propagation techniques, training local farmers to propagate trees like *Guibourtia* using simple vegetative propagation methods to scale up production while protecting biodiversity (Mbile et al., 2006). 3. **Community-based Propagation**: Efforts in Cameroon and Gabon involve community-level propagation activities, where farmers are trained to propagate high-value tropical species. These activities are part of larger agroforestry initiatives aimed at enhancing local livelihoods while ensuring environmental sustainability (Degrande et al., 2006).
Investment in Conservation (i.e. private or public sector projects) Plantation or Natural forest studies or actions)	Investment in conservation and plantation or natural forest management for Guibourtia species (*Guibourtia demeusei*, *Guibourtia tessmannii*, *Guibourtia pellegriniana*) in countries of distribution, such as Cameroon, Gabon, and the Democratic Republic of Congo (DRC), includes both public and private sector projects. Here are some notable points: **1. Public and Private Sector Investment:** • **Chinese Investment**: Chinese state-owned and private companies have been investing heavily in the resources of the Congo Basin, especially in logging and forest management. This includes both legal and informal processes for land acquisition and resource extraction, affecting the forests in Cameroon, Gabon, and DRC. These investments have created opportunities but also pose potential environmental risks, particularly in forest-dependent communities (Putzel et al., 2011).

	• **Logging Concessions and FSC Certification**: Some companies in Gabon and Cameroon operate under Forest Stewardship Council (FSC) certification, promoting sustainable timber management practices. FSC certification is linked with selective logging and aims to mitigate the ecological impact of deforestation (Tchatchou et al., 2015). **2. Natural Forest Management and Selective Logging:** • In **Cameroon**, selective logging operations target high-value species like *Guibourtia demeusei*, and management practices focus on maximizing recovery of timber while minimizing forest degradation. Studies in DRC show that around 75% of felled trees, including *Guibourtia*, are merchantable, while the rest is wasted in forests (Nshobole et al., 2018). **3. Challenges and Opportunities:** • **Conservation and Ecotourism in Gabon**: The Gabonese government has created 13 new national parks and invested in ecotourism to diversify its economy away from logging and petroleum. This is seen as an alternative strategy to protect the forests while generating income. However, the challenge remains in enforcing conservation policies and addressing illegal logging and hunting (Laurance et al., 2006). **4. Community-Based Conservation and Restoration:** • Some community-managed projects in Cameroon focus on using selective propagation techniques and agroforestry systems to restore degraded lands and conserve valuable tree species, including *Guibourtia* (Mbile et al., 2006).
Conservation Impact Analysis	As with the other species analyzed for the case studies of Decision 18.321 (Rev. CoP19), there are a range of outcomes from the *Guibourtia* species analysis. It is important to point out the *Guibourtia* species are a high-volume commercial timber compared to the target *Dalbergia* species in this report. The conservation impacts from the exemptions in annotation #15 are less direct and more difficult to analyze comparatively to the *Dalbergia species D. latifolia, D. retusa and D. melanoxylon*. The other key point of impact is the reports, through supplier interviews, that indicate the demand for *Guibourtia* species in finished musical instruments and their parts has slowed over the past few years as a result of the CITES listing and regulations at the range state level. There have been reports that Gabon will increase harvesting quotas of "bubinga." Regardless of the prevalence in trade for finished musical instruments, the conservation impact of use for a musical instrument is lower compared to the overall trade. The supply chain for Guibourtia species is less direct and the wood is exported under HS code 4407 for lumber. A musical instrument wood supplier would most likely buy sawnwood / lumber either by the container or buy from a source already imported into EU, USA or China, for example. The following are a set of measures determined from the case study survey. **1. Regulatory and Legal Measures** • **CITES Listing**: *Guibourtia tessmannii* and *Guibourtia demeusei* are listed under **CITES Appendix II**, regulating international trade. This is a positive step in curbing overexploitation, but enforcement challenges remain due to limited monitoring capacities and corruption.

- **National Forestry Laws**: Countries like Gabon and Cameroon have introduced national regulations to manage logging and enforce sustainable practices. However, illegal logging continues to be an issue, reducing the effectiveness of these legal measures.

Impact: **Mixed**. While regulatory frameworks exist, the lack of effective enforcement undermines conservation efforts.

2. Forest Management and Logging Practices

- **Selective Logging and FSC Certification**: Selective logging is widely practiced, with some companies adopting Forest Stewardship Council (FSC) certification. This promotes sustainable practices, reducing ecological damage and encouraging long-term forest health.
- **Challenges**: Many logging concessions do not adhere to sustainable practices, leading to forest degradation. Reports indicate that 75% of felled Guibourtia trees are usable, but significant volumes are wasted, exacerbating forest depletion (Nshobole et al., 2018).

Impact: **Mixed**. While certified concessions show positive results, unsustainable practices and timber waste are prevalent in non-certified areas.

