

**TRAFFIC**

August 2022

# CHINA'S ROSEWOOD MARKET SURVEY

Ke Zhang,  
Hin Keong Chen,  
Yuqi Yang

# TRAFFIC REPORT

## ABOUT US

TRAFFIC is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

Reproduction of material appearing in this report requires written permission from the publisher.

The designations of geographical entities in this publication, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of TRAFFIC or its supporting organisations concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

## SUGGESTED CITATION

Zhang, K., Hin Keong, C. 2022. *China's rosewood market survey*

## LEAD AUTHOR

Ke Zhang

## ADDITIONAL AUTHORS

Hin Keong Chen  
Yuqi Yang

## PROJECT SUPERVISOR

Gayle Burgess

## PUBLISHED BY:

TRAFFIC International, Cambridge,  
United Kingdom. UK Registered  
Charity No. 1076722

© TRAFFIC 2020. Copyright of  
material published in this report is  
vested in TRAFFIC.

## DESIGN

Marcus Cornthwaite / Abbie Pearce



This project is funded by  
the European Union



# ACKNOWLEDGEMENTS

The authors wish to extend their gratitude to the European Union (EU) for generously funding this important research on rosewood in China.

Special appreciation is due to the Chinese Academy of Forestry (CAF) for their expert advice and elaborations on rosewood and Hongmu species, and to China Timber and Wood Products Distribution Association (CTWPDA) for providing timber market information and co-ordinating with the interviewees. Prof. LIU Hong, XIAO Di, CHEN Hong, ZENG Zhi are also thanked for contributing to the physical market surveys in China.

Appreciation is also extended to Gayle Burgess, XU Ling, James Compton, Stephen Watson, Julie Gray, Marcus Cornthwaite and Richard Thomas of TRAFFIC for their support in the project.

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of TRAFFIC and do not necessarily reflect the views of the European Union.

# TABLE OF CONTENTS

page 04

Glossary / Abbreviations list  
List of tables  
List of figures

page 06

## EXECUTIVE SUMMARY

<b>1. BACKGROUND</b>	09
<b>2. SCOPE AND METHODS</b>	10
2.1 Scope	10
2.2 Methods	11
<b>3. SPECIES PROFILES AND LEGISLATION</b>	13
3.1 CITES and Hongmu species	13
3.2 Ranges of Hongmu standard species	14
3.3 Domestic laws in range countries and hongmu standard species	16
<b>4. MARKET PROFILES AND PRICING</b>	18
4.1 Timber forms and pricing factors	18
4.2 The main influence of price	19
4.3 Markets and merchants	19
4.4 Species types and values	20
4.5 The search for sustainable supplies	21
<b>5. DISCUSSION</b>	22

page 24

## RECOMMENDATIONS

page 26

## ANNEXES

ANNEX 1: Species Profiles	26
ANNEX 2: Market Profiles	38
ANNEX 3: Template of survey interview and questionnaire	58
ANNEX 4: Statistics on furniture prices	59
ANNEX 5: Statistics for prices of hewn logs	60

page 62

References

## GLOSSARY / ABBREVIATIONS LIST

BRI	Belt and Road Initiative
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CITES MA	CITES Management Authority
CTWPDA	China Timber & Wood Product Distribution Association
EUTR	European Union Timber Regulation
FOCAC	Forum on China-Africa Cooperation
INTERPOL	International Criminal Police Organization
Lao PDR	Lao People's Democratic Republic
MEE	Ministry of Ecology and Environment
MOFCOM	Ministry of Commerce
NFGA	National Forest and Grassland Administration
SOP	Standard Operating Procedure
UNODC	United Nations Office on Drugs and Crimes
WCO	World Customs Organization

## LIST OF TABLES

13	Table 1 Hongmu and substitute species in the CITES Appendices
15	Table 2 Species listed in China's National Hongmu Standard
17	Table 3 Policies in countries of origin for Hongmu Standard species
36	Table 4 Price overview of Dalbergia species listed in the National Hongmu Standard in 2018
37	Table 5 Price overview of Dalbergia species listed in the National Hongmu Standard from 2010 to 2017
41	Table 6 The main species used for finished furniture in the Beijing-Tianjin-Hebei region
46	Table 7 Comparison of tropical hardwood distribution in Kunming, Dehong (Ruili, Jiegao and Nongdao ports), Jinghong, 2018. Source: TRAFFIC
53	Table 8 Type and materials used in key Hongmu furniture production bases in Guangdong.
55	Table 9 Distribution of tropical hardwood species in the main Guangdong markets, 2018. Source: TRAFFIC

## LIST OF FIGURES

18	Figure 1 Distribution and function of the major tropical hardwood markets in China
26	Figure 2 <i>D. cochinchinensis</i> logs and sawn wood, photographed in Baxia, Xianyou, Fujian, 6th September 2018. © TRAFFIC
27	Figure 3 <i>Dalbergia oliveri</i> Chinchang sawn wood, photographed in Zhangjiagang Bigland City rosewood market, 30th August 2018. © TRAFFIC
27	Figure 4 <i>Dalbergia latifolia</i> Sonokeling sawn wood, photographed in Shanghai Furen timber market, 20th November 2015. © TRAFFIC
28	Figure 5 <i>Dalbergia cultrata</i> Yindaik sawnwood, photographed at the Shanghai Furen Timber Market, 19th October 2011. © TRAFFIC
28	Figure 6 Sample of <i>Dalbergia odorifera</i> , photographed in Fu Tsin, Fujian Province, 7th September 2018. © TRAFFIC
29	Figure 7 <i>Dalbergia retusa</i> Cocobolo and <i>Dalbergia granadillo</i> sawn wood, photographed at the Shanghai Furen Timber Market, 11th September 2018. © TRAFFIC
30	Figure 8 <i>Dalbergia stevensonii</i> Honduran Rosewood lumber, photographed at the Shanghai Furen Timber Market, 20th November 2015. © TRAFFIC
30	Figure 9 <i>Dalbergia cearensis</i> Kingwood lumber, photographed at the Shanghai Furen Timber Market, 16th May 2017. © TRAFFIC
30	Figure 10 Sample of <i>Dalbergia decipularis</i> Brazilian Tuliwood, photographed at the Shanghai Furen Timber Market, 30th April 2015. © TRAFFIC
31	Figure 11 <i>Dalbergia congestiflora</i> lumber, photographed at the Zhangjiagang Eastern China Timber Market, 31st August 2018. © TRAFFIC
31	Figure 12 Sample of <i>Dalbergia tucurensis</i> , photographed at the Shanghai Furen Timber Market, 29th July 2014. © TRAFFIC
32	Figure 13 Logs of <i>Dalbergia melanoxydon</i> , photographed at the Zhangjiagang Eastern China Timber Market, 31st August 2018. © TRAFFIC
32	Figure 14 Logs of <i>Dalbergia melanoxydon</i> stamped with non-CITES marking, photographed at the Zhangjiagang Golden Port Logistics Timber Market, 20th December 2017. © TRAFFIC
33	Figure 15 Logs of <i>Dalbergia melanoxydon</i> from Nigeria, photographed at the Shanghai Furen Timber Market, 12th August 2015. © TRAFFIC
33	Figure 16 Logs of <i>Dalbergia louvelii</i> photographed at the Shanghai Furen Timber Market, 9th May 2017. © TRAFFIC
34	Figure 17 Logs of <i>Dalbergia nitidula</i> , photographed at the Shanghai Global Rosewood Market, 30th April 2015. © TRAFFIC
35	Figure 18 Palissandre sawn wood, Photographed at the Zhangjiagang Golden Port Logistics Timber Market, 28th March 2011. © TRAFFIC
38	Figure 19 Market shares of precious wood species in Pingxiang, 2018.
39	Figure 20 Market shares of precious wood species in Dongxing, 2018.
39	Figure 21 Market shares of precious wood species in Nanning, 2018.
40	Figure 22 Species used in furniture manufacturing in Guangxi markets (based on appearance frequency). Source: TRAFFIC.
40	Figure 23 Appearance frequency of different tropical hardwood species are used in furniture manufacture in Pingxiang, 2018. Source: TRAFFIC
40	Figure 24 Appearance frequency of different tropical hardwood species are used in furniture manufacturing in Dongxing, 2018. Source: TRAFFIC
40	Figure 25 Appearance frequency of different tropical hardwood are used in furniture manufacturing in Nanning, 2018. Source: TRAFFIC
43	Figure 26 Average price (in USD) comparison for species in Yunnan Province, 2018. Source: TRAFFIC
47	Figure 27 Composition of tropical hardwood species in Yunnan markets (based on appearance frequency), 2018. Source: TRAFFIC
47	Figure 28 Appearance frequency of tropical hardwood species in Kunming, 2018, research observations by TRAFFIC
48	Figure 29 Appearance frequency of tropical hardwood species in Ruili, Jiegao and Nongdao ports, 2018. Source: TRAFFIC
48	Figure 30 Appearance frequency of tropical hardwood species in Jinghong, 2018. Source: TRAFFIC.
49	Figure 31 Appearance frequency of Hongmu and CITES species in all locations of Yunnan, 2018. Source: TRAFFIC
49	Figure 32 Distribution of source countries for unhewn logs and furniture in major Yunnan markets, 2018. Source: TRAFFIC.
50	Figure 33 Entry ports for various timber species, 2018. Source: TRAFFIC.

# EXECUTIVE SUMMARY

## ROSEWOOD IS A GENERAL DESIGNATION OF A SPECIFIC GROUP OF HIGH-QUALITY TROPICAL HARDWOODS

“Rosewoods” are a group of prized tropical hardwoods used in the Chinese traditional furniture and arts and craft industries. They are valued for their high quality and ability to fulfil the technical requirements of certain furniture or carving styles. The demand for rosewood and other tropical hardwood species has remained high in the Chinese market since around 2000, driven in part by Chinese economic development.

This is explored further in the two companion TRAFFIC reports to this study: *Rosewood Products and Consumption in China* report, and *Rosewood Policy in China*.

In TRAFFIC's research for the former, 32% of 3,160 survey respondents indicated they had previously purchased rosewood products. This relatively large proportion reflects the increase in wealth and disposable income of China's middle classes in recent years and an associated desire for rosewood items as a celebration of tradition, culture, and expression of individual status and wealth. Uses associated with this include rosewood furniture and arts and crafts items for household display, as well as for collectibles and investments.

*Embossed Rosewood Hans Lee / Pixabay*

The burgeoning rosewood trade in China has, however, attracted international attention and concern linked to overexploitation, illegality, and socio-economic development issues in source countries in Asia, Africa, and South America. Some estimate that, by value, rosewood represents the most lucrative wildlife trafficking sector (China Green Times, 2015) and most significant illegally traded wildlife species group by volume of seizures (UNODC, 2020<sup>1</sup>).

Using the best available statistics and market surveys from 2010–2019, the research for this report examined the trade in rosewood species, with a focus on 12 *Dalbergia* species and 2 species groups within the *Dalbergia* genus. A dramatic price increase for selected Hongmu species in trade was documented in 2013 associated with rapid developments in the real estate market in China, alongside inflation and the listing of seven species of rosewood in the Appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at the 16th Conference of the Parties (CoP16). That same year, 2013, represented the peak of trade in terms of both volume and price of rosewood in China. However, since 2014, the expansion of the rosewood industry has caused an oversupply of alternative hardwood species and stockpiling of CITES-listed species.

Most rosewood species have dropped in price since the peak of 2013, however, trade in selected rosewood species and high-value Hongmu species reached a second price peak ahead of CITES CoP17 in 2016, when all *Dalbergia* spp. and some other rosewood species were listed in Appendix II, followed by a significant price decline in 2017. Industry representatives and others interviewed for this study attributed this price decline to overstocking of some rosewood products alongside the slowdown in China's real estate market. Additional factors included the exploitation of new rosewood species by the private sector, combined with the requirement for issuance of CITES permits for *Dalbergia* spp. imports, as agreed by Parties through the Appendix II listing at the genus level. China's rosewood market then stabilised between 2018 and 2019. The existing trade

volume and value of rosewood remains high, and information shows that the listing of all *Dalbergia* rosewoods and some palisander tree species in the CITES Appendices from 2017 has pushed some trade underground.

For this study, the main physical rosewood markets in China (major border/ports functioning as wood distribution sites, non-border-port wood distribution sites, processing sites, and markets for finished products) and were visited and surveyed in various cities. Analysis shows there is still potential for price increases in the medium and higher levels of the rosewood market in the next couple of years; demand remains high, and traders are increasing their stocks in anticipation of the next rosewood business boom or “hot season.” The price at the lower end of the market is more stable because of the availability of cheaper substitute species, not listed in the official Hongmu Standard. These substitute rosewood species have the potential to reduce the threat posed to some highly endangered rosewood species if there is sufficient demand for them, although demand for them may in turn cause conservation and management issues due to the threat of heavy logging, trade, and consumption. This is discussed further in the Responsible Consumption Guide for general consumers and Code for Responsible Cross-Border Timber Procurement for the rosewood industry, aimed in particular at members of the China Timber & Wood Products Distribution Association (CTWPDA).

Research for this study did not identify a direct causal relationship between resource scarcity and pricing. However, changing consumer demand led to price fluctuations in non-Hongmu and CITES species. If there continues to be demand for tropical hardwoods other than traditional Hongmu species (which are expensive), the market for “new” tropical hardwoods may grow. For listed species, the implementation of CITES regulations poses challenges and there is a need for more research into issues concerning inadequate regulations, weak enforcement, and technical constraints such as species identification, in both source and importing countries to identify appropriate solutions.

1 UNODC. (2020). *World Wildlife Crime Report 2020*. United Nations.

**The problems and challenges identified in this report clearly demonstrate the need for a co-ordinated approach from the rosewood industry, supply chain actors, and government regulatory agencies. The recommendations to address these are captured here and additional recommendations are presented in the sister TRAFFIC reports to this one: Rosewood Products and Consumption in China report, and Rosewood Policy in China. The recommendations of this market assessment are as follows:**

1. The rosewood industry, including China's entire supply chain, has a responsibility to ensure the exploitation of new timber species and resources follows sustainable forest management principles and the laws of the relevant range or transit countries. Actions must be taken by management authorities and associations of the rosewood industry in China against overexploitation and illegality, using best practices and norms for a transparent and traceable supply chain.
2. Range countries' legal prohibitions, restrictions and quotas should be respected by the industry along the supply chain. Proof of legality should be made transparent from source, transport, import, stockpiling and finally to the retail market in China. Further discussion around how management of this could be improved is available in the Rosewood Policy in China report.
3. China's Customs Administration, China's CITES Management Authority (CITES MA), and other relevant government agencies should be extra vigilant in monitoring borders and rosewood trade hotspots, including by deploying relevant intelligence, surveillance, and species identification technologies, and collaborating with enforcement agencies in range countries, inter-governmental organisations such as the World Customs Organization (WCO), United Nations Office on Drugs and Crimes (UNODC), and INTERPOL.
4. Since only 17 of the 29 rosewood species that feature in the Hongmu Standard are

listed in the CITES Appendices, China Customs and other enforcement agencies will need to consider a new mechanism and Standard Operating Procedure (SOP) to verify legality for non-CITES listed species protected in the country of origin. This may require new legislation or regulations to enforce the legal prohibitions on harvest and trade in range countries.

5. China is currently drafting a legality verification system, and this should seek to incorporate international mechanisms such as the European Union Timber Regulations (EUTR), Lacey Act, and other relevant legislation to help boost China's export trade in finished wood products to the EU and elsewhere. The development of the verification system should include comprehensive consultations with industry and other stakeholders.
6. Strengthen international cooperation of the rosewood industry, including consulting the exporting country on their Non-Detriment Findings (NDF) for the species in trade, implementing the trade suspension decision made by the CITES Standing Committee on some countries and species, and promoting the international exchanges and cooperation with the rosewood range countries and transit countries in the management, policy, information sharing and species identification technology. Chinese authorities, especially the National Forest and Grassland Administration (NFGA), Ministry of Ecology and Environment (MEE), and Ministry of Commerce (MOFCOM), should co-operate with their counterparts in rosewood range countries to ensure sustainable forest management for CITES-listed and non-listed rosewood species. This is especially important for Chinese enterprises that own forest concessions in range countries, where they have a role to play in ensuring good governance, sustainable forest management, and to promote local development, assurance of timber legality and sustainability, prevention of illegal logging/trafficking, and in the reduction of destructive harvesting techniques in relation to wild rosewood populations

7. China has been moving towards having rosewood plantations in China. Only native rosewood species should be planted to support the recovery of populations depleted in the wild. These plantations could be introduced to other range countries through scientific co-operation to achieve a more advantageous outcome (i.e., re-introduction in the wild and enrichment planting in range countries), as well as to support the sustainability of the supply chain from source countries.
8. Actively carry out public education and guide rational consumption. At present, some countries and organizations confuse "rosewood" with China's concept of "Hongmu", and then unscientifically accuse China of excessive consumption of endangered wood resources. Broadening the concept of "Hongmu" to complement

the internationally recognized trade name rosewood can lead to a reduction in future misunderstandings.

9. China can send a strong message of its seriousness in cracking down on timber and other wildlife smuggling crimes and syndicates, with strong support from research, analysis and technology. This also requires improving the technical level of wood identification, strengthening the research on wood species identification technology, accelerating the construction of wood specimen resource database, developing automatic and accurate wood identification technology and equipment, and establishing a wood identification technology platform and laboratory that are acceptable to the courts.



# 1. BACKGROUND

China is the world's largest consumer of rosewood and other high-value hardwood species, particularly those included within the National Hongmu Standard of P.R. China. The 29 species that feature in the Hongmu Standard are known for the deep colour of their heartwood and prized as raw materials for furniture production (Yang & Watson, 2021). The Hongmu trade in China also relates to 17 additional species not included in the Hongmu Standard but offering similar characteristics. The timber supplying Hongmu products in China originates from tropical and sub-tropical regions and is hard (durable), heavy (conveying a solid "quality" finish), easily carved, tactile, attractively coloured, rot-resistant and insect-proof, among other desirable characteristics (Anon, 2016a). There are various misunderstanding and misleading terms related to rosewood and Hongmu, with many outside of China using the commercial name "Rosewood" in international trade. Chinese traditional Hongmu furniture may have various trade names in China. These include rosewood, Huantanmu, Meiguimu, Zitan (used specifically for *Pterocarpus* spp.), and others. However, according to the CITES definition "Rosewood" covers 7 genera of tropical hardwood.

The common trade name or term used to describe rosewood and Hongmu gives rise to widespread confusion through the rosewood industry, as well as with government agencies and consumers. There are also species which are substituted for Hongmu but not classified in the National Standard (e.g. *Guibourtia tessmannii*). Not all the Hongmu Standard species are listed in CITES (e.g. *Pterocarpus macrocarpus*). Non-CITES listed tree species are also commonly traded as rosewood (e.g. *Pterocarpus angolensis*). The protection status of all these species varies, with some that are listed in the CITES Appendices and/or are nationally protected species in range countries, while others are afforded only some degree of management and controls under the range country's general forestry laws. To avoid confusion, in this study, as in the sister Rosewood Products and Consumption in China report (Yang & Watson, 2021), the

term "rosewood" is used to represent timbers sourced from species both included in and outside of, China's National Hongmu Standard. A full list of these species can be found in Annex I of Yang and Watson, 2021. Although the use of Hongmu may originate from as early as the 4th Century BC, credible records of rosewood furniture manufacturing and use of Hongmu species date from the end of the 16th Century. Extant antique Hongmu products can only be verified back to the 18th Century at the earliest (Zhai et al., 2014).

The rosewood market in China is large, driven by expanding middle- and higher-income classes. The research conducted for TRAFFIC's Rosewood Products and Consumption in China study found that 32% of middle- and high-income earners surveyed reported having purchased rosewood products in the past (Yang & Watson, 2021). The import of Hongmu species has risen rapidly, alongside a diversification in source countries and a shift in supply of rosewood species from one region (encompassing South and Southeast Asia) to others (Latin America/Sub-Saharan Africa) (China Green Times, 2015). Increased demand over the past two decades has led to accelerated trade in some threatened species and depletion of wild populations. Unsustainable logging has occurred in some source countries such as Benin, Central African Republic, Gabon, Gambia, Ghana, Guinea, Madagascar, Mali, Nigeria, and Sierra Leone, and has been associated with other illegal activities (UNODC, 2020). This has led to concerns about the sustainability of the industry from the international community and a surge in illegal wildlife trade. Rosewood represented the largest proportion of seizures of any wildlife commodity in UNODC's World WISE database analysis featured in the 2020 World Wildlife Crime report (UNODC, 2020). The depletion of rosewood resources and an increase in protection of rosewood species in many range countries has resulted in the shift in supply from one range country to another. In China, rosewood plantations have been initiated, but these will not prove viable in terms of supply for several decades. The rosewood trade discussed in the report is entirely derived from wild populations.

Markets for *Dalbergia* spp. and other rosewood species in China include locations which are not rosewood-specific and stock other types of hardwood and softwood. Generally, import ports and first-tier markets (wholesale markets directly selling timber imported from range countries, including wholesalers near the import and border ports, main processing and distribution centres) trade and process all sorts of timber, not just rosewood, whereas second-tier retail trade markets and final product markets are more specific for rosewood. Efforts have been made in recent years to identify timber import ports and first-tier markets for *Dalbergia* spp. to understand better the status of bulk commodity imports and the domestic market. Previous studies identified the major markets as the Yangtze River Delta, the Pearl River Delta and the south-west border regions (Zhang et al., 2018).

Online trade in rosewood and other timbers is not as popular as for other industrial and commercial sectors in China. Several online timber platforms such as Tianfu, Anywood, Wood Cloud, and China International Timber Networks mostly work as advertising platforms and provide introductions to merchants, rather than functioning as transaction and trading platforms. China International Timber Networks itself is the online platform of the North China Timber Trade Centre physical market. Wood Cloud and Wood Circle are platforms developed and

maintained by several big timber companies. In terms of international efforts to improve management of the rosewood trade, the 17th Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES CoP17) in 2016, voted to list *Dalbergia nigra* in Appendix I (prohibiting its commercial international trade), while *Pterocarpus santalinus*, *P. erinaceus* and all other *Dalbergia* spp. were listed in Appendix II—whereby trade in listed specimens of the species requires a CITES export permit issued by a CITES MA. The legal requirements of a CITES listing led to speculation by some traders and merchants in China, causing a short-term trade peak around CoP17, both in terms of volume and value until the CITES permitting system began to be enforced.

To understand how best to address issues of illegality and unsustainability, as well as the shifting trade dynamics of the world's most trafficked wildlife commodity (UNDOC, 2020), TRAFFIC conducted research under the China Champions of Change project, supported by the European Union (EU) in China. This research focused on market demand, resources, quantity, and price information for rosewoods in China and identified priority opportunities and intervention points through which to promote responsible consumption.

## 2. SCOPE AND METHODS

### 2.1 SCOPE

China classifies “Hongmu” through the National Hongmu Standard. This Standard covers more than one genus, although *Dalbergia* spp. is the most prominent, comprising nearly half the Hongmu species within it (15 out of 29 spp.). As explained in the Background section, the Hongmu Standard is only a subset of the species that comprise 29 species of rosewood.

Market information (including price, trade route, price, stockpiles) was sought, particularly for those species listed by China as nationally protected species or those also

included within the CITES Appendices and National Hongmu Standard, to assist in the formulation of recommendations to address any negative and unsustainable changes in the rosewood market.

Market conditions at major import points, processing hubs, and end-sales locations in China were surveyed. Researchers took note of the confusion between individual tree species listed in the National Hongmu Standard, and incidences where species with similar characteristics are being passed off as Hongmu by unscrupulous traders at wholesale

and retail levels. A synthesis of the key findings is presented in the pages that follow, with additional details available in Annexes 1 and 2.

*Dalbergia* spp. was listed in CITES Appendix II at the genus level in 2016. This listing covers more than 304 accepted species names and 242 synonyms (Winfield et al., 2016), so is an appropriate choice to illustrate the challenges and issues related to implementing CITES provisions in China and the need for any revision of China's domestic Hongmu management policy.

Given the wide range of species within the rosewood trade, this study therefore focused on gathering information on Chinese import of selected *Dalbergia* spp., to ascertain the dynamics of the domestic Chinese market. Explicitly, the aims of the research associated with this study were to:

- Gather information on the distribution and species composition in the main timber and furniture locations selling *Dalbergia* spp. tropical hardwood and semi-finished and finished products, to provide a baseline market assessment;
- Identify the *Dalbergia* spp. products prevalent in the Chinese market;
- Provide a summary of information about the most popular *Dalbergia* species in the Chinese market based on the best available data and complemented by stakeholder interviews covering:
  - Product categories, source of supply, price range, import and export, and sales turnover status;
  - Import and export ports, transportation, storage and processing methods;
  - Market drivers, supply and demand, and potential macroeconomic conditions that could influence future price fluctuations;
  - Industry supply chain information.
- Review the implementation of CITES provisions for popular *Dalbergia* species and products in the Chinese market;
- Correlate information from this study with that arising from two separate TRAFFIC studies on China's rosewood policy and Chinese consumption patterns and characteristics; and
- Provide recommended directions for future research and identify how to strengthen implementation of CITES measures for listed timber species in China.

### 2.2 METHODS

A review of domestic and international literature on *Dalbergia* spp. and other tropical hardwoods was carried out. Trade statistics between 2013 to 2020 from customs, timber associations, and markets including import data on species, wood process status, source country, type of goods, year, entry port, and other factors were analysed. Information about online trade in rosewood timber was used as secondary inputs to the overall analysis given it is not often used in this sector.

To understand domestic demand, information on the structure of rosewood markets in China was gathered following physical visits to shops, manufacturers, merchants, etc. and interviews conducted with selected stakeholders over the period July 2018 to the end of 2019. Recommendations from the China Timber & Wood Product Distribution Association (CTWPDA), the most important timber industry association in China, were followed to identify and refine appropriate markets for the field surveys.

TRAFFIC dispatched 5 market survey teams

to the Beijing-Tianjin-Hebei Region, Yunnan Province, Guangxi Zhuang Autonomous Region, and other eastern Chinese provinces, to acquire information about China's rosewood utilisation. Harbour cities in the provinces of Jiangsu, Fujian, and Guangdong were surveyed in addition to those in Dacheng and Tianjin. Border cities/towns with large volumes of rosewood imports, such as the major transit centres of Kunming and Nanning for cargos entering from Lao People's Democratic Republic (PDR), Myanmar, and Viet Nam, were also selected for field investigations. Research focused on *Dalbergia* species but included other rosewoods—both those listed and not listed in the National Hongmu Standard.

As any single merchant usually sells more than one species of rosewood, the number of merchants selling a certain species (exhibited in the shop rather than in storage, and regardless of what type, i.e. whether as a log, lumber, veneer, art-craft or furniture) was taken as the appearance frequency for that species and was used to calculate the overall proportion of a certain species in relation to others species. The researchers were unable to visit each furniture shop's storage warehouse to collect more information, as these were generally not open to visitors and were sometimes located some distance from the corresponding shop. The inventory volume of particular species and related products was mainly calculated using the supply volume of the species in the raw timber markets. Therefore, the data only reflect the appearance frequency of particular species in their corresponding markets, rather than their market share or stockpile volume.

In selected market locations, questionnaires were used to carry out random (54, 50%) and targeted (54, 50%) interviews with timber and furniture dealers, timber market managers, wood research experts, and government management staff. A total of 108 representatives were interviewed based on their involvement with certain species

and the activities of the suppliers within the supply chain although not all representatives answered the full questionnaire as some were only familiar with certain aspects of the rosewood trade and markets. The survey questionnaires were drafted by TRAFFIC and then finalised after receiving input and advice from several Chinese forestry research experts. Their feedback made the interviews more flexible and follow-up was pursued on a case-by-case basis. The specific questions are listed in Annex III to this report.

For market-based interviews, key rosewood processing (20 interviewees) and manufacturing enterprises (20 interviewees), timber market dealers (20 interviewees) and rosewood furniture retailers (20 interviewees) were visited on the recommendations of timber associations (8 associations interviewees in different provinces and cities) or industry insiders. At least one in-depth interview took place with a representative of each segment in the supply chain. Simple interviews were also carried out randomly in markets, featuring specific questions on prices, species identification, source countries, trade channels, and demand dynamics.

There are limitations to the survey methodology. The analysis assumes that the interviewees provided genuine information, although the researchers removed some information that was inconsistent with facts gleaned during survey work. Furthermore, field surveys were conducted at different times (between July 2018 and the end of 2019) and in different places, making locations hard to compare while survey team members had various backgrounds and interview techniques, which may have affected the emphasis and analysis of interviews. Finally, the market survey data were collected prior to the Covid-19 pandemic, which dramatically changed markets dynamics from around February 2020. A separate follow-up study to obtain post Covid-19 market data is advised.

## 3. SPECIES PROFILES AND LEGISLATION

### 3.1 CITES AND HONGMU SPECIES

CITES aims to ensure the survival of listed species in the wild by controlling international trade in those species, including all imports, exports, re-exports and the introduction of convention-controlled species, through the issuance and verification of permits. So far, CITES has listed more than 5800 species of fauna and nearly 30 000 species of flora in the Appendices of CITES to control its international trade.

Before 2010, a total of 111 tree species were listed in the CITES Appendices. During the decade from CITES CoP15 in 2010 to CITES CoP18 in 2019, the number of tree species listed in the Appendices rapidly increased to 523. The newly added tree species includes tropical tree species such as *Dalbergia* spp. and *Pterocarpus* spp.

As of 2020, currently 15 National Hongmu Standard species are listed in CITES Appendix II (for which trade can only take place with export and re-export permits issued by a designated CITES Management Authority), and one species (*Dalbergia nigra*) is listed in Appendix I (international commercial trade not permitted) (Table 1). A further five rosewood species not included in the Hongmu Standard are also listed in Appendix II (*Dalbergia congestiflora*, *Pterocarpus tinctorius*, *Guibourtia tessmanni*, *G. demseusei*, *G. pellegriniana*).

During the 16th Conference of the Parties to CITES (CITES CoP16), held in Bangkok, Thailand in 2013, seven rosewood species were listed in the CITES Appendices: *Dalbergia nigra* in Appendix I and another six species (*Pterocarpus santalinus*, *Dalbergia cochinchinensis*, *D. granadillo*, *D. retusa*, *D. stevensonii*, *D. louvelii*) in Appendix II. The

price in China for rosewood species proposed for listing surged rapidly ahead of the CITES CoP16 and immediately after the listing, which led to a trade peak for the remaining months of 2013 after CoP16, both in terms of volume and price. However, since 2014, oversupply of alternative hardwood species and stockpiling of CITES-listed species has occurred, caused by speculation in the Chinese market, and prices have reduced for some species.

Parties to CITES continues to accelerate the extension of its control scope to other listed timber species, especially tropical timber species. At the same time, CITES emphasizes a scientific approach to conservation and effective management of timber trade through modifying corresponding notes (annotations) on the types of products to be controlled in trade, and the implementing regulatory measures.

At CITES CoP17, held in Johannesburg in 2016, all species of the *Dalbergia* genus and some species in other rosewood genera, more than 247 species of rosewood not already listed, were uplisted into Appendix II of the Convention (Hartvig, et al., 2015). CITES listings may not immediately affect trade behaviour, but there are some notable cases where it has appeared to. For example, *Pterocarpus erinaceus* (known as kosso in Nigeria) exports increased to their highest-ever recorded trade levels before the species's CITES listing and continued to rise afterwards, although CITES permits were then needed (UNODC, 2020). However, as Nigeria was unable to produce a non-detriment finding for trade in the species, the CITES Standing Committee subsequently imposed a trade suspension for kosso originating from Nigeria in October 2018.



TABLE 1

Hongmu and substitute species in the CITES Appendices

SPECIES	CATEGORIES IN NATIONAL HONGMU STANDARD	APPENDICES	REMARKS
<i>Dalbergia nigra</i>	<i>Dalbergia</i> spp.	Appendix I	
All <i>Dalbergia</i> spp. except <i>Dalbergia nigra</i>	Scented rosewood, Heisuanzhi (Black Rosewood), Hongsuazhi (Red Rosewood) or other species	Appendix II	<i>Dalbergia cochinchinensis</i> is covered by CITES Annotation #4, <i>Dalbergia</i> spp. from Mexico is covered by annotation #6, and the rest are covered by annotation #15. At present, <i>Dalbergia</i> spp. from Madagascar cannot be traded
<i>Pterocarpus santalinus</i>	<i>Pterocarpus</i> spp.	Appendix II	Covered by Annotation #7
<i>Pterocarpus erinaceus</i>	<i>Pterocarpus</i> spp.	Appendix II	
<i>Pterocarpus tinctorius</i>	non-Hongmu species, but used as replacement for Hongmu	Appendix II	Covered by Annotation #6
<i>Guibourtia tessmannii</i> , <i>G. pellegriniana</i> , <i>G. demeusei</i>	non-Hongmu species, but used as replacement for Hongmu	Appendix II	Covered by Annotation #15

Annotation #4: All parts and derivatives, except:

- Seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from *Cactaceae* spp. exported from Mexico, and to seeds from *Beccariophoenix madagascariensis* and *Dypsis decaryi* exported from Madagascar;
- Seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers;
- Cut flowers of artificially propagated plants;
- Fruits, and parts and derivatives thereof, of naturalised or artificially propagated plants of the genus *Vanilla* (Orchidaceae) and of the family *Cactaceae*;
- Stems, flowers, and parts and derivatives thereof, of naturalised or artificially propagated plants of the genera *Opuntia* subgenus *Opuntia* and *Selenicereus* (*Cactaceae*); and
- Finished products of *Aloe ferox* and *Euphorbia antisyphilitica* packaged and ready for retail trade.

Annotation #6: Logs, sawn wood, veneer sheets and plywood.

Annotation #7: Logs, woodchips, powder and extracts.

Annotation #15: All parts and derivatives, except:

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

### 3.2 RANGES OF HONGMU STANDARD SPECIES

The State Bureau of Quality and Technical Supervision first published China's National Hongmu Standard in 2000. The Standard was revised in 2017, and the 29 species within five genera identified as Hongmu in this update (Table 2) form the focus for this study. Substantive information is not available for all the species listed in the Standard.

Only four species listed in the Hongmu Standard are native to China: *Dalbergia odorifera* (Hainan Huanghuali), *D. cultrate*, *Diospyros philippensis*, and *Senna siamea*. In

addition, Hongmu Standard species are also mainly found in Southeast Asia, Sub-Saharan Africa, and Central and South America (Zhai et al., 2014). Southeast Asia was traditionally the major source region for Hongmu (Mao, 2018), in particular Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam, along with some from South Asia (India) (Zhai et al., 2014).

The present study focuses on *Dalbergia* species listed in the National Hongmu Standard (species numbers 7 to 21 in Table 2, below), although the report also captures information on other *Dalbergia* spp. where available.

NO	CHINESE NAME	SCIENTIFIC NAME	TRADE NAME	PRODUCING AREA
紫檀木类 (Zitan)				
1	檀香紫檀	<i>Pterocarpus santalinus</i> L.F.	Red Sanders, Red Sandalwood	southern India
花梨木类 (Hualimu)				
2	安达曼紫檀	<i>Pterocarpus dalbergioides</i> Benth.	Andaman Padauk, Andaman Redwood, Vermilion	India
3	刺猬紫檀	<i>Pterocarpus erinaceus</i> Poir.	Ambila	tropical Africa
4	印度紫檀	<i>Pterocarpus indicus</i>	Amboyna, Burmacoast Padauk, Sena, Manila Padauk, Narra	India, Myanmar, Philippines, Papua New Guinea, Malaysia, Indonesia, China
5	大果紫檀	<i>Pterocarpus macarocarpus</i> Kurz	Burmese Padauk, Pradeo, May Dou	Myanmar, Thailand, Lao PDR
6	囊状紫檀	<i>Pterocarpus marsupium</i> Roxb.	Bijasal, Narra, Padauk	India
香枝木类 (Xiangzhimu)				
7	降香黄檀	<i>Dalbergia odorifera</i> T.Chen	Scented Rosewood	China
黑酸枝木类 (Heisuanzhi)				
8	刀状黑黄檀	<i>Dalbergia cultrate</i> Grah.	Burma Blackwood, Indian Cocobolo	Myanmar, China
9	阔叶黄檀	<i>Dalbergia latifolia</i> Roxb.	Indian Rosewood, Sonkeling, Sonobrits, Bombay Blackwood, Rosewood, Java-palisandre, Angsana Keeling	India, Indonesia
10	卢氏黑黄檀	<i>Dalbergia louvelii</i> R. Viguier	Bois de Rose	Madagascar
11	东非黑黄檀	<i>Dalbergia melanoxylon</i> Guill. & Perr.	African Blackwood, Mozambique Ebony, African Rosewood	East Africa
12	巴西黑黄檀	<i>Dalbergia nigra</i> Fr. Allem.	Brazilian Wood, Jacaranda	Brazil
13	亚马孙黄檀	<i>Dalbergia spruceana</i> Benth.	Jacararda, Brazilian Rosewood	Brazil
14	伯利兹黄檀	<i>Dalbergia stevensonii</i> Tndl.	Honduras Rosewood, Hogaed	Belize
红酸枝木类 (Hongsuazhi)				
15	巴里黄檀	<i>Dalbergia bariensis</i> Pierr	Neans Nuon	Indochina Peninsula
16	赛州黄檀	<i>Dalbergia cearensis</i> Ducke.	Kingwood, Violetta, Violetwood	Brazil
17	交趾黄檀	<i>Dalbergia cochinchinensis</i> Pierre	Siam Rosewood, Paying, Trác, kranghung	Thailand, Viet Nam, Cambodia
18	绒毛黄檀	<i>Dalbergia frutescens</i> var. <i>tomentosa</i> Tndl.	Brazilian Tulipwood, Pinkwood	Brazil
19	中美洲黄檀	<i>Dalbergia granadillo</i> Pittier	Cocobolo	Central America
20	奥氏黄檀	<i>Dalbergia oliveri</i> Gamb.	Burma Tulipwood, Chinchang, Tamalan	Myanmar, Thailand, Lao PDR
21	微凹黄檀	<i>Dalbergia retusa</i> Hesml.	Cocobolo	Central America
乌木类 (Wumu)				
22	乌木	<i>Diospyros ebenum</i> Koenig	Ceylon Ebony, East India Ebony, Ebony	Sri Lanka, South India
23	厚瓣乌木	<i>Diospyros crassiflora</i> Hiern	African Ebony, Black Ebony, African Persimmon	Tropical Africa
条纹乌木类 (Tiaowenwumu)				
24	苏拉威西乌木	<i>Diospyros celebica</i> Bakh.	Makassar Ebony, Ebony, Toetandu	Indonesia
25	菲律宾乌木	<i>Diospyros philippensis</i> Gurke	Kamagony	Philippines, Taiwan China
26	毛药乌木	<i>Diospyros pilosanthera</i> Blanco	Bolong-eta	Philippines
鸡翅木类 (Jichimu)				
27	非洲崖豆木	<i>Millettia laurentii</i> De Wild	Wenge, Bokonge, Awoung, Uson-so	Congo
28	白花崖豆木	<i>Millettia leucantha</i> Kurz	Thinwin, Theng-weng, Sothon	Myanmar, Thailand
29	铁刀木	<i>Cassia siamea</i> Lam.	Siamese Senna	Southeast Asia, China

Species listed in China's National Hongmu Standard

### 3.3 DOMESTIC LAWS IN RANGE COUNTRIES AND HONGMU STANDARD SPECIES

This following presents a selection of information related to protection, bans and quotas for selected Hongmu Standard species. It is derived mainly from an information document prepared by Winfield et al. (2016) that was submitted to CITES CoP17 in

Johannesburg, South Africa, in 2016 and supplemented from other sources: Forest Legality<sup>1</sup> and Forest Trends<sup>2</sup>. Since legislation and policies change over time, readers should verify their current accuracy through up-to-date sources. Legislative protection measures in source countries are also compiled in TRAFFIC's sister publication Rosewood Policy in China (Zhang & Chen, 2022).

1. Forest Legality Initiative on Logging and Export bans. <https://forestlegality.org/content/logging-and-export-bans>
2. Forest Trends – Known Forest Product Export Restrictions, as of June 2020. <https://www.forest-trends.org/known-log-export-bans/>

COUNTRY	YEAR	SPECIES	LEVEL OF POLICY	HIGHLIGHTS
Cambodia	2013	<i>Dalbergia cochinchinensis</i>	Forestry Law	All forms are prohibited from harvesting/col-lection/processing/storage for domestic use or export
	-	<i>D. oliveri</i> & <i>Pterocar-pus macrocarpus</i>		Protected
India	-	<i>D. latifolia</i>	Forest Act	Export ban on logs and sawn timber
Indonesia	-	<i>P. santalinus</i>		Export ban on all forms except for value-add-ed products with permits (i.e. extracts, dyes, musical instruments, and parts)
Philippines	-	<i>P. indicus</i>	Department of Environment and Natural Resources	Permit required for harvesting and trade
Myanmar	2014	<i>D. oliveri</i> , <i>P. macro-carpus</i>	Ministry of Natural Resources and Environmental Conservation	Authorisation required for harvesting; export ban on logs
				Export ban on logs
Thailand	-		Logging ban	Logging in natural forests is prohibited
Viet Nam	-		Logging and exporting logs from natural forests are prohibited	Logging and export bans
Benin			Export ban	Exports for finished products only
Bukina Faso	2005	<i>D. melanoxylon</i> , <i>P. erinaceus</i> and <i>P. lucens</i>	Export ban	Exports prohibited in all forms
Cameroon	-	All rosewood	Log export ban	All logs found in the country
Central African Republic	-		Export quota	Allows export of 30% of logs
Democratic Republic of Congo	-		Export quota	Allows export of 30% of logs
Republic of Congo	-		Export quota	Allows export of 15% of logs
Côte D'Ivoire	2013	<i>P. erinaceus</i>	Strict ban	Banned exploitation, harvest, transportation, and export
Ghana	2014	<i>P. erinaceus</i> , and <i>P. lucens</i>	Logging and export ban	
Gambia	2012	<i>P. erinaceus</i>	Export ban	
Gabon	2010		Export ban	Exports of logs and sawn timber are prohibited
New Guinea	2006		Export ban	Logs and lumber
Guinea-Bissau	-		Export ban	All timbers
Mali	-		Logging & export ban	All timbers
	-	<i>P. erinaceus</i>		Protected
Sierra Leone	2010		Export ban	All timbers
Senegal	-	<i>P. erinaceus</i>	Export ban	
	-	<i>D. melanoxylon</i>	Export ban	
Tanzania		<i>P. angolensis</i>	Logging ban	
Mozambique	2016		Provincial logging quota	Ranges from 10 t--400 t in different provinces
Madagascar	2010	all rosewood	Logging and trade ban	
	2013	all rosewood	Export ban	
Belize	2013	all rosewood	Moratorium	Harvest and export
Brazil	-	<i>D. nigra</i>	Logging ban	
Honduras	2007	<i>D. retusa</i>	Trade ban	All forms of trade are prohibited

Sources: 1, 2  
Policies in countries of origin for Hongmu Standard species

TABLE 3

# 4. MARKET PROFILES AND PRICING

**FIGURE 1**  
Distribution and function of the major tropical hardwood markets in China



## 4.1 TIMBER FORMS AND PRICING FACTORS

Most of the unhewn logs observed during this study's market assessments were debarked, but the volume of residual "white edge" material on the logs (the sapwood that had not been completely removed) varied between logs. Where this had only been peeled lightly, the original form of the unhewn log was retained. The factors affecting the unit price of unhewn logs include diameter, side length, age, year of harvesting, production area, integrity (insect damage, cracks, etc.), and grain patterns. The unit price per tonne (for old products)/cubic metre (for new harvested products) was a composite figure derived from consideration of all factors, because the weights change quickly during the first one or two years after harvesting. Price quotations for the same species with similar sized logs varied somewhat between different merchants. Some identified special factors could potentially result in a high selling price, such as long diameter of rare species.