3. Investment in Conservation

- **Private and Public Sector Investment**: Conservation investments are driven by both national governments and international actors. China's role in the region, through investments in logging and infrastructure, presents both opportunities and risks, with potential environmental costs if sustainability is not prioritized (Putzel et al., 2011).
- **National Parks and Ecotourism in Gabon**: Gabon has designated new national parks and promoted ecotourism as an alternative to logging, with the aim of balancing economic development with conservation (Laurance et al., 2006).

Impact: **Positive**. Investments in conservation, especially in Gabon, reflect a commitment to sustainable development, though the broader region faces mixed outcomes.

4. Artificial Propagation and Reforestation Efforts

- **Artificial Propagation**: Vegetative propagation techniques have been implemented for various tropical species, though specific research on *Guibourtia* propagation is limited. Some community-based reforestation efforts focus on restoring degraded forests with high-value species (Mbile et al., 2006).
- **Challenges**: Artificial propagation has not yet been widely adopted for Guibourtia species, limiting its impact on population recovery.

Impact: **Neutral**. While artificial propagation techniques exist, their implementation for *Guibourtia* species remains limited.

5. Community-Based Management

- **Community Involvement**: In countries like **Cameroon**, community-managed forestry initiatives have empowered local populations to engage in sustainable timber harvesting and agroforestry. This has had a positive impact on both livelihoods and forest health (Mbile et al., 2006).
- **Challenges**: These programs are often underfunded and struggle to scale up, limiting their overall reach and effectiveness.

	Impact: **Positive**. Community-managed programs show promise, though they require further investment to expand their impact. --- **Conclusion: Positive or Negative Impact?** The **conservation impact** of efforts to protect Guibourtia species in Central Africa presents a **mixed but cautiously positive outlook**. There are significant positive developments: • **Regulatory frameworks** like CITES have slowed illegal trade. • **Sustainable management** practices, particularly through FSC-certified logging, have demonstrated ecological benefits. • **Community-based initiatives** have shown success in involving local populations in conservation and sustainable forestry practices. • **Ecotourism and national parks** in Gabon provide alternative income sources while protecting forest ecosystems. However, the **overall conservation efforts are hampered** by the following negative impacts: • **Weak enforcement** of regulations continues to enable illegal logging. • **Selective logging** practices, while less damaging than clear-cutting, still contribute to significant forest degradation. • **Lack of large-scale propagation and reforestation efforts** for Guibourtia species limits population recovery. Given the ongoing initiatives and growing awareness of sustainable practices, the conservation trajectory appears positive, but continued efforts and improvements in enforcement, funding, and community involvement are essential to ensure long-term success. **Final Impact Conclusion**: **Cautiously positive**, with room for improvement.

2.4. Chapter 2 preliminary conclusions

The case studies found that current management measures and data reporting requirements for the target species of both raw materials and finished products need more investment to monitor and mitigate conservation risks such as overharvesting due to high demand versus a sustainable recovery rate determined in completing comprehensive NDFs. The study found that the most effective measure to mitigate conservation impact would be best completed at the range state level. Investments in NDFs, legal acquisition procedures and efficient processing in the value chain would provide better conservation outcomes than regulating finished products exempted in annotation #15. This was common to each species that was analyzed.

Based on this analysis, the conclusion is that although there is a relatively high conservation impact from producing a finished musical instrument, the exemptions found in annotation #15 are having a relatively low conservation impact overall. This conclusion is based on the review of management measures and the need for more investment in the value chain at the range state level.

3. Chapter 3: Closing reflections and preliminary recommendations in support of Decisions 18.321 (Rev. CoP19) and 18.322 (Rev. CoP19)

3.1. Overarching reflections

The present report's findings in accordance with Decision 18.321 (Rev. CoP19) can be seen as an extension to the outcomes of the CITES Rosewood report. Responses from PC26 Doc. 37 provided the roadmap for experience with the implementation of annotation #15 and was used as a key document for completing the analysis.

The CITES Rosewood report provided a valuable foundation to complete Decision 18.321 (Rev. CoP19) and analyze the conservation impacts of annotation #15 exemptions paragraph c) and where relevant paragraph b), including the selection of the regionally representative case studies that are the focus of Chapter 2 of the present report.

The CITES Rosewood report provided a comprehensive review and inputs for aligning with Module 10 of the CITES Non-Detriment Findings Guidance for timber producing species as well as relative data for completing the case studies found in Output 2 of the present report. The fact sheets provided a consolidated data source for approaches to determine conservation impacts from the exemptions found in annotation #15 and where to focus attention for completing assessments of trade flows and management measures in the case studies.

The findings and recommendations in the Decision 18.321 (Rev. CoP19) report are presented in the hope that the information and conclusions will provide insights for addressing conservation and trade issues for CITES listed species. It is the hope that the information will be useful to the Plants and Standing Committees as well as Parties and stakeholders to prioritize strategies and information sharing for improving data for evaluating annotations as mandated Decision 19.266 on the Informal review mechanism for existing and proposed annotations. It is also the hope that findings and recommendations can add to the process of reviewing policies for listings based on updates to Resolution Conf. 10.13 (Rev. CoP18) on the Implementation of the Convention for tree species, when appropriate.