- For example, if a chair and table use one species, and each piece is good quality and good looking, they can sell for a high price individually. However, if there is a big difference between the colour or pattern of the two pieces, the products are deemed to have low integrity and will not sell for a good price.

Compared to unhewn logs, the price of furniture (or "worked" pieces) of the same type made from the same species, fluctuated less. The major factors affecting furniture price were the number of items, number of times planks were joined (dependent upon the length of the unhewn log), the year the raw material was harvested, the source region of the raw material, patterns, style, and craftsmanship. Pricing patterns for large planks were harder to identify. Few merchants in Yunnan markets sold by unit prices in tonnes or cubic metres—most sold "blocks" without bargaining. The block price is influenced by pattern, size, number of flaws in the grain, and timber integrity<sup>3</sup>.

## 4.2 THE MAIN INFLUENCES ON PRICE

The variability between species and price was found to depend on additional factors to those above. Commodity categories (logs, planks, sawn wood, etc.), source countries (species in Southeast Asia and India command higher prices generally), composition, and substitution of species used for furniture manufacturing (also influenced by texture and other properties of the wood), all featured. However, in finished products, planks, and unhewn logs, the species (including different origins for the same species) was identified as the most dominant primary influence on price (See Annex I, Species Profiles).

Apart from planks, the price differences between species were not found to change significantly due to other factors, such as objective (physical properties) and subjective (appearance, grain/colour, shape) qualities.

## 4.3 MARKETS AND MERCHANTS

Rosewood markets or retailers are present in almost all major Chinese cities, but the products are all sourced from a small number of different manufactures/distribution centres. The provinces of Jiangsu, Fujian, and Guangdong have a long history of processing rosewood products. Beijing, which grew in prominence under the Ming Dynasty, used to be a rosewood manufacturing centre. City planning then moved large rosewood markets and factories out of the capital to Dacheng and Tianjin in Hebei Province in 2016.

In the markets surveyed for this research, up to 13 of the 29 Hongmu Standard species were found to be either actively stockpiled, traded, or on sale in the form of unhewn logs, processed timber planks, or finished retail products, including furniture and arts and crafts.

As presented in Annex II, the distribution of timbers originating from different species varies even within one province in China. In Dacheng and Tianjin, and almost all other manufacturing cities surveyed, the species share changed rapidly. At the time of the field investigations for this study, light-coloured timbers (i.e. *Dalbergia oliveri* and *D. retusa*) dominated the market.

The species share is more source dependent

In general, furniture was not priced by style, although there were some exceptions. For example, the price of furniture in Ming Dynasty style (Ming style) was often higher than that of Qing Dynasty style (Qing style). With Qing style furniture, intricate carvings can be used to cover flaws in the timber, thus the use of broken timber, scraps, and sapwood is more prevalent than with Ming style furniture. Ming style furniture uses better quality raw materials, and has higher standards for tenon (the traditional joinery technique used by artisans in China), craftsmanship, and line aesthetics (See Annex II, Market Profiles). The price of "New Chinese style" furniture was found to be lower than that of the traditional styles, because it consumes less material, requires simpler craftsmanship, and has a less strict quality requirement for the raw material.

in border cities/towns. Nanning and Jinghong, two cities near China's southern border with Viet Nam, Myanmar, and Lao PDR, were suppliers of *Dalbergia cochinchinensis*, *D. odorifera* (Viet Nam), and *D. latifolia*. The city of Ruli borders Myanmar. Rosewood imports there were mostly *D. oliveri* and *Pterocarpus macrocarpus*, both species native to Myanmar. Rosewood originating from other countries was also found in these border cities, presumably from direct import, since it is difficult to transport timbers between border cities without transiting transportation centres, which would take more time and increase costs.

Similarly, rosewood transported by sea is more common in Jiangmen, Zhongshan, Dongguan, Xianyou, Dongyang, and Zhangjiagang. Rosewood species originating from Africa and India, including *Guibourtia* spp., *Pterocarpus tinctorius*, *P. soyauxii*, *P. santalinus*, are popular. *Dalbergia latifolia*, *D. oliveri* and *D. retusa* were also found in lower volumes.

However, the species share in transit markets i.e. Kunming and Nanning, is very different to border cities. Rosewood originating from African countries dominates in Kunming, including *Pterocarpus soyauxii*, *P. tinctorius*, *P. erinaceus*, *Guibourtia* spp., whereas only a small amount of *Dalbergia oliveri* (a Myanmar-sourced species)

was found. Little wood from species native to Southeast Asia (i.e. *Dalbergia cochinchinensis*, *D. bariensis*, *D. latifolia*) was found in rosewood markets in Kunming. In Nanning, Guangxi Autonomous Region, the most popular species were *D. odorifera* (Viet Nam) and *Pterocarpus macrocarpus*, which matches the border cities in Guangxi. However, about 35% of the timber (20% unknown rosewood and 15% African rosewood) did not fit the species share in border cities.

The popularity of different species is also influenced by consumer purchasing power. The Chinese rosewood market has been less active due to a weaker economic environment in the past four years. However, the 17th Conference of the Parties to CITES (CITES CoP17) in 2016 triggered a short rebound in the rosewood market in China as a result of speculation ahead of the proposed listing of all *Dalbergia* spp. in the Appendices. This boom ended in 2017 after CITES permits became required for all international trade in *Dalbergia* spp.

#### 4.4 SPECIES TYPES AND VALUES

Hainan *Dalbergia odorifera* and *Pterocarpus santalinus* are used to cater to the luxury market due to their scarcity. These species continue to command high prices despite declining values for other taxa. Raw and worked material prices for products from both species did not decrease over the survey period, and merchants with stocks or inventories were reluctant to lower the price overall, being confident of a market rally in the future.

Species hardly found to be selling at even slightly lower prices due to the strength of domestic protection in source countries, included *D. cochinchinensis*, Hainan *Dalbergia odorifera*, Viet Nam *Dalbergia odorifera* and

In reaction to the uplisting of all *Dalbergia* spp. at CITES CoP17, merchants increased the price of rosewood products to stimulate demand for exclusive, high-value, hard-to-acquire pieces, making the most of consumer perceptions of dwindling product supply. The market reacted poorly to this, however, demand also dwindled and the rosewood market slumped back to a low level in 2018. During the present survey, merchants indicated they considered it very unlikely that the prices of all the different types of rosewood would rebound to levels seen before the CITES listing in 2016, although some species such as *Dalbergia odorifera*, *Pterocarpus santalinus*, and *Dalbergia cochinchinensis* had become price stable in 2019.

In Yunnan province, the use for manufacturing furniture and other wood products of non-CITES-listed species classified in the Hongmu Standard (52%), was slightly higher than CITES-listed species (48%) and this appears typical of other markets in China.

*Pterocarpus santalinus*. Products from these species were identified as being used primarily for the China collectibles market.

During the survey period, all suppliers interviewed considered that rosewood species in these higher-value classes could still increase in price, especially merchants running businesses using these species who indicated they even stocked rosewood roundwood and products as a form of capital investment. CITES controls have undoubtedly strengthened merchants' attention to future shortages of supply, and the probability of a sharp price decline for rosewood raw materials is considered small. Most wood dealers indicated they would rather maintain their stockpiles than sell them in the market.

#### 4.5 THE SEARCH FOR SUSTAINABLE SUPPLIES

Due to the growing shortages of *Dalbergia* raw materials, the need to accelerate the exploration of other wood resources has become evident. Many furniture companies have reacted by positively promoting the use of materials other than those listed in the National Hongmu Standard for high-end traditional Chinese furniture, in turn providing a new direction for merchants, traders and other timber dealers.

Interviews with companies in Dachong market, Zhongshan City, were illustrative of this. In recent years, new timber resources have been sought and promoted, particularly species with similar dark and red colours. Wood dealers have tried to take the first step to develop more timber resources with a favourable quality and price for consumers. While such actions are important for industry leaders and represent a critical first step towards reducing the pressures on already overexploited rosewood species, it is paramount that similar pressures are not just diverted towards these other species. The rosewood industry in China needs to consider appropriate precautions that can be adopted to avoid new species becoming overexploited and build an industry that is based on the strong core principles of an ecological civilisation and sustainability. Plantations for other products and a market for repurposed existing rosewood items should also be considered.

This study of the Chinese rosewood markets highlights the following:

1. The importance of market/consumer behaviour on furniture styles and design. This is accompanied by recognition of the importance of efforts to influence consumer behaviour through initiatives promoting responsible consumption. This in turn would influence the supply chain in terms of sourcing from range countries, species, and prices.
2. Dealers/merchants/manufacturers are key actors in the supply chain: they seek particular species, wood products, patterns, grains, colour, etc. and shift their supply chain from certain species sourced from one country to another, from one continent to another. All these factors are relevant to resource decline, conservation and legality factors, and tie in with the way manufacturers, retailers and suppliers look at species use and demand from consumers—which also varies between end-user market locations, transport infrastructure, and population centres in China. Such factors make market trends unpredictable and highlight the importance of conducting regular assessments to understand the interactions of supply, demand, and other contextual factors on a species-by-species approach. This insight will be critical to informing appropriate actions in rosewood markets to ensure the sustainability of source species.

## 5. DISCUSSION

This market research offers a systematic description and reference point in relation to rosewood trade in China. However, the study is not able to provide guidance for the prediction of future market trends, especially for specific species. Nevertheless, a review of the past two decades of rosewood trade offers insights into the relationship between pricing, protection in range countries, China's economy, domestic governance, CITES decisions, and other factors.

One key finding of the study is that the inclusion of species in the CITES Appendices does not inhibit their market price. On the contrary, listing stimulates speculation, especially demand from merchants to stockpile, which can contribute to the idea of resource scarcity and boost the market price. In China, the use of rosewood and corresponding CITES-listed precious woods experienced a boom between 2003 and 2013, and again in 2016 for some rosewood species, but has experienced a decrease in recent years (2018–2020). If coincident with a booming economy, it would probably stimulate consumer demand. Pricing of rosewood species may reflect several factors, including the popularity of the species and governance in range countries (for example, the high-priced *D. cochinchinensis* found in the Mekong region is highly threatened and under strict local controls for harvest and trade). Therefore, price monitoring is important in the industry for both investment and conservation management.

In addition, the listing of all *Dalbergia* spp. in the CITES Appendices since 2017 has increased the difficulty of monitoring for law enforcement agencies, which is paramount for border control and market management efforts. The government needs to develop new approaches to deal with this situation. This is discussed further in Rosewood Policy in China (Zhang & Chen, 2022). Accurate species identification coupled with capacity development for legality framework implementation and regulation reforms have become more important for species protection. The difficulty in identifying the species of an unheven log or finished product leaves room for

illegal trade and substitution to occur. There are weaknesses in the legislation governing the supply chain for CITES-listed species, and the management of the National Hongmu Standard. For example, even though there is practically no legal harvest of *Dalbergia cochinchinensis*, it can be imported "legally" as a finished product after being simply and roughly sawn. According to this survey, most of the *D. cochinchinensis* imported into China originated from Lao PDR while a minor proportion came from Viet Nam, Thailand, or Cambodia. However, all these countries have prohibited the harvest and/or trade of the species. Unless cross-border trade for all parts of trees and finished products are completely supervised throughout the entire supply chain, criminal behaviour is likely to continue. This and other relevant issues are discussed further in Zhang and Chen, 2022.

China has not been involved in any bilateral or multilateral co-operation agreements for timber trade legality, nor does it have any co-operation memoranda of understanding regarding rosewood with other countries. Range countries' rosewood export restrictions have little impact for China's authorities to take powerful law enforcement action or influence on domestic timber public procurement mandates. The extent of China's transnational co-operation regarding rosewood protection is in its implementation of CITES.

Law enforcement agencies in source, transit, and importing countries need to work together on harmonised approval and verification procedures that support good forest management, transport, processing, exports and imports including capture of royalties. China as the end market for rosewood has an important role to play in stopping the trade of illegality harvested rosewood, and in doing so assisting partner countries to conserve and manage their rosewood resources sustainably. This will support the continued sustainable development of the rosewood industry and market in China.

Cities near China's borders with range countries like Myanmar and Viet Nam have a

higher tendency to import rosewood species found in those countries. However, rosewood can enter China by land, sea, or river. Five species of tropical hardwood from Africa—*Dalbergia melanoxylon*, *Pterocarpus tinctorius*, *Pterocarpus soyauxii*, *Millettia laurentii*, and *Diospyros crassiflora*—entered China mainly through Zhangjiagang. One species from Myanmar, *Diospyros ebenum*, entered China through Nongdao. Less than 50% of *D. cochinchinensis* entered through Mohan on the Laotian border, while the balance was through unknown entry ports. Customs and the Chinese CITES MA will need to work across all entry points to carry out monitoring and undertake timely and impactful enforcement actions.

Regulations and law enforcement need to be supported by a change in consumers' attitude away from the idea that scarcity equals value without any consideration for the sustainability of the resource. Another key finding of this study is the apparent lack of a causal relationship between resource scarcity and pricing for higher-value rosewood species in China. Rising consumer demand for tropical hardwood substitutes over high-priced traditional Hongmu species may lead to increased market demand for these tropical hardwood species. This reinforces the imperative to ensure the trade in Hongmu species and their substitutes is developed in a sustainable manner. Social and behaviour

change approaches should therefore be developed to encourage the market in demonstrably sustainable and legally sourced products. This is discussed further in the sister TRAFFIC report Rosewood Products and Consumption in China (Yang & Watson, 2022). This study provides a snapshot of the Hongmu market across China, which is very capital intensive. However, consumers are purchasing Hongmu furniture and arts and crafts that reflect traditional Chinese craftsmanship. Rosewood is important, but the traditional skills at the core of this culture do not depend on species. It is necessary to focus consumers on the value of the culture rather than the value of the materials.

Given the many species within *Dalbergia* spp. and the related products that are manufactured, new methods and analytical tools and technology are needed to help shape the efforts of all stakeholders, such as market and consumption surveys, big data analytics, behaviour change science, and timber species forensics identification tools and platforms. become price stable in 2019.

In Yunnan province, the use for manufacturing furniture and other wood products of non-CITES-listed species classified in the Hongmu Standard (52%), was slightly higher than CITES-listed species (48%) and this appears typical of other markets in China.

# RECOMMENDATIONS

BASED ON THE ANALYSIS AND DISCUSSION, THE REPORT RECOMMENDS THE FOLLOWING ACTIONS:

## ENSURE SUSTAINABLE HARVESTING

**The rosewood industry, including China's entire supply chain,** has a responsibility to ensure the exploitation of new timber species and resources follows sustainable forest management principles and the laws of the relevant range or transit countries. Actions must be taken by management authorities and associations of the rosewood industry in China against overexploitation and illegality, using best practices and norms for a transparent and traceable supply chain.

## ENSURE PROOF OF LEGALITY

**Range countries'** legal prohibitions, restrictions and quotas should be respected by the industry along the supply chain. Proof of legality should be made transparent from source, transport, import, stockpiling and finally to the retail market in China. Further discussion around how management of this could be improved is available in the Rosewood Policy in China report.

## MONITOR TRADE HOTSPOTS

**China's Customs Administration, China's CITES Management Authority (CITES MA), and other relevant government agencies** should be extra vigilant in monitoring borders and rosewood trade hotspots, including by deploying relevant intelligence, surveillance, and species identification technologies, and collaborating with enforcement agencies in range countries, inter-governmental organisations such as the World Customs Organization (WCO), United Nations Office on Drugs and Crimes (UNODC), and INTERPOL.

## INCORPORATE EXISTING SYSTEMS

**China is currently drafting a legality verification system, and this should seek to incorporate international mechanisms such as the European Union Timber Regulations (EUTR), Lacey Act, and other relevant legislation** to help boost China's export trade in finished wood products to the EU and elsewhere. The development of the verification system should include comprehensive consultations with industry and other stakeholders.

## CO-OPERATE WITH PARTNERS IN RANGE STATES

**Strengthen international cooperation of the rosewood industry. First, earnestly fulfill the obligations of the importing country, actively carry out due diligence processes, and consult the exporting country on their Non-Detriment Findings (NDF) for the species in trade. Second, strictly implement the trade suspension decision made by the CITES Standing Committee on some countries and species, and actively cooperate with the CITES Secretariat to verify trade in CITES listed species and carry out other consultations, including with non-governmental organisations, and industry associations as appropriate. Third, promote the international exchanges and cooperation with the rosewood range countries and transit countries in the management, policy, information sharing and species identification technology under the framework of the Belt and Road Initiative (BRI) and Forum on China-Africa Cooperation (FOCAC), and jointly strengthen capacity building for law enforcement. Chinese authorities, especially the National Forest and Grassland Administration (NFGA), Ministry of Ecology and Environment (MEE), and Ministry of Commerce (MOFCOM), should co-operate with their counterparts in rosewood range countries to ensure sustainable forest management for CITES-listed and non-listed rosewood species. This is especially important for Chinese enterprises that own forest concessions in range countries, where they have a role to play in ensuring good governance, sustainable forest management, and to promote local development, assurance of timber legality and sustainability, prevention of illegal logging/trafficking, and in the reduction of destructive harvesting techniques in relation to wild rosewood populations.**

## USE NATIVE SPECIES IN PLANTATIONS

**China is moving towards having rosewood plantations in China.** Only native rosewood species should be planted to support the recovery of populations depleted in the wild. These plantations could be introduced to other range countries through scientific co-operation to achieve a more advantageous outcome (i.e. re-introduction in the wild and enrichment planting in range countries), as well as to support the sustainability of the supply chain from source countries.

# RECOMMENDATIONS

## CONSIDER NEW VERIFICATION MECHANISMS

Since only 17 of the 29 rosewood species that feature in the Hongmu Standard are listed in the CITES Appendices, **China Customs and other enforcement agencies** will need to consider a new mechanism and Standard Operating Procedure (SOP) to verify legality for non-CITES listed species protected in the country of origin. This may require new legislation or regulations to enforce the legal prohibitions on harvest and trade in range countries.

## IMPLEMENT PUBLIC EDUCATION AND CONSUMPTION GUIDES

**Actively carry out public education and guide rational consumption.** At present, some countries and organizations confuse "rosewood" with China's concept of "Hongmu", and then unscientifically accuse China of excessive consumption of endangered wood resources. Presenting good research data and analysis related to the protection of endangered wood species and improving the international communities and the general public about China's efforts to protect the species will be beneficial towards developing actions on responsible wood consumption. Broadening the concept of "Hongmu" to complement the internationally recognized trade name rosewood can lead to a reduction in future misunderstandings, and enhance cooperation between China and the international communities.

## INFLUENCE OTHERS BY CRACKING DOWN ON WILDLIFE SMUGGLING

**China can send a strong message of its seriousness in cracking down on timber and other wildlife smuggling crimes and syndicates, with strong support from research, analysis and technology:** first, China CITES MA has sent letters to the Ministry of Public Security, the General Administration of Customs, the China Maritime Police Bureau, the State Immigration Bureau and other management and law enforcement departments to further strengthen the supervision and anti-smuggling of endangered timber imports. The CITES MA compiled the basic information of the main endangered tree species imported into China for reference by enforcement agencies. Second, prioritize support to the inter departmental CITES Law Enforcement Coordination Group, further improve the coordination mechanism, strengthen intelligence monitoring and analysis and information sharing, and jointly carry out special enforcement operations. Third, strict approval procedures for reporting law enforcement cases. This also requires improving the technical level of wood identification, strengthening the research on wood species identification technology, accelerating the construction of wood specimen resource database, developing automatic and accurate wood identification technology and equipment, and establishing a wood identification technology platform and laboratory that are acceptable to the courts, so as to provide scientific and technological support for China's CITES performance and law enforcement.

# ANNEX I: SPECIES PROFILES

## NATIONAL HONGMU STANDARD SPECIES

### DALBERGIA COCHINCHINENSIS

*Dalbergia cochinchinensis*, commonly known as “Big Hongsuanzhi” (Red Rosewood) or “Old Hongmu” in China, originates from Southeast Asia and is called Siamese rosewood in the global market. It is typically used to fashion traditional Chinese furniture and was previously readily available from source countries. Its international trade volume spiked hugely from 2000 to 2014. From 2010 to 2013, its price increased 10-fold, then declined post-2013 before rebounding from the end of 2016. Since the end of 2017, the price has declined again about 25% (see Tables 4, 5). *D. cochinchinensis* is expensive and requires too much up-front investment by Hongmu furniture manufacturers, so most have now stopped using it as the sales turnover volume is low (Figure 2).

Xianyou county in Fujian Province is the main production base for furniture made from *D. cochinchinensis*. From 2013 to 2018, about 500 factories or workshops existed in Xianyou making furniture from *D. cochinchinensis*. With an average of 10 tonnes consumed monthly by each factory or workshop, the estimated consumption of *D. cochinchinensis* in Xianyou would have been around 5,000 tonnes per month between 2013 and 2018. However, there was a drastic drop in use of *D. cochinchinensis* thereafter, with an estimated consumption of only about 1,000 tonnes per month from 2018 to 2019.

Many people in the Hongmu industry consider the price of *D. cochinchinensis* to be a benchmark for the state of the Chinese economy—when the economy is good the price is

high and when there is a recession the price declines. Today, Thailand has the only viable population of *D. cochinchinensis* in Southeast Asia and has banned any harvest of the species since 1989. Harvesting is also banned in Cambodia, by Cambodian Forestry Law 2002 No.35 and in Lao PDR, Prime Ministerial Order No-17/ PM of 2008 explicitly prohibits harvesting of all domestic *Dalbergia* species, which was supplemented by a specific ban on the exploitation, trading, and export of *D. cochinchinensis* wood in 2011. In Viet Nam, harvesting, transport, and storage of *D. cochinchinensis* has been forbidden since 2006 (Cao, 2008).

From 2014 to 2017, Thailand organised several regional dialogues to combat trafficking of *D. cochinchinensis*. Due to the dialogues, it is well-known among law enforcement agencies, including those in China, that harvesting *D. cochinchinensis* is illegal in range states.

The effects of China's declining economic growth combined with the logging ban in Thailand, has constricted the overall market for *D. cochinchinensis*. Its listing on CITES and tightening of policies to control illegal logging and illegal timber trade in Lao PDR, Viet Nam, and Cambodia as well as the transit roles played by these countries, have triggered the price rise. Since 2017, all *D. cochinchinensis* products (including semi-produced and finished products) require CITES permits to be traded, with very few exceptions, such as seeds (CITES Annotation #4).

FIGURE 2

*D. cochinchinensis* logs and sawn wood, photographed in Baxia, Xianyou, Fujian, 6th September 2018. © TRAFFIC



### DALBERGIA OLIVERI

*Dalbergia oliveri* is also known as *Dalbergia bariensis*. The common names of *Dalbergia oliveri* in Chinese are 白酸枝 and 花枝, which means white rosewood or coloured rosewood (Figure 3). It is traded internationally as Tamalan, Chinchang, etc, and is originally from Southeast Asia. *Dalbergia oliveri* has been one of the main materials used in the Chinese Hongmu furniture market since the 1990s. Myanmar is a major source country, while Lao PDR, Cambodia, and Thailand have also become key source

countries for import into China since 2006. The price of *Dalbergia oliveri* in Myanmar has been unstable for many years. From 2013 to 2017, the price had climbed slowly. At the end of 2017, the price of *Dalbergia oliveri* surged (Table 5), and then dropped significantly for the first six months of 2018. The annual sales turnover volume for *Dalbergia oliveri* in Shanghai is approximately 3,000 to 4,000 tonnes in 2019 according to information gathered during surveys for this report.

FIGURE 3

*Dalbergia oliveri* Chinchang sawn wood, photographed in Zhangjiagang Bigland City rosewood market, 30th August 2018. © TRAFFIC



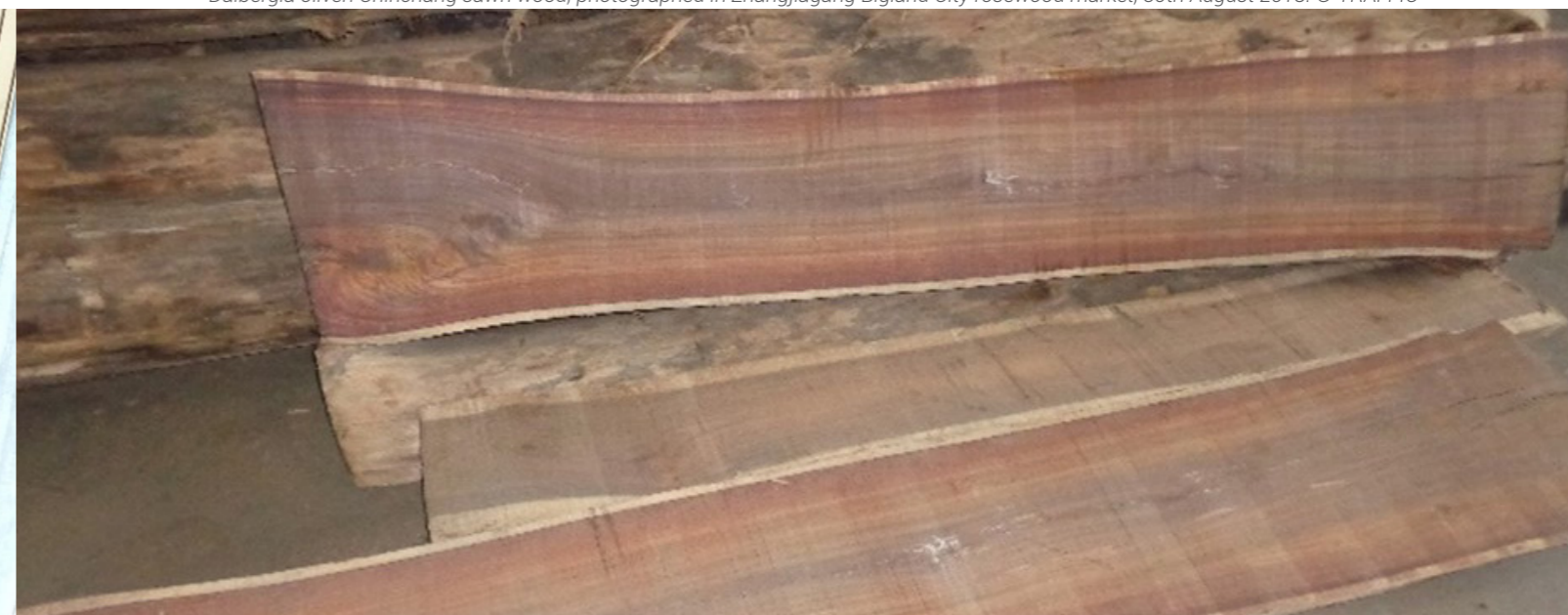
### DALBERGIA LATIFOLIA

*Dalbergia latifolia* is known as “Heisuanzhi” (Black Rosewood) or “Indonesia Heisuanzhi” (Indonesian Black Rosewood) in China. Its international commercial names include East Indian Rosewood and Sonokeling. China's imported *Dalbergia latifolia* comes from Indonesia, and it is mainly used for manufacturing Hongmu furniture,

flooring, and veneers. *Dalbergia latifolia* is usually imported in the form of sawn wood or planks (Figure 4). Demand for *Dalbergia latifolia* is stable but low, though peaked between 2016 and 2017. Currently, the annual sales turnover of *Dalbergia latifolia* in Shanghai is at least 12,500 tonnes (equivalent to at least 500 20-foot containers).

FIGURE 4

*Dalbergia oliveri* Chinchang sawn wood, photographed in Zhangjiagang Bigland City rosewood market, 30th August 2018. © TRAFFIC





## DALBERGIA CULTRATA

*Dalbergia cultrata*, also known as *Dalbergia fusca* and traded in China as "Heisuanzhi" (Black Rosewood) and "Myanmar Heisuanzhi", is more commonly known as "Yindaik". Most of China's imported *Dalbergia cultrata* comes from Myanmar, though a small amount has come

from Lao PDR. Although the size of *Dalbergia cultrata* squared timber is acceptable, it has shortcomings such as significant colour variations in the timber and drying difficulty (Figure 5), so few dealers and users buy this species. In past years, the annual sales turnover volume for this species in Shanghai was 300 to 400 tonnes.

FIGURE 5

*Dalbergia cultrata* Yindaik sawnwood, photographed at the Shanghai Furen Timber Market, 19th October 2011. © TRAFFIC



## DALBERGIA ODORIFERA AND D. PARVIFLORA

*Dalbergia odorifera* is also known as *Dalbergia tonkinensis*, Hainan *D. odorifera*, Viet Nam *D. odorifera*, and Scented Rosewood or Fragrant Rosewood in China (Figure 6). It comes mainly from Viet Nam, Lao PDR, and the Chinese provinces of Hainan, Guangxi, and Guangdong. Because *Dalbergia odorifera* is a scented rosewood, it is the most popular material for traditional Chinese furniture, and therefore is in high demand. As early as 2000, Hainan *Dalbergia odorifera* was already very expensive. Since then,

the price has increased from CNY20,000 (USD2,857) per tonne in 2003 to CNY6,000,000–8,000,000 (USD857,142–1,142,857) per tonne in 2013. The price for Hainan *D. odorifera* even reached CNY20,000,000 (USD2,857,142) per tonne at one point in 2016. However, accurate volumes of *Dalbergia odorifera* imports into China has not been available for many years. It is believed that the high commercial value of *Dalbergia odorifera* is leading to overexploitation, regardless of source country.

FIGURE 6

Sample of *Dalbergia odorifera*, photographed in Fu Tsin, Fujian Province, 7th September 2018. © TRAFFIC



## DALBERGIA RETUSA AND DALBERGIA GRANADILLO

*Dalbergia retusa* is commercially called "Cocobolo" and comes from Central America. *Dalbergia granadillo*, also called "Granadillo", "Central American *Dalbergia*" and "Mexican Retusa" in China, comes mainly from Mexico. *Dalbergia retusa* entered the Chinese market before 2004, priced at CNY15,000 (USD2,142) per tonne. Because it has the same bright red colour as *Dalbergia cochinchinensis* (Figure 6), it has gradually become used as replacement for this species, yet its price has not increased significantly. After CITES CoP16 in 2013, the price of *Dalbergia retusa* from countries such as Nicaragua and Panama climbed to CNY45,000–60,000 (USD6,428–8,671) per tonne, while from Mexico *D. granadillo* reached CNY70,000–80,000 (USD10,000–11,428) per tonne with some imports even exceeding CNY100,000 (USD14,285) per tonne (Table 5). After the Hongmu market's speculation bubble burst in 2013, demand from furniture factories was low due to

the backlog of inventories. The price of *Dalbergia retusa* decreased most significantly among all Hongmu species, sinking back to its price point when it first entered the Chinese market.

At present, the source countries of *Dalbergia retusa* are Nicaragua, Honduras, Costa Rica, and Panama, while the price of *Dalbergia granadillo* imported from Mexico is about twice that of other source countries (Tables 4, 5). Due to the continuing high price of *Dalbergia cochinchinensis*, some high-end Hongmu furniture companies have gradually begun to use *Dalbergia retusa* to make Hongmu furniture in recent years. At its peak, its monthly import reached 200 40-foot containers, then dropped to 50 to 100 containers, and not less than 20 containers per month in the past couple of years prior to 2018, finally to around 20 containers imported per month on average in Shanghai in 2018.

FIGURE 7

*Dalbergia retusa* Cocobolo and *Dalbergia granadillo* sawn wood, photographed at the Shanghai Furen Timber Market, 11th September 2018. © TRAFFIC



## DALBERGIA STEVENSONII

*Dalbergia stevensonii* is called "South American Huasuanzhi" and "Big-leaf Scented Rosewood" in the Chinese market and is traded internationally as "Honduran Rosewood." It is sourced mainly from Mexico and some Central American countries. *Dalbergia stevensonii* wood entered China in about 2005 and was initially used in counterfeit *D. oliveri* furniture, due to their similarity in colour and pattern. Furniture makers once favoured *Dalbergia stevensonii* in places like Dacheng, Hebei Province. However, there are some disadvantages in the wood's physical characteristics, such as large colour variations and poor drying performance, and it has gradually been abandoned by furniture manufacturers. Now it is used more for manufacturing crafts than furniture. At present, the annual import volume of *Dalbergia stevensonii* is about 1,000 tonnes in Shanghai, in 50 20-foot and 40-foot containers. But it is difficult to sell and there are at least 2,000 tonnes in stock, which is difficult for the arts and crafts sector to consume rapidly (Figure 8).



FIGURE 8

*Dalbergia stevensonii* Honduran Rosewood lumber, photographed at the Shanghai Furen Timber Market, 20th November 2015. © TRAFFIC

It is worth noting that *Dalbergia stevensonii* has been labelled as *Dalbergia frutescens*, *Dalbergia spruceana* and even Heisuanzhi (Black Rosewood) and Hongsuanzhi (Red Rosewood) for Customs clearance, due to the difficulty in identifying *Dalbergia stevensonii*. This created loopholes for the management and protection of *Dalbergia stevensonii* prior to its CITES listing. After CoP 17, all *Dalbergia* spp. were listed in the appendices and the loophole was closed.

## DALBERGIA CEARENENSIS AND D. DECIPULARIS

*Dalbergia cearensis* is also known as Kingwood and Violetta (Figure 9). It was imported by Shanghai Tongsheng Timber Company from 2011 to 2012, with an overall volume of about 700 tonnes in nearly 30 20-foot containers. It was also mixed with 15 to 20 tonnes

FIGURE 9

*Dalbergia cearensis* Kingwood lumber, photographed at the Shanghai Furen Timber Market, 16th May 2017. © TRAFFIC



of *D. decipularis*, which is commonly known as Brazilian Tuliwood (Figure 10). The above two species are not favoured by the manufacturing market due to drying difficulties and their high prices. Consequently, they are seldom imported. In 2018, only three containers of *Dalbergia cearensis* arrived in China.

FIGURE 10

Sample of *Dalbergia decipularis* Brazilian Tuliwood, photographed at the Shanghai Furen Timber Market, 30th April 2015. © TRAFFIC



## DALBERGIA CONGESTIFLORA AND D. TUCURENSIS

*Dalbergia congestiflora*, commonly known as Camatillo, entered the Chinese market mixed with *Dalbergia granadillo*, with both originating from Mexico. In the beginning, it was misidentified as *Dalbergia cearensis* (Figure 9) due to its bright purple colour, and this error is still made today. The disadvantages of the species are that its bright colour changes and fades (Figure 11), and it is difficult to dry, so it has ended up being used for making small crafts. As it was mixed with *D. granadillo*, its import volume into China is unknown, but considering the quantity of imported *D. granadillo*, the amount of *D. congestiflora* is likely to be significant. *D. tucurensis*, commonly known as Yucatan Rosewood, Guatemalan Rosewood, Panama Rosewood, or Nicaraguan Rosewood, comes from Central America and does not meet the requirements of China's national Hongmu Standard due to its low wood density (Figure 12). It is hard to acquire information about its import volumes and sales turnover, and it may sometimes be misidentified as *Dalbergia stevensonii*, due to similarities in its colour and texture.



FIGURE 11

*Dalbergia congestiflora* lumber, photographed at the Zhangjiagang Eastern China Timber Market, 31st August 2018. © TRAFFIC

FIGURE 12

Sample of *Dalbergia tucurensis*, photographed at the Shanghai Furen Timber Market, 29th July 2014. © TRAFFIC



## DALBERGIA MELANOXYLON

*Dalbergia melanoxylon* is also called East African Black Rosewood. In the Chinese market, it is commonly known as African Blackwood, and it comes mostly from Mozambique, where its local name is Pau Preto. *D. melanoxylon* is known for its black colour, hardness, and heaviness, but the wood has many defects. Although the quality of the finished furniture is good, it is difficult and expensive to process, plus most Chinese Hongmu consumers do not favour the black colour. Finished *D. melanoxylon* furniture appeared in the market around 2005 and is still being manufactured. *D. melanoxylon* is used by some well-known brands, such as the Hermès furniture brand SHANG XIA, and its price has been stable for a long time.

Differences in quality between specimens means the price of certain *Dalbergia melanoxylon* timber could be 10 times the average price of this species (Tables 4, 5). Import volumes of *D. melanoxylon* also fluctuate, and a large amount arriving at Zhangjiagang port in 2016, resulting in an inventory of more than 30,000 tonnes (Figures 13, 14). In January 2017, the Mozambican government banned the export of *Dalbergia melanoxylon* logs, and only planks can be licensed for export. The export quota for *D. melanoxylon* permitted by Mozambique in 2018 was 300 20-foot containers, in the form of planks 12.5 cm thick. In addition, a small amount of *D. melanoxylon* was imported from countries in West Africa including Nigeria and Guinea, most of which accompanied *Pterocarpus erinaceus* and was not used on a large scale due to its poor quality.

Mozambique's CITES MA stated that it would strictly implement CITES regulations for *Dalbergia melanoxylon* in early 2017. Despite speculation of a coming price hike due

to the CITES listing, the price of *D. melanoxylon* in China did not surge and the market remained quite stable. Ample supply existed in China already and demand was far less than expected. According to the dealers, *D. melanoxylon* sales and prices were disappointing, and many dealers were unwilling to sell at a loss because they purchased the timber during the price peak. The strict controls implemented through CITES have strengthened the resolve of dealers to hold on to their stocks until the price is right.



FIGURE 13

Logs of *Dalbergia melanoxylon*, photographed at the Zhangjiagang Eastern China Timber Market, 31st August 2018. © TRAFFIC

FIGURE 14

Logs of *Dalbergia melanoxylon* stamped with non-CITES marking, photographed at the Zhangjiagang Golden Port Logistics Timber Market, 20th December 2017. © TRAFFIC



FIGURE 15

Logs of *Dalbergia melanoxylon* from Nigeria, photographed at the Shanghai Furen Timber Market, 12th August 2015. © TRAFFIC

## DALBERGIA LOUVELII

*Dalbergia cultrata*, also known as *Dalbergia fusca* and traded in China as "Heisuanzhi" (Black Rosewood) and "Myanmar Heisuanzhi", is more commonly known as "Yindaik". Most of China's imported *Dalbergia cultrata* comes from Myanmar, though a small amount has come from Lao PDR. Although the size of *Dalbergia cultrata* squared timber is acceptable, it has shortcomings such as significant colour variations in the timber and drying difficulty (Figure 5), so few dealers and users buy this species. In past years, the annual sales turnover volume for this species in Shanghai was 300 to 400 tonnes.



FIGURE 16

Logs of *Dalbergia louvelii* photographed at the Shanghai Furen Timber Market, 9th May 2017. © TRAFFIC

## NON-NATIONAL HONGMU STANDARD SPECIES

### DALBERGIA NITIDULA

*Dalbergia nitidula* is also known as Bright *Dalbergia*, Purple Zitan, Zambia Zitan, Angola Zitan, and Central America Zitan. This species comes mainly from Angola, Zambia, and Mozambique in central and southern Africa. It has a light purple colour like *Dalbergia cearensis*, and is small with beautiful patterning but poor drying properties. *D. nitidula* with a relatively large diameter is priced at CNY16,000

(USD2,285) per tonne (Figure 17). Currently, there is little market demand and inventories contain poor quality logs. In 2017, there were cases of *D. nitidula* being imported as *Brachystegia* spp. for Customs clearance at Zhangjiagang port, but the Zhangjiagang National Key Laboratory for Wood Species Identification spotted the error and seized the illegally imported timber, which did not have a CITES permit.

FIGURE 17

Logs of *Dalbergia nitidula*, photographed at the Shanghai Global Rosewood Market, 30th April 2015. © TRAFFIC



### MADAGASCAR DALBERGIA SPECIES OTHER THAN D. LOUVELII

In 2013, the Conference of the Parties to CITES agreed to include Malagasy populations of the genera *Dalbergia* and *Diospyros* in Appendix II, as well as adopting a CITES Action Plan for the conservation and sustainable use of these species (CITES Decision 16.152). However, all *Dalbergia* spp. from Madagascar are currently under a CITES trade suspension until further notice, with the exception of certain products which had been produced, registered and authorised for export prior to 2nd January 2017.

Nevertheless, illicit Malagasy rosewood has been found en route to China, including in the Comoros and Singapore. In June 2010, according to local media reports, a freighter loaded with illegal rosewood from Madagascar was intercepted in the Comoros. The freighter departed Madagascar loaded with rosewood in 15 containers. Authorities in Singapore made the largest-ever international seizure of rosewood logs in 2014, totalling 29,434 logs, weighing 3,235 tonnes, worth USD50 million, providing further evidence that industrial-scale smuggling of

Madagascar's rosewood continued despite an official ban on the trade from Madagascar (Lum, 2019, 2017a,b).

Madagascar's 48 *Dalbergia* species are usually categorised into two types: Bois de Rose and Palissandre. Palissandre is a Malagasy trade name (Palisander in English) that is still used in China to describe a series of valuable wood products made from Madagascar *Dalbergia* species, including *Dalbergia greveana* and *Dalbergia madagascariensis*. Palissandre includes various species with small diameters and large differences in pattern, colour and texture. These unfavourable features limit the interest of furniture manufactures. Although Palissandre is still used, it is only by instrument manufacturers purchasing small quantities and choosing the most beautiful planks, with long-term price trends between CNY9,000 to 12,000 (USD1,285–1,714) per tonne. In recent years, Palissandre has had no legal channels through which to enter China, and the limited market sales turnovers are between manufacturers (Figure 18).