The findings from the two main components of the study to complete Decision 18.321 (Rev. CoP19) provide significant insight into the conservation implications and impact of the exemptions contained in annotation #15 paragraph c) for finished musical instruments, parts and accessories and where relevant the exemptions found in paragraph b) Finished products to a maximum weight of wood of the listed species of up to 10 kg per shipment.

Summary of overarching findings:

- It is critical to improve data reporting and improve data correlation through the CITES Trade Database and potentially the use of other data sources to fully analyze annotation #15 conservation implications or moreover, to complete future studies on conservation impacts of finished products containing CITES listed species.

- Annotation development can benefit from improved and correlated data for listing species as well as evaluating the effectiveness of species management regulated by annotations such as evaluating the conservation impact from exemptions in annotation #15.

- Mitigation of conservation impacts from trade from finished products exempted in annotation #15 would be more beneficial through actions at the range state level where the first commodity in trade occurs and where the oversight on forest management as well as primary processing is directly related to the conservation impact on the species.

- Management measures and regulations are in place in all case study areas but data gaps from NDFs and commercial trade are apparent. The access to usable data is a major issue. Addressing data deficiencies and access to data through reporting improvements would improve analysis of conservation impacts from finished products.

- Increasing traceability and monitoring capacity in range states could improve responses for timely and science-based conservation interventions.

- Exemptions in annotation #15 are having a low conservation impact on targeted species based on overall trade, however, the conservation impact from producing a finished musical instrument is analyzed as a relatively high impact based on the yield and direct use of the target species. This is true for *Dalbergia* species in particular.

- Finished musical instruments and their parts are predominantly finished outside the countries of harvest of the target CITES listed species. Increasing actions for sustainable forest management and investing in the value chain at the range state level, by the musical instrument sector, would increase long-term commercial availability and sustainable use of CITES listed species that are important for culture and tradition for producing musical instruments.

3.2. Closing reflections on Chapter 1 on the mapping and analysis of the supply-chain of specimens exempted through annotation #15

The goal of Output 1 (Chapter 1) of the study was to provide a comprehensive analysis of the trade flows of target species and target commodity groupings that are exempted under #15 paragraph c) Finished Musical Instrument, Finished Musical Instrument Parts, and Finished Musical Instrument Accessories. There was also an analysis of trade trends of target species with 10kg or less under the annotation #15 paragraph b). This was added to increase analysis of exemptions found in annotation #15, although Decision 18.321 (Rev. CoP19) did not indicate this as part of the mandate.

The basis of the study under Decision 18.321 (Rev. CoP19) is to determine the conservation implications of the outlined exemptions. This required understanding the different sectors use of the species and the time frames of regulated and unregulated trade of finished products outlined in annotation #15 paragraph c).

A fundamental finding was there needs to be alignment and improvements to annual reports that are required to be submitted to the CITES Secretariat by Parties to successfully complete these types of analysis. A key recommendation will be to incorporate other trade data sources such as alignment with HS codes and other databases to effectively correlate data across a range of product forms that annotations are trying to regulate.

The current tools that are needed to conduct a survey or study on the implications for conservation of any CITES listed species are limited as a result of the limitations to searches and filters available with the CITES Trade Database. The database cannot filter for relevant forms or finished products which presented the need to develop a methodology that converted volumes to cubic meters and incorporated the use of other databases and metrics for assessing the mandate of conservation implications as a result of the exemptions in annotation #15.

The methodology developed for completing Output 1 on trade flows was designed to provide a comparative analysis of the trends of export and import data captured from the CITES Trade Database and based on the limitations incorporate inputs from other global databases particularly from World Bank WITS database on HS Code declarations concerning commodities of interest. Stakeholder consultations were also a key component.

The methodology developed for the study helped organize and present data and trends in the histograms and charts of Output 1. The incorporation of multiple data sets provided an overview of the yearly totals of potential Dalbergia use in the unfinished form before it is transformed into a finished musical instrument. This data provides the qualitative and quantitative comparison necessary for addressing the goal of this study for conservation implications of the exemptions in annotation #15. This data provides a basis for analyzing the time frames of regulated trade of finished products from 2017 - 2019 and the time frames of un-regulated trade of finished products once the exemptions in annotation #15 entered into effect from 2020 (following CoP18) to date.

There were a number of obstacles for obtaining data that was relevant to the tasks of useful and practical comparative analysis for completing the goals of Output 1 on trade flows. For example: there was a need to convert volumes and metrics of declared data from the CITES Trade Database into cubic meters as there are at least three different metrics that were converted and also a specimen's category that requires a different conversion. These conversions - and the methodology for their use - is a very important aspect of completing the goal of the study.

It is critical to show where the regulated species originate and when the regulations under annotation #15 change in 2020. This is demonstrated through comparative charts and narrative for analyzing the trends of export and import. The methodology relied heavily on export as this is a more direct link to the range state and conservation implications of trade on the target species groups.

The other critical methodology was to develop a similar presentation of relevant data that demonstrates the most important global areas of manufacture of finished musical instruments. This was developed using HS Codes as there are very few practical methods for obtaining data on trade flows outside of how trade is regulated. There were interviews with manufacturers to gain perspective on volumes and quantities of the instruments produced in different HS Code related scenarios. This is important because HS Codes do not capture individual musical instrument quantities in trade.

In order to overcome the data gap issues around HS Codes, a methodology was developed for volumetric comparisons of sample finished musical instrument groupings that traditionally or potentially could have a Dalbergia or Guibourtia species component. The three case examples are HS Code 920790 for electric guitars, 920590 for clarinets and 920290 for acoustic guitars.

The overarching comparisons between the species and commodity data show clear trends of regulated and non-regulated timeframes under annotation #15. The data also is very useful in clearly demonstrating that the majority of exports and imports of the target species trends where musical instruments are manufactured.

The data clearly indicates that the trade trends of manufacturing or finishing musical instruments is outside of the range States where the target species would have conservation implications for management. This is an important indicator for conservation impact based on the CITES precedent of annotations striving to regulate the first commodity in trade to gain the most impact for sustainability of a listed species such as Dalbergia.

The fact that the "finished" product is exempted will be further measured for conservation impact in Output 2. This analysis will focus heavily on Non-Detriment Findings and whether forest and species management practices in the countries of origin is sufficient to effectively prevent the risks to the species from trade.

Consultations with stakeholders indicate that although there are concerns with the implementation of annotation #15, it works better with the exemptions. This was a stated fact from Management Authorities, private sector companies as well as NGOs that have direct experience in the issues based on participation in the CITES annotations working group and trade.

There was interest from all stakeholders in the outcomes from completing Decision 18.321 (Rev. CoP19), but the responses indicated that there were no major indicators of concerns based on the exemptions. Basically, annotation #15 as amended CoP 18 is working. The major elements of concern from stakeholders involved making sure that CITES permits are issued for non-exempted materials on time, range countries are formulating NDFs that will be accepted by import countries, that shipping is taking place without disruptions, which can cause issues for CITES permit expiration. The impacts on trade from COVID were prevalent during the quarantines and disruptions to shipping but at this point are a nonfactor for trade.

A key finding is that there is a stronger sense of knowledge and investment responsibility for conservation by the private sector that is reliant on the raw materials at the range state level and for companies producing finished products. These indicators are apparent in programs and studies that are taking place that are directly related to the 2016 CoP 17 genus level listing of Dalbergia species and the three Guibourtia species and the formulation of annotation #15.

The key outcomes as they relate to trade flows, mapping the supply chains and conservation implications, that are described in the Executive Summary, are reiterated here:

Recap of conclusions for Chapter 1

The analysis of trade data from the CITES Trade Database and the World Integrated Trade Solution (WITS) database reveals significant trends in the export and import of *Dalbergia* and *Guibourtia* species across various timeframes, particularly in relation to the implementation of annotation #15.

1. Impact of annotation #15: The data shows clear shifts in trade volumes corresponding to the regulatory changes brought by annotation #15. For instance, there is a noticeable increase in the export volumes of *Dalbergia latifolia* and *Dalbergia melanoxylon* after the initial implementation of annotation #15 in 2017. However, the introduction of exemptions in 2020 seems to have contributed to fluctuations in the trade of finished musical instruments, with some increases in 2020 caused by a higher demand in musical instruments, especially guitars during the Covid-19 pandemic.

2. Geographical Disparities in Trade: The trade analysis indicates that the majority of finished musical instruments are manufactured outside the range states where the target species are harvested. For example, countries like Indonesia, China, and the United States are leading manufacturers of musical instruments, while the raw materials, particularly *Dalbergia* species, are predominantly sourced from countries like India, Nicaragua or Tanzania. In the case of Indonesia there is significant use of domestic sourced *D. latifolia*, but it is artificially propagated.

3. Data gaps and reporting Inconsistencies: There are significant gaps in the reporting of trade data, particularly concerning the quantities of raw materials versus finished products. This issue is evident in the case of electric guitars, where Indonesian export quantities are underreported, despite the country being a major producer. These gaps in the available data are visible when attempting to correlate the CITES database with manufacturing industries, in this case with the musical instrument production industry, as there is no qualitative data reported regarding the use of the exploited and traded wood volumes, making it difficult to assess the impact of various industries on the exploitation of *Dalbergia* and *Guibourtia* species.