FIGURE 18

Palissandre sawn wood, Photographed at the Zhangjiagang Golden Port Logistics Timber Market, 28th March 2011. © TRAFFIC

### DALBERGIA SISSOO

*Dalbergia sissoo* from Pakistan, India, and other countries is also present in the Chinese market, but the aggregate import amount is not significant and there are no accurate figures available. India took issue with the *Dalbergia* spp.

listing discussions at CoP17, particularly because there are a lot of *Dalbergia sissoo* plantations in the country (DownToEarth, 2017). There are also *D. sissoo* plantations in the southern region of China (Anon, 2016b).

TABLE 4

Price overview of *Dalbergia* species listed in the National Hongmu Standard in 2018

SPECIES	YEAR OF QUOTATION	TYPE	PRICE		UNIT	REMARKS
			CNY / USD	(EXCHANGE RATE 7/1)		
<i>Dalbergia cochinchinensis</i>	June 2018	squared timber	200,000--280,000 28,571--40,000		tonne	diameter = 15--30 cm, length = 2--3 m
<i>Dalbergia retusa</i>	June 2018	squared timber	30,000 4,285		tonne	Nicaragua, Panama, Costa Rica, Honduras
<i>Dalbergia Granadillo</i>	July 2018	squared timber	60,000 8,571		tonne	Mexico
<i>Dalbergia oliveri</i>	August 2018	squared timber	30,000-50,000 4,285-7,142		tonne	diameter = 10--35 cm, length = 2--3 m
<i>Dalbergia oliveri</i>	August 2018	squared timber	60,000-80,000 8,571-11,428		tonne	diameter = 10--35 cm, length = 2--3 m, high quality
<i>Dalbergia latifolia</i>	September 2018	squared timber	13,000-14,000 1,857-2,000		tonne	stable price
<i>Dalbergia odorifera</i>	September 2018	-	2,000,000-3,500,000 285,714-500,000		tonne	Viet Nam
<i>Dalbergia odorifera</i>	September 2018	-	4,000,000-7,000,000 571,428-1,000,000		tonne	Hainan, China
<i>Dalbergia cultrate</i>	October 2018	squared timber	11,000-18,000 1,571-2,571		tonne	out of supply
<i>Dalbergia stevensonii</i>	October 2018	squared timber	13,000-14,000 1,857-2,000		tonne	low market acceptance
<i>Dalbergia cearensis</i>	November 2018	squared timber	55,000-70,000 7,857-10,000		tonne	low market acceptance
<i>Dalbergia congestiflora</i>	November 2018	squared timber	-		tonne	often misrecognised as <i>Dalbergia cearensis</i>
<i>Dalbergia melanoxydon</i>	July 2018	unhewn log	2,000-7,000 285-1000		tonne	-
<i>Dalbergia melanoxydon</i>	July 2018	unhewn log	20,000-30,000 2,857-4,285		tonne	high quality
<i>Dalbergia louvelii</i>	August 2018	unhewn log	50,000-300,000 7,142-42,857		tonne	market acceptance has been declining

TABLE 5

Price overview of *Dalbergia* species listed in the National Hongmu Standard from 2010 to 2017

SPECIES	PRICE <CNY/ USD, EXCHANGE RATE 7/1> UNIT (TONNE)						TYPE	REMARKS
	2010		2013		2017			
	CNY	USD	CNY	USD	CNY	USD		
<i>Dalbergia cochinchinensis</i>	100,000 14,285		300,000 42,857		Same as quotations in 2018		squared timber	diameter = 15--30 cm, length = 2--3 m
<i>Dalbergia retusa</i>	12,000-25,000 1,714-3,571		45,000-60,000 6,428-8,571		Same as quotations in 2018		squared timber	
<i>Dalbergia retusa</i>	70,000-80,000 10,000-114,28		N/A		N/A		squared timber	Mexico
<i>Dalbergia oliveri</i>	8,000-20,000 1,142-2,857		20,000-50,000 2,857-7,142		60,000	8,571	squared timber	diameter = 10--35 cm, length = 2--3 m
<i>Dalbergia oliveri</i>	NA		NA		150,000	21,428	squared timber	diameter = 30--40 cm, length > 2-.5 m
<i>Dalbergia odorifera</i>	6,000,000-8,000,000 857,142-1,142,857				Same as quotations in 2018		-	Viet Nam
<i>Dalbergia odorifera</i>	NA		20,000,000 2,857,142				-	Hainan, China
<i>Dalbergia louvelii</i>	NA		250,000-300,000 35,714-42,857		Same as quotations in 2018		unhewn log	Hainan, China

# ANNEX II: MARKET PROFILES

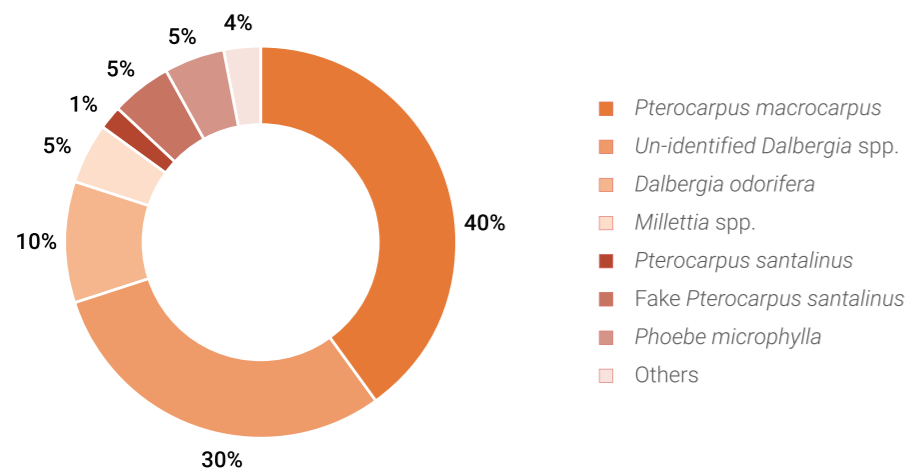
## GUANGXI

In the Guangxi Zhuang Autonomous Region, the study focused on cities bordering Viet Nam, including Pingxiang (under the administration of Chongzuo) and Dongxing (under the administration of Fangchenggang). The tropical hardwood circulating in markets in Guangxi Zhuang Autonomous Region is mainly in the form of finished furniture, including products from Viet Nam. Information regarding unhewn logs was more difficult to collect in interviews in Pingxiang and other border markets to discover sales turnover. A frequency-based encounter analysis was used to reflect the relative availability of rosewood species in Guangxi markets.

Rosewood trade in Pingxiang and Dongxing began to develop in the late 1990s, taking advantage of the proximity to Viet Nam and connectivity to the wider ASEAN region. With government support, Hongmu soon became a pivotal industry. Pingxiang ranked first in Hongmu furniture imports to China for six consecutive years from 2007 to 2012. With an annual sales turnover of more than CNY10 billion (USD1.4 billion), it became the key national Hongmu furniture market, import entry point, and distribution centre. Its timber businesses integrated raw material procurement, production, and processing with sales and service.

The wastage rate from logs to finished furniture is around 15–18%. During the survey in late 2018, the price for a large piece of Hainan *Dalbergia odorifera* was CNY6,000 (USD857) per kg, a lounge chair made from this wood (using about 40 kg of raw material) in the store was priced at CNY280,000 (USD40,000). One dealer said that a market auction in early 2019 of four large pieces (two chairs, one side table, and one long narrow living room table made of Hainan *Dalbergia odorifera*) was estimated to be worth CNY3.9 million (USD557,000), but was eventually sold for CNY8 million (USD1.14 million).

FIGURE 19  
Market shares of precious wood species in Pingxiang, 2018



In comparison, the price for imported Vietnamese *Dalbergia odorifera* is only several hundred CNY per kg. When asked why finished products were not imported from Viet Nam directly, the dealer replied that the craftsmanship in Viet Nam was poor, a sentiment that which was shared by other key interviewees. Thus, Chinese Rosewood dealers would generally visit Viet Nam, Cambodia, or Lao PDR to process logs to sawn wood. The second option was to import semi-processed products or conduct further processing in Pingxiang. The study observed semi-processed products being imported to Dongxing and then transported to Pingxiang for further processing.

The Forest Products Quality Testing Centre of Guangxi University is one of three testing centres in the Guangxi Zhuang Autonomous Region that offers non-destructive testing technology to verify species. The centre is responsible for species identification and wood quality verification and conducts nearly half of the tests for imported Rosewood in Guangxi. The most-tested Hongmu species in the past two years have been scented rosewood, including *Pterocarpus macrocarpus* and *Pterocarpus erinaceus*. Interviewees said that a huge amount of Malaysian *Streblus elongatus* is deliberately misidentified as Hainan *Dalbergia odorifera* in Guangxi's markets.

Testing does not cover legality verification. According to official data, in 2019 China consumed 192 million cubic metres of logs and timber products, 15% of which was rosewood. 10% of the rosewood is produced in China, while the rest was imported.

The survey in Guangxi Zhuang Autonomous Region was conducted by combining key informant interviews and research on commercial products. The survey found that the most abundant Hongmu species in Pingxiang was *Pterocarpus macrocarpus*, followed by *Dalbergia* spp., while *Millettia laurentii* (*Millettia* spp. and *Cassia siammea*) and have a small share respectively. *Pterocarpus santalinus* was only observed for making bracelets. Most of the *P. santalinus* products were suspected to be counterfeits made from African Padauk (possibly *Pterocarpus suyauxii* or *Swartzia* spp.), Mukula (*Pterocarpus tinctorius*), Eucalyptus spp. and other species (Figure 19). Among scented wood, the quantity of Vietnamese "*Dalbergia odorifera*" (actually *Dalbergia tonkinensis*: the two species are very similar but *odorifera* is native to China) is much

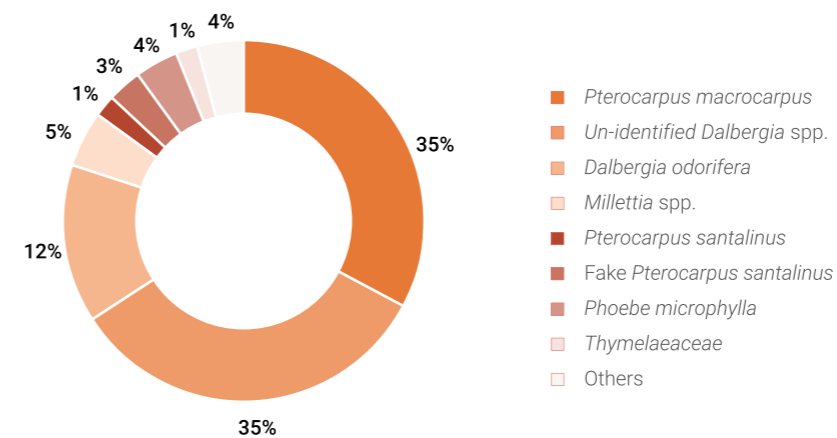
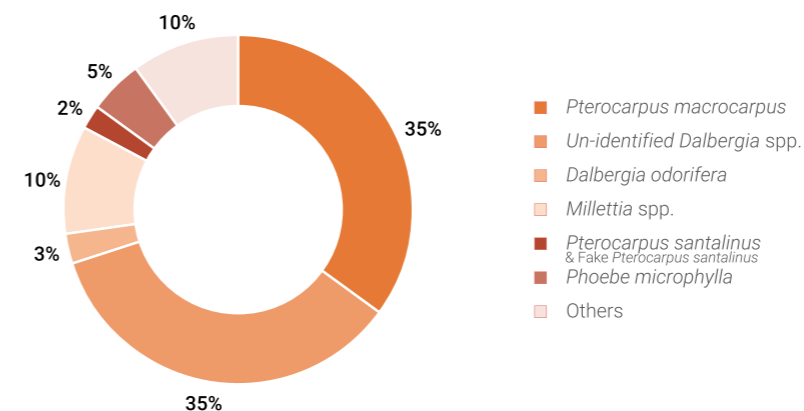


FIGURE 20  
Market shares of precious wood species in Dongxing, 2018

Compared to Pingxiang, the Hongmu species in Dongxing market was dominated by Hongshuanzhi (Red Rosewood, mainly *Dalbergia cochinchinensis*) and Scented Rosewood (*Pterocarpus macrocarpus*). The Hongmu furniture stores dealing in these two species accounted for 50% of the market respectively. *Millettia laurentii* and *Dalbergia nigra* (listed in CITES Appendix I) and *Dalbergia odorifera* from Viet Nam accounted for a small share respectively. The amount of Vietnamese "*Dalbergia odorifera*" (i.e. *D.*

FIGURE 21  
Market shares of precious wood species in Nanning, 2018.



bigger than Hainan *Dalbergia odorifera*.

Pingxiang's 5,000 market stores and crafts shops reached a peak sales turnover of CNY12 billion (USD1.7 billion) in 2013. Sales then declined sharply to CNY4 billion (USD570 million) in 2014. From 2016 to 2018, the turnover rebounded slightly, reaching CNY8 billion (USD1.14 billion) in 2017. During 2013 to 2018, nineteen Hongmu species from Southeast Asia were imported into Pingxiang, the majority of which entered from Viet Nam. In recent years, other Southeast Asian countries such as Myanmar and Lao PDR have also been exporting *Dalbergia cochinchinensis* and *Pterocarpus macrocarpus* to Pingxiang, transiting via Viet Nam.

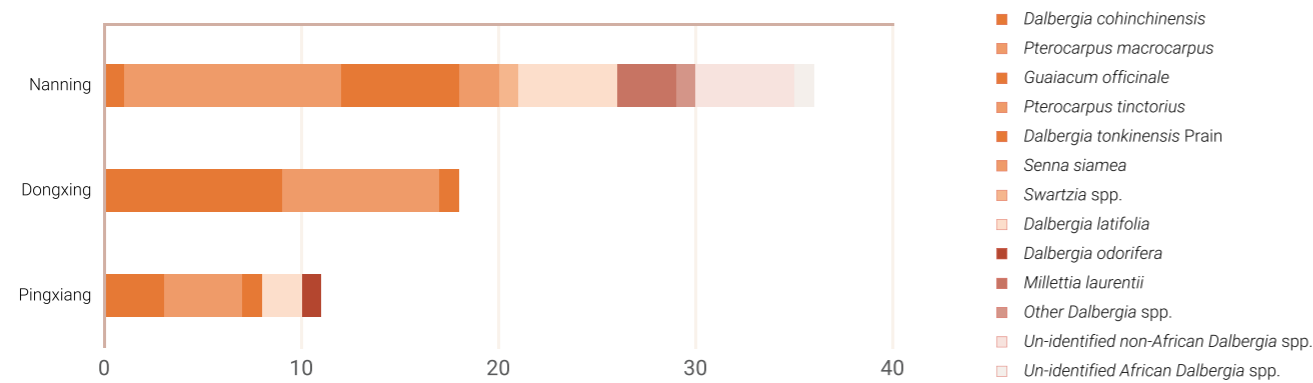
*tonkinensis*) is more substantial than Hainan *Dalbergia odorifera*. Compared with Pingxiang, Dongxing has less *Pterocarpus macrocarpus* but more *Dalbergia* spp. (due to more *Dalbergia cochinchinensis* and *D. bariensis*) and Vietnamese *D. tonkinensis*. Dongxing also processes a lot of semi-finished products.

The proportion of *Pterocarpus erinaceus* and *Pterocarpus macrocarpus* in Nanning is higher than Dongxing but lower than Pingxiang. Counterfeiting is more common in the Nanning market, techniques including the use of thick paint and wax and deeper dyeing than in Pingxiang and Dongxing. The market share of each species in Nanning

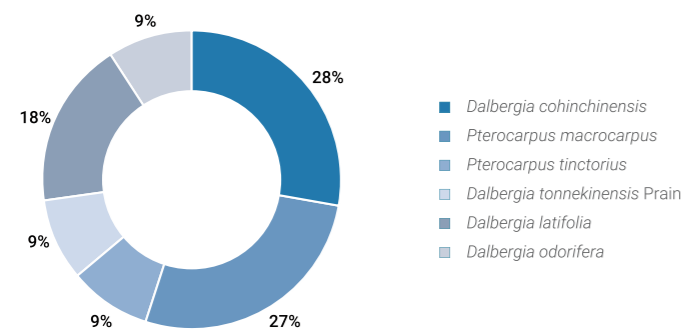
is shown in Figure 21. It is worth noting that Vietnamese "*Dalbergia odorifera*" (*D. tonkinensis*) is often used as a substitute for Hainan *D. odorifera* due to its similar texture, and accounts for a small market share in Guangxi (Fu & Li, 2019) although it is not listed in the National Hongmu Standard.

## FURNITURE MANUFACTURING IN GUANGXI

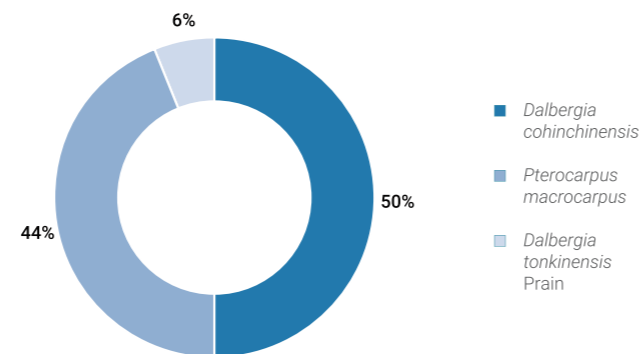
**FIGURE 22**  
Species used in furniture manufacturing in Guangxi markets (based on appearance frequency). Source: TRAFFIC.



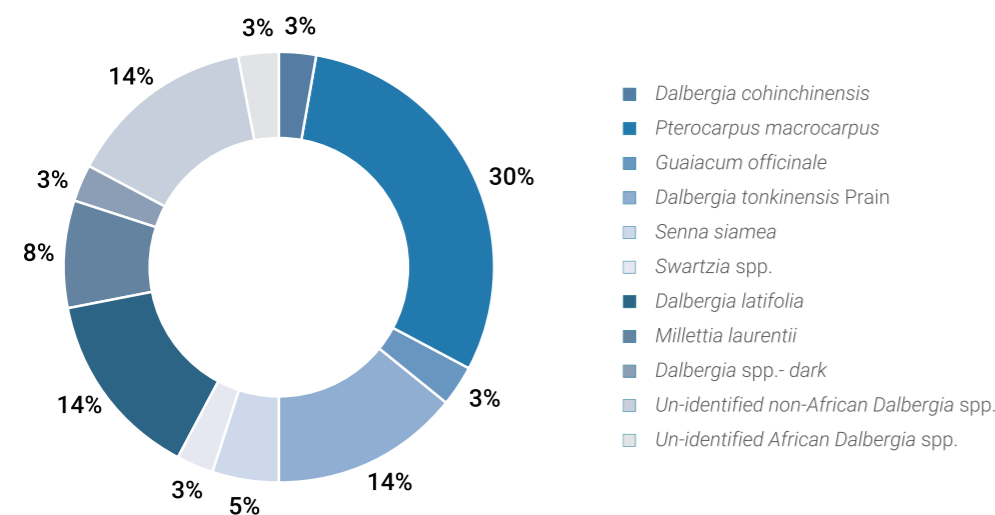
**FIGURE 23**  
Appearance frequency of different tropical hardwood species are used in furniture manufacture in Pingxiang, 2018. Source: TRAFFIC



**FIGURE 24**  
Appearance frequency of different tropical hardwood species are used in furniture manufacturing in Dongxing, 2018. Source: TRAFFIC



**FIGURE 25**  
Appearance frequency of different tropical hardwood are used in furniture manufacturing in Nanning, 2018. Source: TRAFFIC



## DACHENG

In mid-August 2018, TRAFFIC surveyers visited Dacheng's Hongmu Culture Market, where finished tropical hardwood products were the main commodity. The species involved were not limited to those in the National Hongmu Standard. Merchants in the Central Plaza and District B sold feng shui columns made from *D. melanoxylon* and *Pterocarpus tinctorius*, along with bracelets, small wood segments (hewn log), and crafts made from *Dalbergia odorifera*. Old *D. odorifera* was sold in pieces ranging from 1–10 kg. The new stocks, including Vietnamese "*D. odorifera*" (*D. tonkinensis*) and Hainan *D. odorifera* were sold in pieces of 500 g with the same unit price. However, larger pieces of Vietnamese *D. tonkinensis* usually cost the same as smaller pieces of Hainan *D. odorifera*, implying the latter is considered more valuable.

Among the species present in this market, *D. odorifera* is less often seen due to its scarcity as a raw material. In addition, surveyed merchants reported that wooden furniture with a relatively light colour was more common than that with a darker colour. Furniture made from *D. latifolia* and *Diospyros crassiflora* is exceptionally rare. According to the interviewees, this is because these two species have a lower yield rate and are less preferred consumers. In general, dark-coloured furniture is sold to middle-aged and older consumers, while young people (20 to 40 years old) prefer light-coloured furniture.

Species such as *Dalbergia oliveri* are more preferred due to their moderate colour and smooth pattern. *D. oliveri* is widely popular due to its similarity in pattern to *D. odorifera*. Because its texture can be distinguished from other species easily, and the price is middle- to low-end, respondents suggested that new buyers choose *D. oliveri* to avoid being cheated. Consumers in northern China also value *D. oliveri* for its stability and hardness.

*D. retusa*'s pattern is similar to *D. cochinchinensis* and it is often used as a substitute. But according to the interviewees, with a growing understanding of Hongmu among consumers in the Beijing-Tianjin-Hebei region, increasingly fewer customers are favouring *D. retusa*. Some interviewees said *D. retusa* would no longer be processed given the unfavourable dry weather conditions for preserving its timber in northern China, including Beijing, Tianjin, and Hebei Province. Thus, *D. retusa* is not commonly seen in Dacheng market, however, it is still considered a high-end rosewood with a price ranking below *D. cochinchinensis*.

**TABLE 6**  
The main species used for finished furniture in the Beijing-Tianjin-Hebei region

1	<i>Dalbergia odorifera</i>
2	<i>Dalbergia cochinchinensis</i>
3	<i>Dalbergia retusa</i>
4	<i>Dalbergia oliveri</i>
5	<i>Dalbergia latifolia</i>
6	<i>Dalbergia melanoxylon</i>
7	<i>Pterocarpus santalinus</i>
8	<i>Pterocarpus macrocarpus</i>
9	<i>Pterocarpus tinctorius</i>
10	<i>Pterocarpus erinaceus</i>
11	<i>Diospyros crassiflora</i>
12	<i>Guibouria coleosperm</i>
13	<i>Guibourtia</i> spp. (Bubinga)

*Dalbergia odorifera* has the highest price in the furniture market, but dealers with stocks are often reluctant to sell, preferring to retain stocks hoping they will accrue in value. *Pterocarpus santalinus* has a slightly lower price, followed by *Dalbergia cochinchinensis*. Significant price gaps exist between the above three species and the other species traded here. Factors such as craftsmanship or texture do nothing to narrow the gap. *D. retusa* follows *D. cochinchinensis*, and is in turn followed by *D. oliveri*, which is more accessible to young or new buyers. In fact, according to the data obtained from this market survey, *D. oliveri* may be the only species that has recently risen in price. The relatively lower prices of *D. oliveri* and *P. tinctorius* compared with the three most expensive species (*D. odorifera*, *Pterocarpus santalinus* and *Dalbergia cochinchinensis*), may make them a target for customers with a lower purchasing power that are interested in investing in rosewood.

## TIANJIN

Panzhuang Precious Wood Market, founded in 2013, is located 40 km from Tianjin, 110 km from Beijing, and 70 km from Tangshan. The market benefits from its proximity to these big cities. Freight vehicles from Panzhuang can reach Tianjin, Beijing, Xiong'an New District, Langfang, and Tangshan within two hours, making transportation very convenient. After Beijing succeeded in its bid for the 2022 Winter Olympic Games, the government ruled that polluting industrial facilities must be relocated to neighbouring cities in order to improve the air quality in Beijing. This included the traditional wood industry, which was re-established in Panzhuang, Tianjin. The relocation of the Beijing Dongba Precious Wood Market, previously the largest wholesale wood market in northern China, to Tianjin Panzhuang, which took over his mantle, was completed in the first half of 2018.

Compared with other species, the appearance frequency of *D. cochinchinensis* in Tianjin is relatively low, and most of the wood held in stock by merchants was purchased around 2013, the peak year for rosewood trade in price and volume. Only one dealer purchased *D. cochinchinensis*

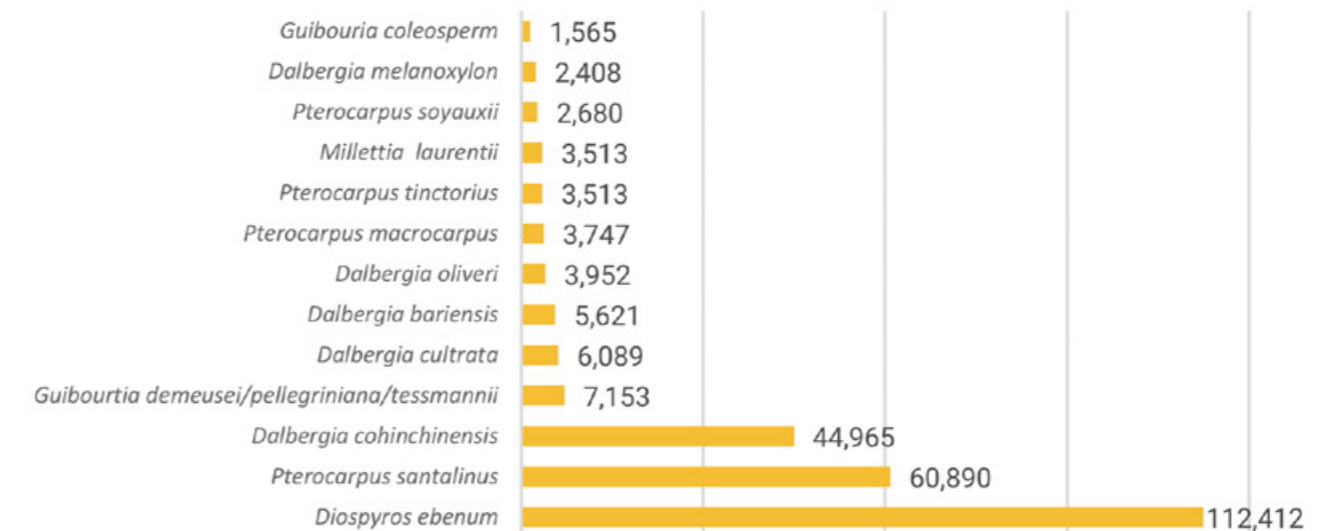
stock around 2016, and it was in a low quantity. The price of *D. cochinchinensis* is CNY200,000–650,000 (USD30,930–92,857) per tonne. According to the interviewees, buyers of *D. cochinchinensis* are usually relatively wealthy and knowledgeable about tropical hardwood and furniture. They are often purchasing collectibles, rather than following trends or speculating. *D. oliveri* is regarded as a cheaper substitute for *D. cochinchinensis*, with prices ranging between CNY26,000–40,000 (USD3,714–5,714) per tonne. According to the interviewees, the price showed no signs of increasing. Factors such as craftsmanship or texture do nothing to narrow the gap. *D. retusa* follows *D. cochinchinensis*, and is in turn followed by *D. oliveri*, which is more accessible to young or new buyers. In fact, according to the data obtained from this market survey, *D. oliveri* may be the only species that has recently risen in price. The relatively lower prices of *D. oliveri* and *P. tinctorius* compared with the three most expensive species (*D. odorifera*, *Pterocarpus santalinus* and *Dalbergia cochinchinensis*), may make them a target for customers with a lower purchasing power that are interested in investing in rosewood.

## YUNNAN

Yunnan is a landlocked province in the southwest of China, bordering Myanmar, Lao PDR, and Viet Nam. Due to its location, Yunnan has become a key region for the importation of precious tropical hardwood into China. Up to 2015, more than 90% of wood from Myanmar imported by China entered through Yunnan (Dong, M., et al., 2016). In addition, nearly 2% of the wood entering Yunnan in 2015 is believed to have come from Lao PDR (Bitonnete, K., et al., 2015). The TRAFFIC survey team visited markets in Kunming, Jinghong and Ruili, but before visiting them, the prices for timber online was checked for comparison purposes.

Ruili tended to have less variety of species and had a focus on *Dalbergia oliveri* and *Pterocarpus macrocarpus*. Jinghong had more tropical hardwood species than Ruili, with the most popular species *D. oliveri*. Kunming had the most complex market and non-traditional Hongmu substitutes have become the mainstream species in the market.

FIGURE 26  
Average price (in USD) comparison for species in Yunnan Province, 2018. Source: TRAFFIC



In Yunnan, merchants capable of acquiring unhewn logs were counted when assessing the appearance frequency for various species, while those offering quotations but unable to acquire unhewn logs were excluded. The appearance frequency for *Dalbergia cochinchinensis* was close to that of other species (in Ruili they were the same). Merchants with an inventory of unhewn logs (already-purchased logs that were stored inside or outside of China) slightly outnumbered those without an inventory but who could buy them when ordered. *D. oliveri* was distributed in Kunming, Jihong, & Ruili, the majority of it being in Ruili. The appearance frequency of unhewn logs in Ruili was close to the overall appearance frequency of *D. oliveri* and was the same as the frequency of merchants with an unhewn log inventory. Merchants without unhewn logs said the logs could not be purchased on the market, and their finished products were all furniture.

The TRAFFIC survey team found that the market price in Yunnan for unhewn logs of *Dalbergia cochinchinensis* was CNY100,000–600,000 (USD14,000–86,000) per tonne, with the corresponding online price being CNY80,000–400,000 (USD11,400–57,000). This included used beams, squared timber, and hewn logs (Figure 26). Dealers' unhewn logs were apparently all purchased between 2011 and 2014, and there was no significant price difference between different varieties, i.e. beams, squared timber and hewn log. *D. cochinchinensis* drawing room sets with 11 individual pieces cost CNY500,000 (USD71,400).



*Dalbergia cochinchinensis* was not found in Kunming but was available in Ruili and Jinghong; *D. cultrata* was available in Ruili; *D. bariensis*, *Pterocarpus santalinus* and *D. latifolia* were available in Jinghong; *D. oliveri* and *P. macrocarpus* were available in Ruili and Jinghong; *P. erinaceus* was available in Ruili, while *Guibourtia* spp. and *Guibouria coleosperm* were available in Jinghong. *D. oliveri* and *Pterocarpus macrocarpus* were found in Jinghong, Kunming, and Ruili and but mainly in Ruili, and *Guibourtia* spp. was mainly in Kunming (Figures 27–30).

The price for unhewn logs of *Dalbergia oliveri* was CNY15,000–60,000 (USD2,100–8,500) per tonne. Among them, unhewn logs 20 cm in diameter were priced at around CNY20,000 (USD2,800) per tonne, 30 cm in diameter CNY35,000 (USD5,000) per tonne; and 50–60 cm in diameter CNY50,000–60,000 (USD7,100–8,500) per tonne. The corresponding online price was CNY16,000–27,000 (USD2,300–3,900) per tonne. A *D. oliveri* drawing room set with 11 individual pieces was CNY70,000–110,000 (USD10,000–15,700). According to the interviewees, a *D. oliveri* three-piece palace chair set was CNY12,000 (USD1,700).

Although *D. bariensis* is a common *Dalbergia* species in countries neighbouring China, only a few merchants deal in finished products made from it (by piece rather than weight). Only two merchants offered a quotation for unhewn logs, which was CNY40,000 (USD5,700) per tonne. The corresponding online price was CNY13,000–14,000 (USD1,900–2,000) per tonne. The two merchants mentioned above imported *D. bariensis* from Lao PDR. One merchant said that his business did not regularly store finished furniture products, but unhewn logs could be ordered with a two-week delivery time and did not mention the source of any imports to the survey team. The other merchant had purchased unhewn logs of *D. bariensis* between 2013 and 2015 and said were still being traded in 2018 but could not now be imported into China unless they were first processed into finished products in Lao PDR, of which around 40 sets were currently being produced per month. He also said that the price for *D. bariensis* peaked between 2013 and early 2014, when the price of unhewn logs was double the current price due to speculation, and that it began to fall in 2014 when Lao PDR banned the export of logs. According to these two merchants, the main sales targets of *D. bariensis* were buyers in Guangdong, Zhejiang, Shandong, Beijing, and Harbin. Most of the buyers in Guangdong and Zhejiang were secondary dealers. Additionally, an antiques mall, which seemed to cater to tourists, claimed that it could order *D. bariensis* from Myanmar, but did not have a *D. bariensis* inventory or any further information.

*Dalbergia melanoxydon* was only found in Kunming and mostly as semi-processed large planks, the unit cubic meter price of which varied widely between CNY3,600 and CNY18,000 (USD500–2,570). Based on quotations provided by two dealers, the price for unhewn logs ranged between CNY20,000 and CNY23,000 (USD2,900–3,300) per tonne, with the corresponding online price CNY5,000–15,000 (USD700–2,100) per tonne. The interviewees said that the goods were from Africa and that customs clearance had taken place in Zhangjiagang, but they were unable to name the source country. Unhewn logs of *D. melanoxydon* were mostly stocked in Zhangjiagang rather than Kunming, although Kunming is one of the places *D. melanoxydon* is processed.

Unhewn logs could be bought from the Zhangjiagang stockyard or by ordering direct from Africa, with roughly equal quantities supplied from both. The interviewees who procure directly from Africa were closely tied to upstream supply, mostly have stockpiles in Zhangjiagang, and are able to import raw logs discard the requirements of CITES annotation. When asked directly whether the logs could be transported all around China, one interviewee indicated that it could be done if specifically required. Another merchant said that, in the absence of special buying instructions, *D. melanoxydon* had often been processed to rough planks before being imported to China, though it could be imported in the form of logs. Most of the buyers for *D. melanoxydon* are Yunnan locals, who mainly used it for decoration (large planks) or construction (unhewn logs or lumber). According to the merchants, *D. melanoxydon* did not sell well and is not their main product and the price has fluctuated significantly in the past. Its price was stable in the years 2017 to 2018, and traders feel the price may increase in the future.

Tropical hardwood species found in the Kunming Southwest Timber Market were mainly *Guibourtia* spp. with *Pterocarpus soyauxii* also common, while *Dalbergia oliveri*, *Pterocarpus macrocarpus*, *P. tinctorius*, *Diospyros ebenum* and *D. crassiflora* were less seen. Among the 11 species found in this market, the appearance frequency of *Guibourtia* spp. was highest (22%), followed by *Pterocarpus soyauxii* (17%), *Guibouria coleosperm* (14%), *Dalbergia melanoxydon* (12%), *Pterocarpus tinctorius*, *Diospyros ebenum* and *D. crassiflora* (each 2%) (Figure 27). The appearance frequency of species from the National Hongmu Standard is 45%, that of non-Hongmu tropical hardwood species was 55%, while the species listed in CITES Appendix II accounted for 46% and non-CITES Appendices species 54% (Figure 31).

*Dalbergia cultrata* was only found in Ruili as both unhewn logs and finished furniture. The price for unhewn logs was CNY16,000–60,000 (USD2,300–8,600) per tonne, with a corresponding online price of CNY18,000–30,000 (USD2,600–4,300) per tonne. One merchant said that he did not have a current inventory, but for orders of more than 5 tonnes, he could find an upstream supplier. The merchant also said that his suppliers purchased their stock in 2018. Another merchant who was in charge of stockyards and supplied many of the 8 dealers, quoted prices varying from CNY30,000–60,000 (USD4,300–8,600) per tonne based on quality. All the inventory products were imported between 2013 and 2014, with no wood having entered through customs in 2018, which implies that a lot of timber was entering Yunnan illegally.

Regarding specific price points, a Palace chair set (imitating royal styles of the Ming and Qing Dynasties) with three pieces made from *Dalbergia cultrata* was priced at CNY18,000 (USD2,600) per set. According to merchants, the price of furniture made from *D. cultrata* was high due to a low yield rate while the wood only appealed to customers with a preference for dark-coloured furniture.

In general, Ruili and Jinghong stock more traditional Hongmu products, including both unhewn logs and finished furniture, whereas Kunming offered more large planks than unhewn logs. *Dalbergia odorifera* was not found in the rosewood market in Yunnan, while the price of other two species of the "traditional three" (*Pterocarpus santalinus* and *Dalbergia cochinchinensis*) are distinctively high and relevantly stable. The quoted price of *Diospyros ebenum* was also high, although there were no finished products on display and it was followed by *Dalbergia cultrata* that similarly was not popular with many customers. Next in price for unhewn logs came *D. bariensis* followed by *D. oliveri* and *Pterocarpus macrocarpus*.

In general, the price of tropical hardwood from Africa, such as *Pterocarpus erinaceus*, *Diospyros crassiflora* and (introduced) *Dalbergia latifolia* is relatively low and because it is mostly sold in planks it is difficult to obtain the price of unhewn logs. Prices from highest to lowest for unhewn logs of other species were as follows: *Guibourtia* spp., *Pterocarpus tinctorius*, *P. soyauxii*, *Millettia laurentii*, *Dalbergia melanoxydon* and *Guibouria coleosperm*. The price of a single high-quality tree trunk of an African species, such as *Pterocarpus tinctorius* or *P. santalinus* that could be processed into planks could be higher than ordinary planks of *Dalbergia oliveri*, *D. bariensis*, *Pterocarpus macrocarpus* etc. Price differences exist between market and online prices for unhewn logs of various species.

*D. oliveri* was less available in Kunming than in Ruili, and more finished products were available there than unhewn logs. These were mainly furniture products, with a few plates, root carvings, and other crafts. *D. bariensis* was only found in Jinghong and was only sold by three merchants. Two merchants could access unhewn logs—one possessed stocks while the other one said he could purchase upon demand.

The most commonly seen tropical hardwood in Jinghong was *Dalbergia cochinchinensis* with an appearance frequency of 31%, followed by *D. bariensis*, *D. oliveri*, *Pterocarpus macrocarpus* and *P. santalinus* (each 13%), *D. latifolia* and *Guibouria coleosperm* (each 4%) (Figure 27). The appearance frequency of species in the National Hongmu Standard was 83% and of non-CITES listed tropical hardwood species only 17% (Figure 27).

TABLE 7

Comparison of tropical hardwood distribution in Kunming, Dehong (Ruili, Jiegao and Nongdao ports), Jinghong, 2018.

Source: TRAFFIC

SPECIES	MARKET LOCATION		
	KUNMING	DEHONG (RUILI, JIEGAO AND NONGDAO PORTS)	JINGHONG
<i>Dalbergia cochinchinensis</i>		✓	✓
<i>Dalbergia oliveri</i>	✓	✓	✓
<i>Dalbergia bariensis</i>			✓
<i>Dalbergia melanoxylon</i>	✓		
<i>Dalbergia cultrata</i>		✓	
<i>Guibourtia</i> spp.	✓		✓
<i>Guibouria coleosperm</i>	✓		✓
<i>Pterocarpus santalinus</i>			✓
<i>Pterocarpus macrocarpus</i>	✓	✓	✓
<i>Pterocarpus tinctorius</i>	✓		
<i>Pterocarpus soyauxii</i>	✓		
<i>Pterocarpus erinaceus</i>	✓	✓	
<i>Dalbergia latifolia</i>			✓
<i>Millettia laurentii</i>	✓		
<i>Diospyros ebenum</i>	✓		
<i>Diospyros crassiflora</i>	✓		

FIGURE 27

Composition of tropical hardwood species in Yunnan markets (based on appearance frequency), 2018. Source: TRAFFIC