4. Conservation Implications: The findings underscore critical conservation concerns, particularly the sustainability of *Dalbergia* and *Guibourtia* species under the current data reporting regime where there are gaps between export and import as well as the inability to report on specific products finished or unfinished. The following points highlight the conservation implications of the study:

    a. Sustainability of Harvested Species: The extent of trade in finished products and the potential prevalence of *Dalbergia* and *Guibourtia* species in finished musical instrument is not of very high impact, considering the results reflected in the pie charts from Chapter 7 of Output 1. However, it is critical to examine exemptions from CITES regulations going forward with more specific reporting on potential exemptions. The lack of data or moreover, the lack of correlated data may undermine conservation efforts by allowing higher volumes of raw material extraction if there is insufficient oversight i.e. lack of scientific and fact based NDFs and LAFs, or a very critical aspect – the lack of proper traceability and transparency systems and tools that could provide key data on the sustainability of the harvesting of these species. In addition, the lack of correlation between the data reported in the CITES database and the type of use of the traded wood does not allow for a critical analysis of the impact that certain types of industries may have on the sustainability of *Dalbergia* and *Guibourtia* species exploitation. As a result, certain conservation measures or restrictions may not be adjusted according to the industries that could exert pressure on forest resources.

    b. Need for Stricter Monitoring: The analysis suggests that current exemptions under annotation #15 may be low impact but more data is needed to protect vulnerable species especially in a context of weak monitoring and control at the range state level. Stricter monitoring, traceability systems and a better, more detailed reporting should be required to the parties, particularly for finished products – this is a gap in the CITES reporting database. Moreover, to assess impacts of various industries on species harvesting it is necessary to get specific data for finished products, which

can be correlated to the trade data reported. Better data from the sectors using CITES listed species would enhance the understanding of conservation impacts and increase potential investment towards a species specific or landscape level issue.

c. Conservation vs. trade facilitation: While the exemptions aim to facilitate trade in finished products based on their potential impact on species sustainability, It is critical to evaluate and act on recommendations to improve data for CITES listed species so as not to inadvertently prioritize economic interests over conservation. The study highlights the need to balance these objectives, ensuring that the trade in musical instruments does not come at the expense of species conservation but moreover, to increase the ability for regulations to be practical and for trade to have mutual benefits that include environmental, economic and social benefits.

d. Conservation benefits from trade: Based on analysis of the regulations under annotation #15 that continue to require CITES permits for all parts and derivatives except for the exemptions in paragraph b) for weight limits of 10kg per shipment and paragraph c) for finished musical instruments, finished musical instrument parts and finished musical instrument accessories, there are tangible benefits for CITES listed species from trade and in particular trade in musical instrument components.

As highlighted in the study, conservation and trade are inextricably linked through environmental, cultural, social and economic benefits. The analysis from the trade flows and case studies of species, targeted for this report, shows that *Dalbergia* species are key components in a variety of musical instruments. The trade in these species can be beneficial for the trade of CITES listed species if it is not detrimental to the survival of the species.

The study found that the trade of the target species provides income throughout the value chain - for small agroforest land holders, family run mills and tax revenue for range states to implement regulations and oversight. Moreover, supplying timber for the musical instrument trade is almost direct and there is a knowledge and education level in the musical instrument industry that is concerned about the long-term sustainability of the species that have been used for centuries to produce musical instruments.

5. Data Improvements for Range States: A key outcome is the study highlighted challenges facing range state countries where investment in NDFs, traceability systems and accurate data reporting are critical. The lack of linked and correlated data and the need for more investment in technology for data management could impact the sustainability of *Dalbergia* and *Guibourtia* species. These insights will be critical in shaping the recommendations and case studies to be presented in subsequent reports.

6. Impacts of the COVID-19 pandemic: The report indicates, based on trade flows of delineated time frames of regulated and unregulated CITES species, that global issues such as COVID had a direct effect on the trade of species and finished products. There were multiple effects including CITES permit expirations of products in transit, supply chain disruptions due to shipping backups at ports, increase in the volume of raw materials of species of wood used in musical instruments, higher demand for finished musical instruments globally, such as guitars - as people were quarantined, and indicators that these changes and challenges can have an effect on demand and management at the range state level which can affect conservations impacts.

In conclusion, the findings of this report highlight the complex interplay between trade regulation and species conservation. The data suggests that the amendments to annotation #15 (CoP18, 2019) has facilitated trade activities successfully under the Convention and that there is greater understanding of the issues regarding conservation of *Dalbergia* and *Guibourtia* species particularly in the musical instrument community. The study found that there have been more investments in studies and programs for species specific conservation and sustainability because of the CITES listings. The main concerns continue to be more investment in and implementing strong oversight and data reporting requirements. This point was backed up during the intersessional Annotations Working Group where there was strong participation by private sector, environmental NGOs and Parties.

Based on the findings and comparative analysis of trade and management measures it is concluded that the exemptions in annotation #15 are having a low conservation impact based on comparative levels of total trade. However, the study does determine that producing a finished musical instrument has fairly high

conservation implications based on the yield and use of very specific species such as *Dalbergia latifolia* and *Dalbergia melanoxylon* where the demand from the musical instrument sector is almost direct. A key finding highlights the fact that *Dalbergia latifolia* is by far the most traded *Dalbergia* '"rosewood" species by volume with the majority being from artificially propagated sources in Indonesia. The study concludes with recommendations, based on findings, for mitigation strategies for conservation implications that require investment from stakeholders throughout the value chain. The musical instrument sector has a very strong role to play in the mitigation process through investment and direct action.

As the issues being addressed in Decision 18.321 (Rev. CoP19) are becoming more prevalent with genus-level listings and commodities, we hope this report will make useful recommendations to the Secretariat and Parties for improving and increasing requirements for declaring data.

3.3. Closing reflections on Chapter 2: Regionally balanced set of case studies on the effects on *Dalbergia*/*Guibourtia* species in international trade of the exemptions contained in annotation #15

The case studies found that current management measures and data reporting requirements for the target species of both raw materials and finished products need more investment to monitor and mitigate conservation risks such as overharvesting of the "wild" species due to high demand versus a sustainable recovery rate that should be determined through comprehensive NDFs.

The study found that although there is a relatively high conservation impact from producing a finished musical instrument, the exemptions found in annotation #15 are having a relatively low conservation impact overall.

This conclusion is based on the review of scientific assessments through NDFs, management measures, and analyzing the effectiveness of legal acquisition with the conclusion that there needs to be more investment in the value chain at the range state level.

Based on the review of management measures and data availability on the value chains of the target species, the study found that the most effective measure to mitigate conservation impact from trade would be best completed at the range state level. Investments in updating and standardizing NDFs, legal acquisition procedures and efficient processing in the value chain would provide better conservation outcomes than regulating finished products exempted in annotation #15. This was common to each species that was analyzed.

The study does highlight conservation concerns and specific species issues within this scope particularly for issues of regeneration and slow growth rates in comparison with demand. Factors regarding improving monitoring and enforcement through comprehensive traceability systems are also critical to improving data reporting to address conservation implications from trade.

Based on this analysis, the conclusion is that the range states and species included in the study have mature regulatory frameworks but could benefit from stronger partnerships with fellow Parties, the private sector and non-governmental organizations to institute better data reporting and conservation focused investment strategies. Increased benefit sharing and efficiency in the processing would increase incentives to monitor against illegal logging and unsustainable use.

Based on the study, annotation #15 without the amendments from CoP 18 added significant permit burdens for Management Authorities where permits were required for all commercial transactions. Based on data reporting issues, regulating finished products under the CoP17 annotation #15 with no exemptions for commercial products, finished or unfinished, did not provide any additional conservation mitigation than requiring CITES permits for the unfinished material and regulating the first commodity in trade at the range state level. The listing did increase direct investment in due diligence and initiated more direct investment in conservation assessments to understand the status of commercially traded species such as *D. latifolia*.

There was consensus from stakeholders that annotation #15 is working. Parties responded that annotation #15 with the exemptions from CoP 18, has significantly reduced the permit burden. Private sector companies have indicated that the permit burden was surmountable but with the exemptions there is less confusion in the marketplace on compliance with CITES regulations and moreover, more interest in continuing to invest and continue to use CITES listed species in musical instruments instead of finding alternatives.

Based on the data gaps on species specific conservation and trade dynamics, there is keen interest in the outcomes from the analysis of Decision 18.321 (Rev. CoP19) study as genus level listings increase and products are analyzed for conservation impacts. There is consensus that better and more correlated data on trade and value chains related to finished products and ways to capture that data should be integrated into management of the trade of CITES listed species.

The musical instrument industry has made significant investments in understanding the conservation issues of the target species as well as investments to increase conservation measures such as scientific studies and reforestation programs at the local level. The analysis indicates this is a direct result from the CITES Appendix II listing of the Dalbergia genus as well as the amendments to annotation #15 at CoP18 where the current exemptions in paragraph c) are found. The result has been active participation in the CITES forum on policy and conservation issues.

As stated above, more investment and data correlation between the private sector and CITES needs to take place to increase opportunities to address conservation impacts from the sectors that are using CITES listed species.

Having stated the above conclusions, the case studies reveal a complex intersection of conservation, trade, and socio-economic factors surrounding *Dalbergia* and *Guibourtia* species. While significant progress has been made through certifications, non-detriment findings (NDFs), and sustainable forestry initiatives, the challenges remain formidable. Illegal logging, driven by international demand, undermines conservation efforts, and the slow growth and regeneration rates of these species further complicate their sustainability.

For *Dalbergia* species, particularly *D. retusa*, the conservation status is precarious, with populations continuing to decline in key regions despite the implementation of regulatory frameworks. Forest certification and reforestation projects, although beneficial, are still in their early stages and require more widespread adoption and rigorous enforcement. It is critical to keep science at the forefront through comprehensive NDFs that systematically address the race between increased demand and sustainability. Similarly, *Guibourtia* species, though less documented, face similar risks due to overexploitation for global markets.

Ultimately, the long-term conservation and sustainable management of *Dalbergia* and *Guibourtia* species will require stronger enforcement of legal frameworks, enhanced traceability systems, and broader international cooperation. Investment in sustainable forestry practices at the local level, combined with global market regulation, will be critical to reversing the decline of these important species. Effective management strategies, including increased transparency in trade and investment in local conservation projects, will be essential for ensuring their survival.

CITES regulations have proven vital, but their enforcement must be scaled up, particularly in range states where resources are limited, and illegal trade is prevalent. The emphasis should be on improving governance, enhancing local community engagement in forest management, and ensuring that economic incentives are aligned with conservation goals.