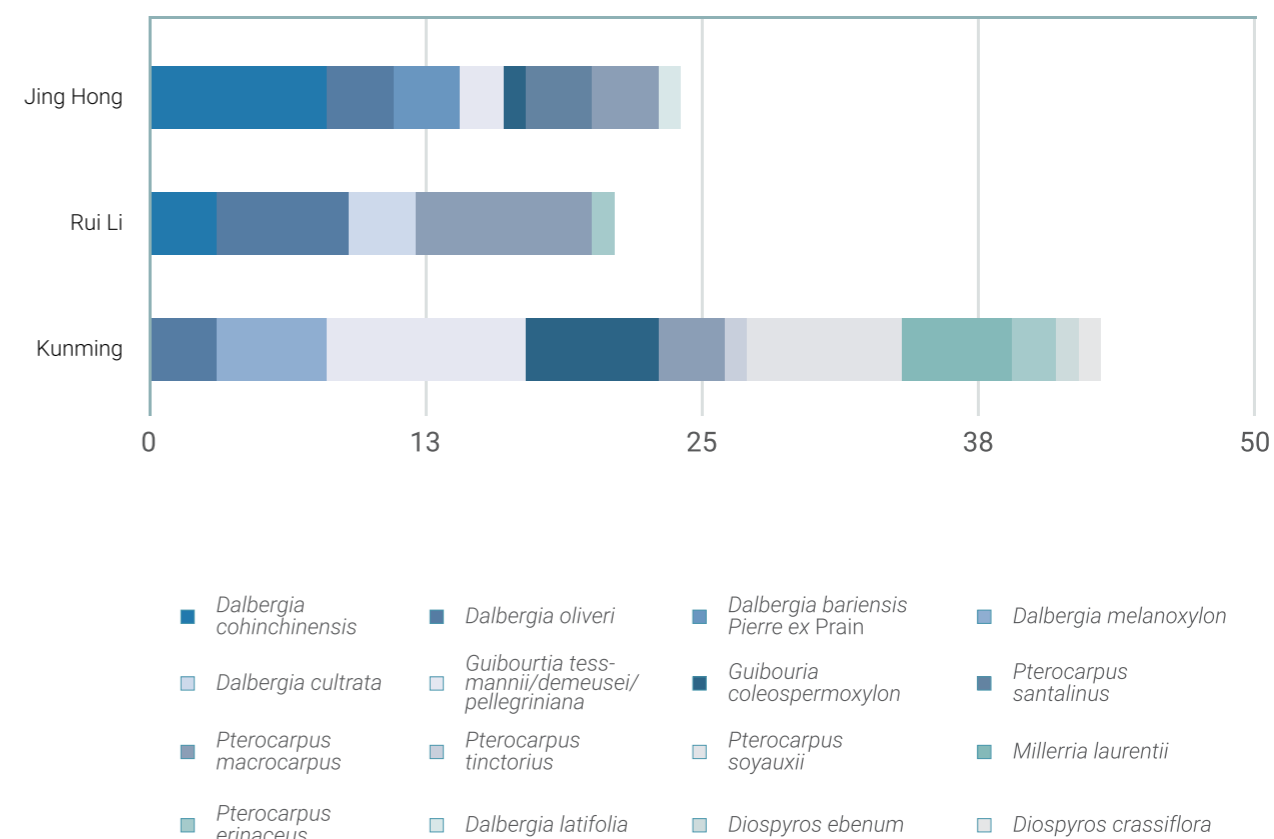
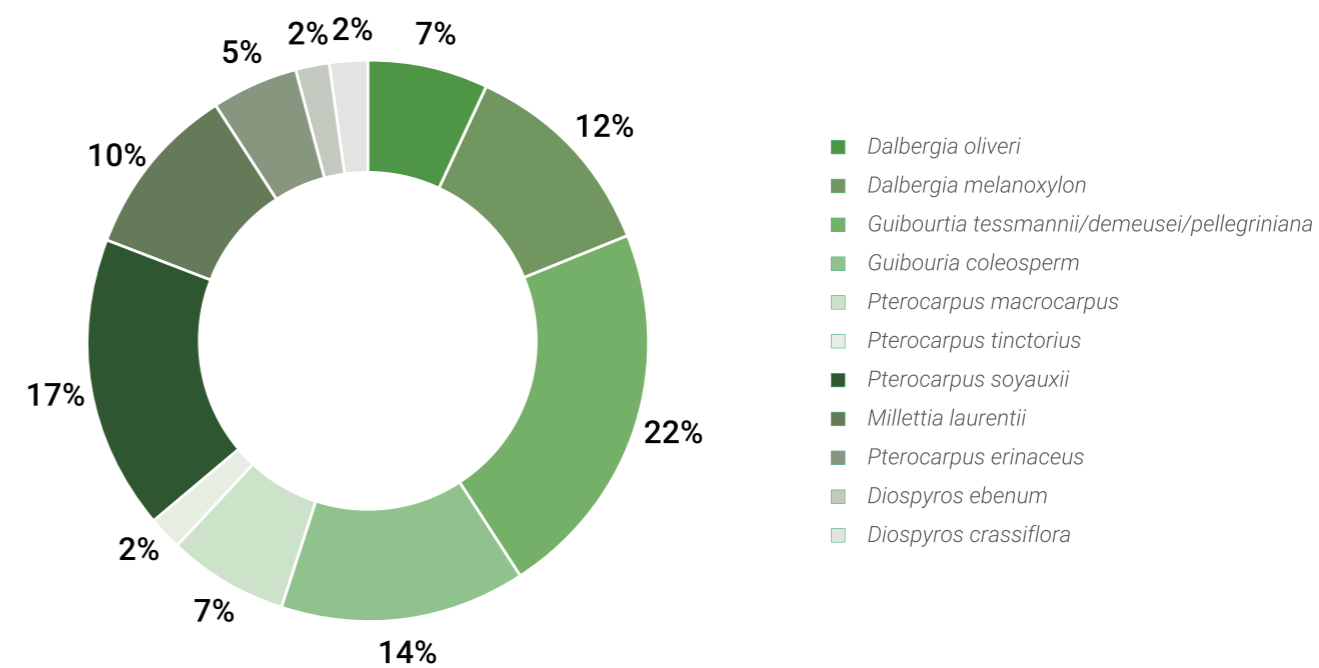


FIGURE 28

Composition of tropical hardwood species in Yunnan markets (based on appearance frequency), 2018. Source: TRAFFIC



Appearance frequency of Hongmu and CITES species in all locations of Yunnan, 2018. Source: TRAFFIC

FIGURE 29  
Appearance frequency of tropical hardwood species in Ruili, Jiegao and Nongdao ports, 2018. Source: TRAFFIC

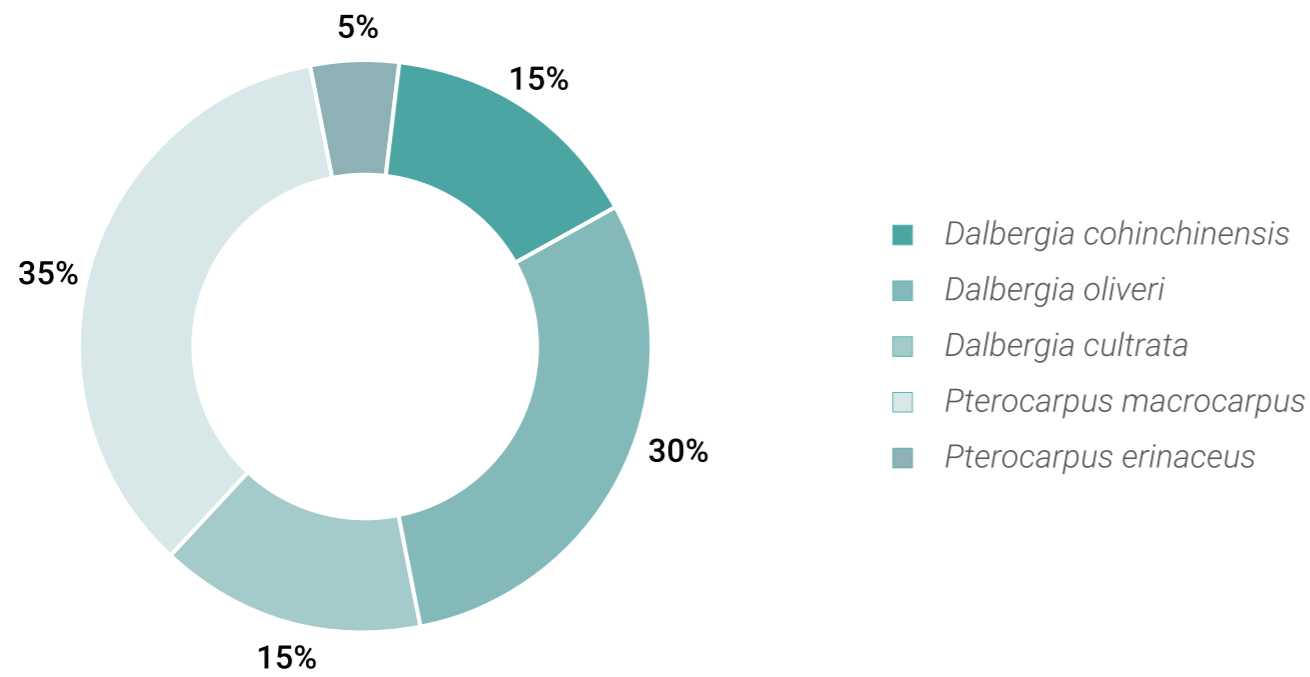


FIGURE 30  
Appearance frequency of tropical hardwood species in Jinghong, 2018. Source: TRAFFIC.

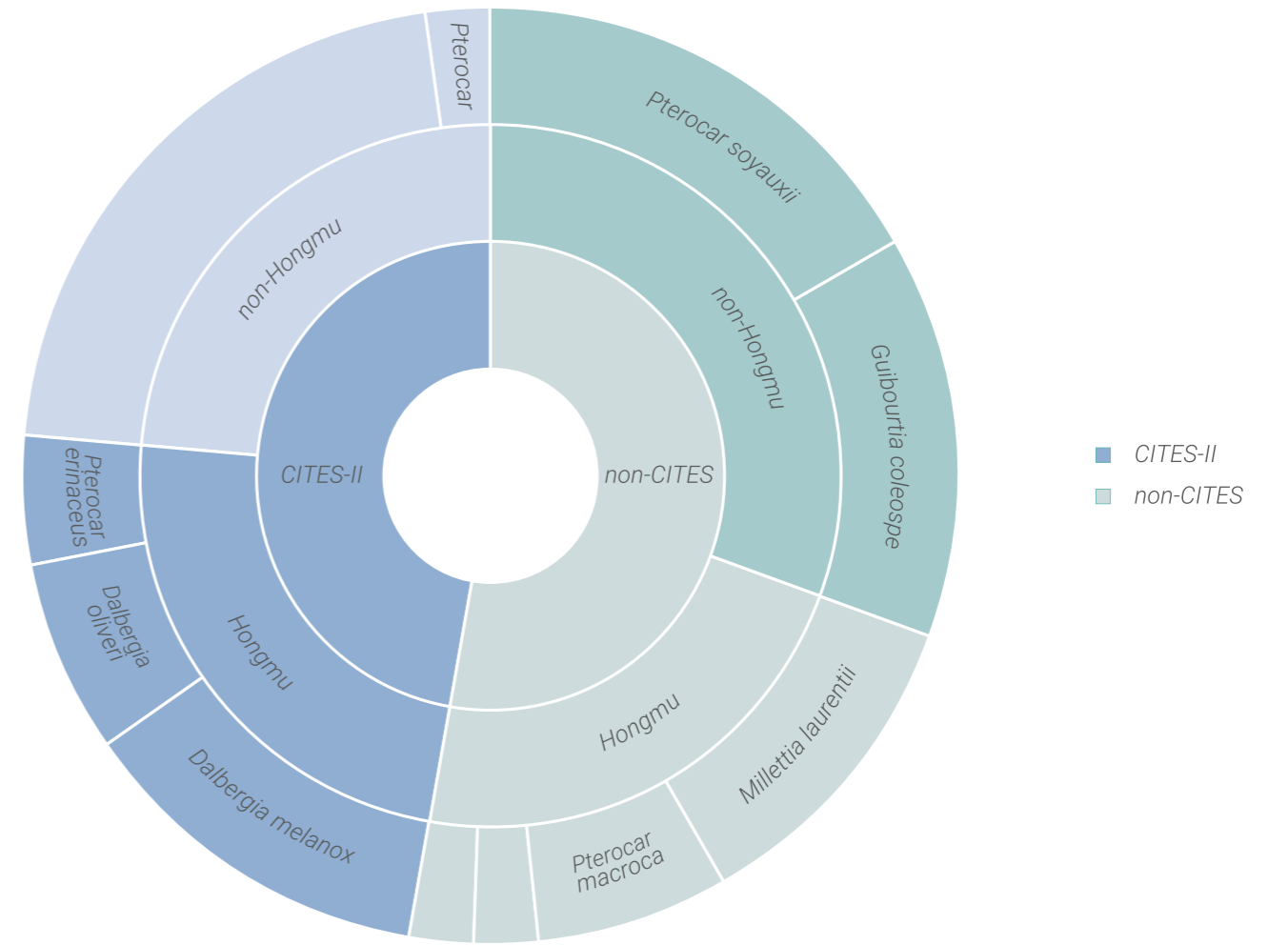
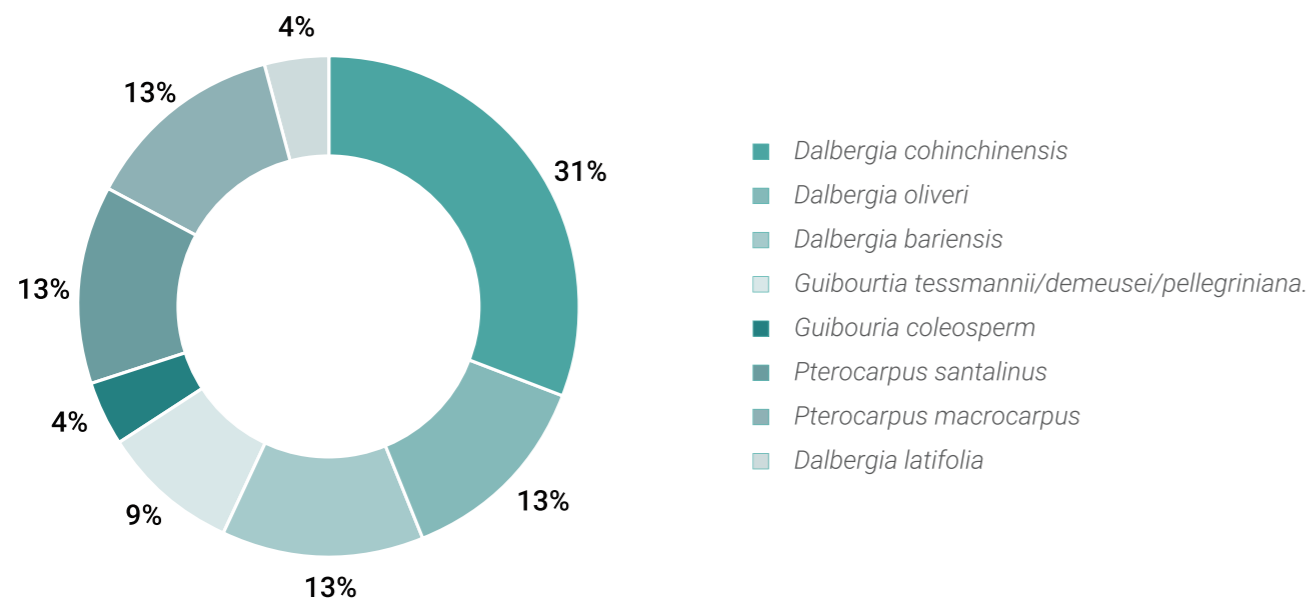


FIGURE 32  
Distribution of source countries for unhewn logs and furniture in major Yunnan markets, 2018. Source: TRAFFIC

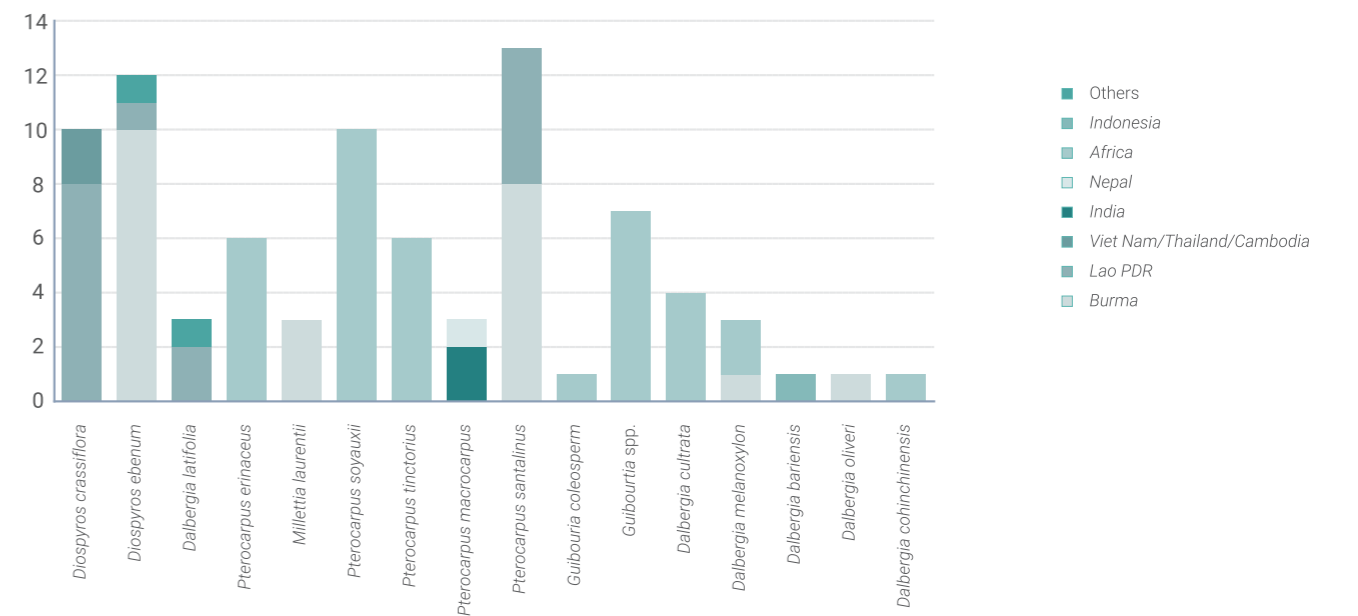
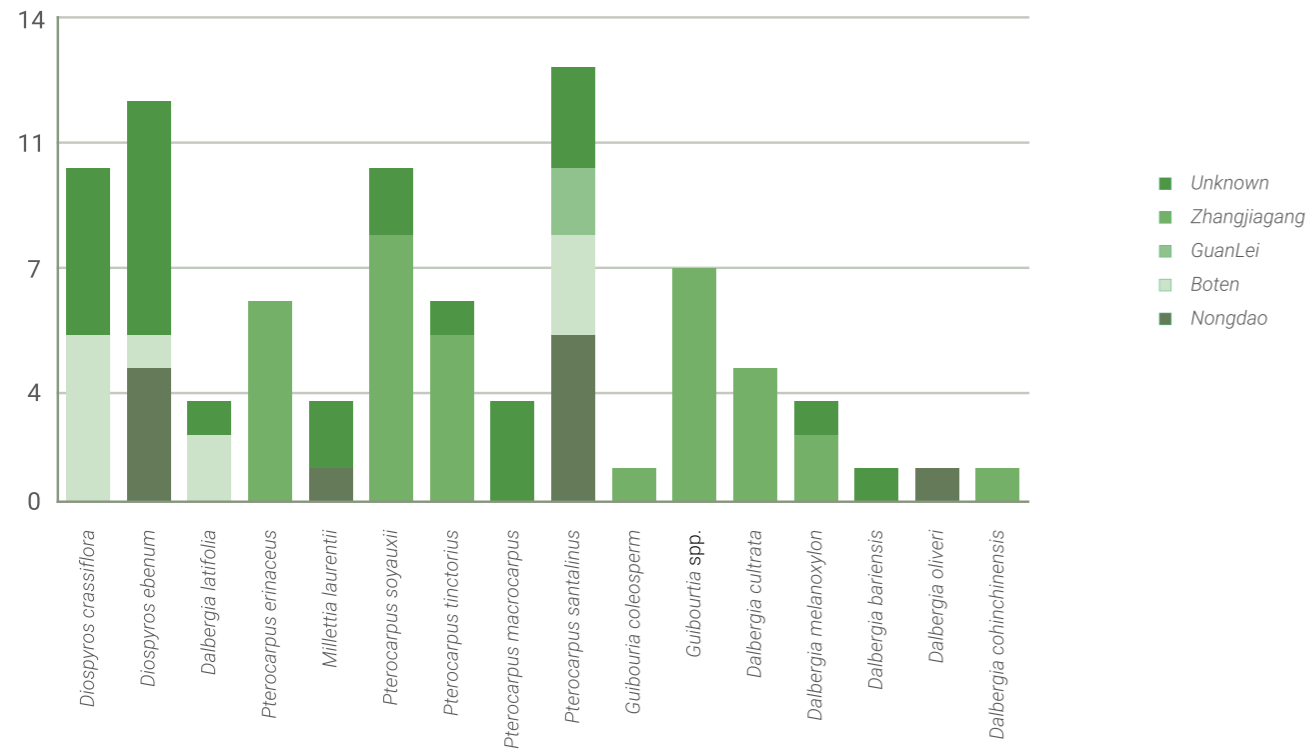


FIGURE 33  
Entry ports for various timber species, 2018. Source: TRAFFIC.



The source countries mentioned by merchants were compiled as far up the supply chain as could be traced before customs clearance. These might include transit countries, while deliberately evasive or vague information was not included (Figure 32). *Dalbergia melanoxylon*, *Guibourtia* spp., *Guibourtia coleosperm*, *Pterocarpus tinctorius*, *P. soyauxii*, *Millettia laurentii*, and *Diospyros crassiflora* were all from Africa (Figure 30). More than half of *Pterocarpus erinaceus* was from Africa, while a minor share was from Myanmar. *Dalbergia cultrata* and *Diospyros* spp. were all from Myanmar. Most of the *Dalbergia oliveri* was reported as coming from Myanmar, while a minor share was from Lao PDR or without clear origin. (purchased from upstream sources where the origin was unclear). More than half of the *Pterocarpus macrocarpus* was from Myanmar, the rest was from Lao PDR. According to the respondents, most *Dalbergia cochinchinensis* originated from Lao PDR while a minor proportion came from Viet Nam, Thailand, or Cambodia. *D. bariensis* was also mainly from Lao PDR, while a minor share with an unclear origin was purchased from upstream sources. In addition, *Pterocarpus santalinus* was mainly from India, while only a minor share was from Nepal according to the merchants (*P. santalinus* is endemic to two states in southeast India, there are no native populations anywhere else. Thus, anything coming from Nepal is illegal supply, unless it has been disposed of through a legal auction from seizures by

the Nepal CITES MA, and any legalised supply would then presumably be accompanied by CITES permits for any further re-export), and all *D. latifolia* came from Indonesia.

China Timber Transportation Permits (issued by local forestry authorities after checking customs clearance documents) were analysed for insights into unhewn logs with clear source information. It was found that, most unhewn logs are from Africa, only a small number of unhewn log samples were from Viet Nam, Thailand and Cambodia. Unhewn log from above region/countries all had transportation permits. Unhewn logs without transportation permits were mainly from Myanmar, followed by Lao PDR. A few *Pterocarpus santalinus* logs transiting through Nepal—noting that the species is endemic to India—lacked transportation and CITES permits also.

Unhewn logs cannot be transported out of Yunnan Province into other provinces without Transportation Permits. However, if the logs are processed into furniture or art and crafts in Yunnan, then the finished timber products can be transported without permits. Similarly, most unhewn logs not permitted to enter China were from Lao PDR (with a small portion from Africa), hence dealers on the Laotian border were promoting furniture manufacturing in Lao PDR in recent years so the finished products could enter the country.