Recommendations relating to Chapter 2

The following recommendations are meant to address the outcomes from the study and provide a framework for policy development and engagement between Parties as well as with private sector and non-governmental stakeholders.

- CITES Trade Database Improvements:

The study found the CITES Trade Database is a critical tool for capturing the required annual reports from Parties on the export, import and reexport of CITES listed species. The database is in need of refinements to better capture data on the trade of species and products. There could be a pilot version developed around Decision 18.321 (Rev. CoP19) findings and recommendations.

- Update and Improve Guidelines for Annual Reports from Parties:

To effectively assess conservation and trade impacts on CITES species or to evaluate a particular exemption such as in annotation #15, it is recommended to update the guidelines for reporting by Parties, Resolution Conf. 11.17 (Rev. CoP19), to potentially include a methodology for reporting a conversion to cubic meters as well as reporting on other metrics such as square meters and weight in kilograms. There is a need for developing an agreed method for reporting on specific products that are regulated by annotations. This could be an asset to further develop the references and actions for Conf. 10.13 (Rev. CoP18)* Implementation of the Convention for tree species.

- HS code integration for data collection and trade analysis for unfinished commodities and finished products:

HS codes provide the global format for distinguishing products and regulating trade. To complete Decision 18.321 (Rev. CoP19), HS codes were used to segregate and develop data trends on the trade flows and volumes of the targeted products exempted under annotation #15. It is recommended to incorporate the use of HS codes into the official guidelines of annual reports by Parties and to develop a tool in the CITES Database that can filter searches based on HS code allocations.

- Use Decision 18.321 (Rev. CoP19) findings to investigate the use of other database sources of information to correlate trade data for products that contain CITES listed species.

One of the fundamental issues that was encountered in completing Decision 18.321 (Rev. CoP19) was the issue of available data for analyzing exempted finished products in annotation #15 for conservation implications. As mentioned the CITES Trade Database does not provide the filtration or the ability to correlate data to specific products.

To address this, other database sources were incorporated to develop analysis on trade flows and trends of, in this case, finished musical instruments, finished musical instrument parts and finished musical instrument accessories.

The recommendation is to continue to improve on the functionality of the CITES Trade Database but to also link or approve other data sources that can add needed data inputs for addressing CITES issues for improving conservation and trade solutions.

- Partnerships with private sector and environmental non-governmental organizations:

At its 19th meeting (CoP19; Panama City, 2022), the Conference of the Parties adopted Decision 19.20 on Cooperation with Multilateral Environmental Agreements (MEAs) and other international organizations. This provides a very important opportunity to increase partnerships for increasing data and increasing investment for species specific conservation actions.

Partnerships help build capacity for compliance to CITES by the private sector and moreover, to help direct resources to improving understanding of the value chains in the range states. Increasing capacity and efficiency in the value chain is a key finding from the Decision 18.321 (Rev. CoP19) for improving conservation outcomes. The increase in active partnerships, focused on sustainable forest and species management, would be an additional asset to further developing the references and actions for Resolution Conf. 10.13 (Rev. CoP18) on *Implementation of the Convention for tree species*.

As proven during Standing Committee's Annotations Working Group, participation and partnerships with multiple sectors was and continues to be extremely beneficial to Parties and the Secretariat in

developing workable and practical annotations. These partnerships also provide critical information and expertise for assessing potential listings.

- Annotation reviews and development

Decision 18.321 (Rev. CoP19) was a result of the development and implementation of annotation #15 which was first adopted, implemented and amended over the period of two CoPs (CoP17 to CoP19).

The annotation development process was complex as it covers the complete *Dalbergia* genus, of over 200 species with only a small percentage in actual trade as timber, and three Guibourtia species. It singles out specific countries for specific regulations for species and includes regulations for derivatives and commercial trade.

In its evolution it became a "poster child" for annotation development and workability. The results of Decision 18.321 (Rev. CoP19) findings provide a foundation for reviewing fundamental applications of existing and proposed annotations. The outcomes of Decision 18.321 (Rev. CoP19) can be used as a guideline for improving data sources that could be used as part of the implementation Decision 19.266 on *Informal review mechanism for existing and proposed annotations*.

The CITES Rosewood report provided needed guidance for standardization and formulation of NDFs. This was a key topic of discussion during the NDF Workshop in Nairobi. The findings from Decision 18.321 case studies highlight the review of species-specific management and conservation concerns with current NDFs.

Based on the outcomes of these two integrated reports, it is recommended to create an NDF sub-committee within the Plants Committee to build consensus on the standardization of formulating NDFs for timber species. This could be informal but is an opportunity to include a range of stakeholders for expertise and data inputs. This could be an ongoing working group that can be guided by the outcomes from the NDF workshop in Nairobi in 2023 and the outputs for developing Module 10 on CITES Non-detriment Findings Guidance.

It is recommended to use the CITES Rosewood report and the present report to incorporate an inclusive regionally balanced working group to review and develop a framework for standardization.

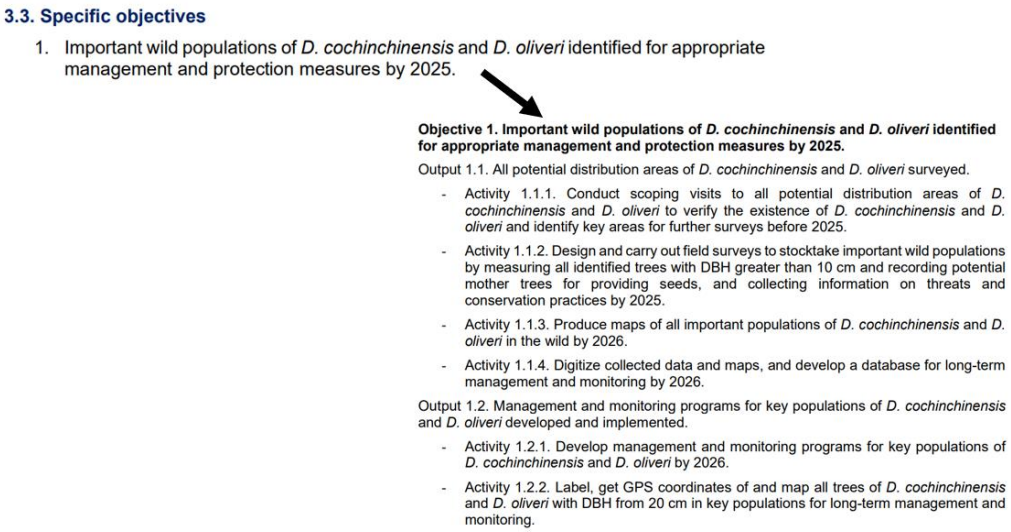
- **Monitoring and Evaluation for Listing and Listed CITES Species**

Questions have been raised on the lifespan of an NDF. What is the most appropriate monitoring and update timeframe?

A key finding from the Decision 18.321 case studies was the need to increase tools for Management and Scientific Authorities to monitor and evaluate NDF processes and to monitor harvesting and commercial management practices. Improving data management and reporting is key to this action.

The CITES Rosewood report outlined several actions that involve more direct monitoring of areas where active harvesting is taking place. One of the key objectives is to increase species specific data and develop actual databases for monitoring.

The following slide was taken from the report to simply demonstrate objectives for improving monitoring and data management of *Dalbergia* species.



The actions outlined in the slide are relevant to all regions and species that require more detailed NDF and management measures. The objective to digitize data and maps is a recommendation that should be emphasized for all data reporting going forward.

It is recommended to integrate technology into the monitoring and evaluation process to increase reliability and efficiency of completing inventories, permanent monitoring plots and improving traceability for legal acquisition compliance. Moreover, using digital tools would increase access for completing studies such as Decision 18.321.

- **CITES Tree Species Project (CTSP) –Partnership opportunities**

In coordination with the outlined and developing CITES partnership strategy, it is recommended to deliberate potential partnership opportunities to add funding mechanisms through programs such as the CTSP.

Outcomes from the 18.321 indicate conservation impacts are best addressed at the range state level. In reviewing management measures and regulatory frameworks that are currently in place, analysis indicates the direct importance of *Dalbergia* and *Guibourtia* species to the stakeholders throughout the value chain.

Conservation implications are rooted in the entire value chain. There are integrated impacts on social, economic and environmental factors that are reliant on the sustainable management of a given species such as *D. melanoxylon*. The value chain and sustainable species management relies not only on the science and legal framework but also the people that benefit from the economy of the species.

The recommendation is to look at current programs such as the CTSP to add value chain investment strategies that can be addressed through public / private partnerships to raise strategic funding for increasing benefits sharing in the value chain. This can include programs for artificial propagation and reforestation as well as processing efficiency and yield improvements. Moreover, the CTSP might be an appropriate vehicle for establishing training and monitoring programs that can be incorporated into NDF development and updates.

Recap conclusions for Chapter 2

The findings and recommendations from the Decision 18.321 (Rev. CoP19) study are crosscutting. Assessing the conservation impacts of exemptions found in annotation #15 was a complex process. Methodologies for organizing and analyzing trade trends had to be developed. Improving correlated data is

essential to the task of producing useable assets to complete studies on the conservation implication from exempted finished products that contain a component of a CITES listed species.

Thankfully, the musical instrument industry was open and interested in ensuring information sharing will lead to sustainable outcomes for the species traditionally used in the sector.

Many of the recommendations put forward are not new ideas but are based on the continued need to update and assess the best tools and expertise for developing solutions for sustainable use of CITES listed species in trade. It is about trade and conservation.

The findings and recommendations from Decision 18.321 (Rev. CoP19) emphasize the opportunities that can be developed to address conservation and sustainable forest and species management. Focusing on value chain investments and building on the expertise available through Parties and Non-governmental Organizations will increase the potential for sustainable use and positive conservation outcomes.

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