China has multiple entry ports in Yunnan, and species from the same source country might enter country through multiple ports. Aside from *Dalbergia melanoxylon*, *Pterocarpus tinctorius*, *P. soyauxii*, *Millettia laurentii* and *Diospyros crassiflora*, five species of tropical hardwood from Africa, which entered China through Zhangjiagang and one species from Myanmar, *Diospyros ebenum*, which entered China through Nongdao, other species entered the country through multiple ports—whether by land, sea, or riverine entry points (Figure 33). Merchants gave little away about these entry ports although *Guibourtia* spp., *Guibouria coleosperm* and *Pterocarpus erinaceus* also from Africa, mostly entered through Zhangjiagang, while some *Dalbergia cultrata* from Myanmar in recent times was imported through Nongdao, although for the most part its

entry ports were unknown. There was no information about the entry ports for *Pterocarpus santalinus* and *Dalbergia latifolia*; less than half *D. cochinchinensis* entered through Mohan, the port county between China and Lao PDR, while the balance was through unknown entry ports. Similarly, the entry ports of more than half the *D. oliveri* was not clear: some entered through Nongdao and a minor share through Mohan. Most *D. bariensis* entered through Mohan while the entry posts for a small portion, purchased through upstream suppliers, was unknown. More than 50% of *Pterocarpus macrocarpus* entered through Nongdao, the remainder through Mohan and Guanlei, the port county of China, Lao PDR, and Myanmar.

## GUANGDONG

Guangdong is an important production and sales base for Hongmu furniture. During the survey, most interviewees reflected that in general the Guangdong rosewood market had a short peak in 2017, and then declined to typical levels in 2018. As a consequence, Hongmu enterprises in Guangdong have made significant changes in their usage of raw materials, particularly in Taishan, Guangdong, and Shenzhen, in response to decreasing demand for high-end furniture made from *Dalbergia cochinchinensis* and *Pterocarpus santalinus*. Although there is little tangible information, Southeast Asia, Africa, Central and South America were all major source regions for Hongmu and other valuable dark-coloured hardwood coming into Guangdong.

In the past two years, Southeast Asian countries such as Cambodia, Lao PDR, Myanmar, and Thailand have continued to adopt strict policies controlling the import and export of raw rosewood materials. These policies have largely restricted the flow of raw rosewood materials into China, including Guangdong. Species such as *Dalbergia cochinchinensis*, *D. bariensis*, and *D. oliveri*, which were mainly from Southeast Asia, have been severely impacted. Although these species were still available on the black market, many timber merchants were reluctant to take the risk. In Lao PDR, the main source country for *D. cochinchinensis*, to minimise costs and control risks, Chinese-owned furniture manufacturers process the raw material into semi-finished products in before importing. This not only makes exportation easier but also reduces the manufacturing cost. The Laotian products are transited to Viet Nam and imported to Guangdong by sea. Otherwise, since 2017 Chinese merchants have been working with stockpiled *D. cochinchinensis* rather than purchasing new raw material, which has led to a price increase for *D. cochinchinensis*. According to the Chinese Timber Index website, the price of *D. cochinchinensis* sold in the Guangdong Yuzhu International Timber Market (Guangdong Yuzhu) has been increasing steadily since 2017 despite a drop in the price of finished pieces caused by reduced consumer demand in 2018 and sales volumes dropping 14% in 2017. Most merchants with stockpiles are waiting for the market to rebound. Currently Hongmu furniture manufacturers use *D. cochinchinensis* for production based on orders, although the high prices for the raw timber in 2017–2018 have reduced profits. Popular *D. cochinchinensis* products include desks and bookcases marketed to rich elites as a social status symbol. Prices of furniture range from CNY100,000–200,000 (USD14,300–28,600). Faced with the strict rosewood export control policies of source countries in Southeast

Asia, timber merchants need to resolve the key problem of a restricted *D. cochinchinensis* supply, including the high costs that adversely affect domestic sales. In the future, *D. cochinchinensis* will face more severe market challenges, including the need to prove legality.

Supplies of *Dalbergia bariensis* and *D. oliveri*, regarded as the best replacements for *D. cochinchinensis* due to similarities in texture, face similar challenges. In the past two years, the price of *D. cochinchinensis* has stayed high for a long period, making many merchants turn to *D. bariensis*. After a small-scale increase in price in 2017, the price of *D. bariensis* and *D. cochinchinensis* in Guangdong Yuzhu have remained stable in 2018.

There have been mixed business fortunes for *Dalbergia retusa*, known as the “twin brother” of *D. cochinchinensis* since 2017 also. Though the sharp price rise in the first half of 2017 showed promise for merchants and investors, the subsequent low sales were disappointing. According to the Chinese Timber Index, *D. retusa* sales have fallen by 9% annually in Guangdong Yuzhu since 2017. Facing shrinking sales, merchants made small-scale price concessions in the first half of 2018 to boost sales although this was ineffective. Manufacturers in Guangdong using *D. retusa* in the rosewood furniture sector had high expectations from investors, but these appear to have been unfounded. Many merchants who focused on *D. cochinchinensis* have diverted part of their business to *D. oliveri* and *D. bariensis* although these species have shown a similar market fluctuation in 2017–2018 (although not as dramatic as that of some non-National Hongmu species such as *Pterocarpus macrocarpus* and *Pterocarpus pedatus* Pierre).

Clearly multiple factors influence rosewood sales in Guangdong Yuzhu. Although the new CITES listings have significantly affected rosewood and other species, the fundamental cause for the lack of market performance lies in demand and it is unlikely this will change, based on the current market situation. The precious wood industry will face further market adjustment.

Rosewood merchants in Dayong, Zhongshan, have started to produce furniture made from *D. latifolia*, which has increased in popularity among consumers following its inclusion in the National Hongmu Standard and favourable price. Sales for logs and furniture made from *D. latifolia* continues to grow and it has become a new market favourite. However, there is also fierce competition with more than 50 dealers for *D. latifolia* in Dayong. With shrinking profits, dealers' enthusiasm has also started to

fade and most production is based on orders only with few products kept for inventories.

The consumer market decline has also slowed down sales of other raw materials with Hainan *Dalbergia odorifera* and Vietnamese “*D. odorifera*” (*D. tonkinensis*), particularly affected, with high prices but few sales. There is also high consumer awareness of conservation and illegality issues due to media attention. Nevertheless, both investors and

collectors are optimistic about their future market potential. Although *Dalbergia bariensis* and *D. oliveri* have attracted market attention since 2017, due to the strict export controls of source countries, including Lao PDR, Myanmar, and Cambodia, overall supply is limited, which makes a price decline unlikely although the market will likely remain stable.

TABLE 8

Type and materials used in key Hongmu furniture production bases in Guangdong

LOCATION	TYPE	MATERIAL USED
Zhongshan	New Chinese, neoclassical, and Ming & Qing classical	<i>Pterocarpus erinaceus</i> , <i>Pterocarpus macrocarpus</i> , <i>Guibourtia conjuata</i> , <i>Swartzia madagascariensis</i> , <i>Conbretum imberbe</i> , etc.
Xinhui	Classical, Neoclassical and New Chinese	<i>Pterocarpus erinaceus</i> , <i>Pterocarpus macrocarpus</i> , <i>Guibouria coleosperm</i> , etc.
Taishan	Ming & Qing classical&	<i>Dalbergia cochinchinensis</i> , <i>Dalbergia oliveri</i> , <i>Dalbergia bariensis</i> , <i>Pterocarpus macrocarpus</i> , etc.
Shenzhen	Classical, New Chinese, etc.	<i>Dalbergia cochinchinensis</i> , <i>Dalbergia oliveri</i> , <i>Dalbergia bariensis</i> , <i>Pterocarpus macrocarpus</i> etc.
Shiqi	Classical, New Chinese, etc.	<i>Dalbergia retusa</i> , <i>Dalbergia bariensis</i> , <i>Pterocarpus macrocarpus</i> , <i>Pterocarpus erinaceus</i> , <i>Pterocarpus tinctorius</i> , <i>Swartzia madagascariensis</i> , <i>Conbretum imberbe</i> , etc.

TABLE 9

Distribution of tropical hardwood species in the main Guangdong markets, 2018. Source: TRAFFIC

SPECIES	LOCATION					
	YUZHU	GUANLAN, SHENZHEN	DAYONG, ZHONGSHAN	TAISHAN, JIANGMEN	XINHUI, JIANGMEN	SHATIAN, DONGGUAN
<i>Dalbergia odorifera</i>				✓		
Viet Nam <i>Dalbergia odorifera</i>				✓		
<i>Dalbergia cochinchinensis</i>	✓	✓		✓		
<i>Dalbergia retusa</i>	✓					
<i>Dalbergia oliveri</i>	✓	✓		✓		
<i>Dalbergia bariensis</i>	✓	✓		✓		
<i>Dalbergia melanoxydon</i>						✓
<i>Dalbergia latifolia</i>			✓			
<i>Pterocarpus santalinus</i>				✓		
<i>Pterocarpus macrocarpus</i>	✓	✓		✓	✓	
<i>Pterocarpus pedatus</i> Pierre.	✓					
<i>Pterocarpus tinctorius</i>	✓					
<i>Pterocarpus soyauxii</i>	✓		✓			
<i>Dalbergia nitidula</i>			✓			
<i>Guibourtia</i>	✓					
<i>Guibourtia conjuata</i>			✓			
<i>Guibouria coleosperm</i>			✓		✓	✓
<i>Millettia laurentii</i>						✓
<i>Swartzia madagascariensis</i>			✓			✓

# ANNEX III: TEMPLATE OF SURVEY INTERVIEW AND QUESTIONNAIRE

A.1 Do you know which wood species and products are imported to China? Do you know the annual volumes and value?

A.2 Do you think demand for Hongmu will increase? Why?

A.3 Which tropical hardwood species and products can be imported to China? Describe the tendency for import of tropical hardwood in China?

B.1 Compared with other tropical hardwood species, how do you look at the species in the national Hongmu standard (in terms of quality, supply and demand stability, popularity among ordinary customers)? With equal interest? Higher? Lower? Why? Do they have higher or lower demand? Higher or lower price?

B.2 Which countries does your company have any kind of operations relating to precious hardwood? Globally or regionally?

C. Do you know whether export tariffs exist for hardwood? Are there any import tariffs on tropical hardwoods entering China? Do you know the legal requirements to export hardwood? Do your buyers need you to import certified timber products from source countries with valid proof (for example, CITES permits)? If so, who are the buyers (where are they located)? What proof do they need?

D. What species and products do you import? Do you face any difficulties in finding import channels? Do you face any difficulties in importing tropical hardwood? Do you want to expand your imports? Do you have any long-term plans for importing tropical hardwood? What are the main threats, challenges, interests, and strategic plans for China to import tropical hardwood?

E. What are the main import ports for tropical hardwood in China? Which do you use? Where do your wood imports transit? Do you know any foreign ports used to transit tropical hardwood? Where does wood go through? (What are the main sites for import and transit of tropical hardwood into China?)

F. Who do you sell your wood to? Who buys your products, and what do they produce using those products? (You might only mention the areas where the buyers are located, not the exact names.)

G. Where are the major processing centres in China? Do you know why the Chinese consumers favour tropical hardwood?

H. Are there any problems with the supply of tropical hardwood?

I. Could you describe the profitability of selling tropical hardwood products? Does it sell better than other wood products? What is the price range of your products? For example, the price for sawn wood, plywood, veneer, molding, furniture, etc. What are the pros and cons of dealing with tropical hardwood? For example, in terms of finance.

J. Why is the market fluctuating so significantly now? When did it start? Why?

# ANNEX IV: STATISTICS ON FURNITURE PRICES

SPECIES	YEAR	TYPE	PRICE (CNY)	UNIT	REMARKS
<i>Dalbergia odorifera</i>	-	11 pieces per set	>3,000,000	set	Viet Nam <i>Dalbergia odorifera</i> and Hainan <i>Dalbergia odorifera</i> , the former is several hundreds of thousands of Yuan cheaper than the latter, and the latter is aging finished products.
<i>Dalbergia cochinchinensis</i>	2017	11 pieces per set	980,000	set	
<i>Pterocarpus macrocarpus</i>	-	11 pieces per set	80,000-90,000	set	New Chinese style
<i>Pterocarpus macrocarpus</i>	-	11 pieces per set	72,000	set	Craft with ripple pattern
<i>Pterocarpus macrocarpus</i>	-	11 pieces per set	300,000	set	Water drop pattern
<i>Dalbergia latifolia</i>	-	11 pieces per set	68,000	set	
<i>Dalbergia cochinchinensis</i>	-	6 pieces per set	158,000	set	Marble inserted
<i>Dalbergia oliveri</i>	-	6 pieces per set	115,000	set	Ordinary class, Ming style
<i>Pterocarpus macrocarpus</i>	-	6 pieces per set	42,000	set	
<i>Pterocarpus macrocarpus</i>	-	6 pieces per set	27,000	set	<i>P. pedatus</i> Pierre or <i>P. cambodianus</i> Pierre commonly called Caohuali, only half the price of <i>P. macrocarpus</i>
<i>Pterocarpus macrocarpus</i>	-	6 pieces per set	60,000	set	
<i>Pterocarpus erinaceus</i>	-	6 pieces per set	35,000	set	Europe style
<i>Guibouria</i> spp.	-	6 pieces per set	38,000	set	Europe style
<i>Guibouria coleosperm</i>	-	6 pieces per set	18,000	set	
<i>Pterocarpus santalinus</i>	August 2018	Palace chair set with 3 pieces	360,000	set	From India, stocked many years in stockyard
<i>Dalbergia cochinchinensis</i>	-	Palace chair set with 3 pieces	30,000-40,000	set	
<i>Dalbergia cochinchinensis</i>	-	Palace chair set with 3 pieces		set	Aging material
<i>Pterocarpus macrocarpus</i>	-	Palace chair set with 3 pieces	>10,000	set	
<i>Dalbergia melanoxydon</i>	-	Palace chair set with 3 pieces	26,000	set	Cheap raw material low yield rate no large pieces
<i>Pterocarpus erinaceus</i>	-	Palace chair set with 3 pieces	3,000-5,000	set	No longer produced
<i>Pterocarpus tinctorius</i>	-	Palace chair set with 3 pieces	33,000	set	With obvious stoma two times the price two years ago
<i>Dalbergia oliveri</i>	-	small dining table with 4 chairs	80,000	set	
<i>Dalbergia melanoxydon</i>	-	small dining table with 4 chairs	45,000	set	Low yield rate, high material cost
<i>Pterocarpus tinctorius</i>	-	small dining table with 4 chairs	24,000	set	
<i>Pterocarpus tinctorius</i>	-	tea table with 5 chairs	110,000	set	Shape-twisted <i>Pterocarpus tinctorius</i> , low yield rate, high material cost with high price
Other species	-	tea table with 5 chairs	10,000	set	Africa/East Africa Suanzhi
<i>Dalbergia cochinchinensis</i>	-	Bogujia (shelf)	178,000	set	Used as beams from Lao PDR without paint or wax, no sapwood or cambium, heartwood only, exquisite
<i>Dalbergia cochinchinensis</i>	-	Dingxianggui (wardrobe)	1,030,000	pair	
<i>Dalbergia oliveri</i>	-	small table with 2 vase shelves	-	set	Ming style, extraordinary quality
<i>Pterocarpus erinaceus</i>	-	one pair of Dingxianggui (wardrobe)	24,000	set	No smell, 50% off
<i>Dalbergia odorifera</i>	-	Jiaoyi (chair)	<1,000,000	piece	Hainan <i>Dalbergia odorifera</i>
<i>Dalbergia retusa</i>	-	Liangtoun (table)	15,000	piece	
<i>Dalbergia oliveri</i>	several years ago until now	Furenyi (chair)	-	piece	Categorised based on patterns with various price (extraordinary, good and regular class, same price in single class). Various style and texture in factory.
<i>Dalbergia oliveri</i>	-	Chanyi (chair)	-	piece	
<i>Dalbergia latifolia</i>	-	Daoyanyi (chair)	-	piece	
<i>Pterocarpus erinaceus</i>	-	tea table	-	piece	Agent, processed in Fujian
<i>Diospyros crassiflora</i>	-	jointed planks	-	-	New Chinese style, for assembling
<i>Pterocarpus santalinus</i>	stocks since 1980s	bracelets	1 thousand to tens of thousands	piece	Online shops, with few <i>P. santalinus</i> bracelet priced at tens of thousands, only bracelet with clustered metal precipitates or extraordinary quality

## Notes:

- The price is from quotations in August 2018, "year" means the time when the products left the manufactures.
- The price is related to species, unheven log quality, craftsmanship etc., and with no absolute value.
- "-" means no information.
- Only goods with clear furniture categories are registered in the figure, and the specific categories are roughly divided by the solid line.

# ANNEX V: STATISTICS FOR PRICES OF HEWN LOGS

SPECIES	YEAR	TYPE	PRICE (CNY)	UNIT	REMARKS	
<i>Dalbergia cochinchinensis</i>	2014	log	200000	tonne	Ruili	
	-	hewn log	200000	tonne	Jinghong	15-20cm
	-	hewn log	600000	tonne	Jinghong	d=30cm;l-2m
	-	hewn log	360000	tonne	Jinghong	d=40cm;l-80cm; for retail
	-	beam	100000	tonne	Jinghong	hewn log, d>8cm
<i>Dalbergia cochinchinensis</i>	-	squared timber	100000	tonne	Jinghong	d=5-10cm
	-	squared timber	300000-700000	tonne	Jinghong	d>20cm
	2013	squared timber	280000	tonne	Jinghong	26 square metre
	-	squared timber	-	-	Jinghong	Strong opposition to raw material sales, only providing furniture quotation
	-	squared timber	470000	tonne	Jinghong	d=30-50cm, 3 pieces, 1.29 tonnes, only for collective sale, priced at 600000
	-	used beams	210000	tonne	Jinghong	Side length>15cm wood cube
<i>Dalbergia odorifera</i>	-	small hewn log	thousands	piece	Dacheng	Late planted, 40 to 50 years of age
	-	small hewn log	200,000	piece	Dacheng	Aging material
	-	small hewn log	4,000	500 grams	Dacheng	Large planks from Viet Nam
	-	small hewn log	4,000	500 grams	Dacheng	Large planks from Viet Nam
<i>Dalbergia oliveri</i>	-	hewn log	30000	tonne	Kunming	
	2013	hewn log	20000	tonne	Ruili	d=15cm
	2013	hewn log	35000	tonne	Ruili	d=30cm
	2018	hewn log	15000-20000	tonne	Ruili	d=15cm
	2018	hewn log	50000-60000	tonne	Ruili	d=50-60cm
	2018	log	18000-19000	tonne	Ruili	d=20cm, length=1.2m
	2018	log	22000-23000	tonne	Ruili	d=20cm, length=2m
	2013, 2014	hewn log	24000	tonne	Ruili	d=15-20cm, length=1.6-3m, sell at 1 yard
	2013, 2015	hewn log	32000	tonne	Ruili	d=20-30cm, length >3m, sell at 1 yard
	2013, 2016	hewn log	50000	tonne	Ruili	d>30cm, sell at 1 yard
<i>Dalbergia oliveri</i>	-	squared timber	14000-18000	tonne	Ruili	
<i>Dalbergia bariensis</i>	-	squared timber	40000	tonne	Jinghong	Side length=20-30cm length=2m, no stock in Jinghong, order and arrive in half a month
	2018	squared timber	40000	tonne	Jinghong	Finished products, raw material entered from 2013 to 2015, received and produced in 2018 20-30cm*2m

cont...

## Notes:

1. The price is from quotations in August 2018
2. The price is related to size, resin content, density, pattern, etc., with no absolute value
3. "Year" means the time when wood species entered the Chinese market, "-" means no clear information
4. Logs are slightly peeled but with a relatively high content of "white peel". Both hewn log and squared timber are all completely peeled with a low content of "white peel" but may vary slightly among different merchants.

SPECIES	YEAR	TYPE	PRICE (CNY)	UNIT	REMARKS	
<i>Dalbergia melanoxylon</i>	-	hewn log	23000	tonne	Kunming	
	-	logs	20000	tonne	Kunming	d=no longer than 1.9m, regardless size and length
<i>Dalbergia melanoxylon</i>	-	squared timber	9800	cubic metre	Kunming	
<i>Dalbergia cultrate</i>	2018	log	16000	tonne	Ruili	
<i>Dalbergia cultrate</i>	2013, 2014	hewn log	30000	tonne	Ruili	d=15-20cm, length=1.6-3m, sell at 1 yard
<i>Dalbergia cultrate</i>	2013, 2014	hewn log	40000	tonne	Ruili	d=20-30cm, length>3m, sell at 1 yard
<i>Dalbergia cultrate</i>	2013, 2014	hewn log	60000	tonne	Ruili	d>30cm, sell at 1 yard
<i>Guibourtia</i> spp.	-	hewn log	-	-	Kunming	Price based on size and pattern, single extraordinary plant worth hundreds of thousands
<i>Guibourtia</i> spp.	-	log	80000	tonne	Jinghong	-
<i>Guibourtia</i> spp.	-	squared timber	24000	cubic metre	Kunming	-
<i>Guibourtia</i> spp.	-	squared timber	40000	cubic metre	Kunming	-
<i>Guibouria coleosperm</i>	-	squared timber	9800	cubic metre	Kunming	
<i>Pterocarpus santalinus</i>	-	hewn log	300000	tonne	Jinghong	300 Yuan/kg
<i>Pterocarpus santalinus</i>	2011	unhewn log	600000	tonne	Jinghong	-
<i>Pterocarpus santalinus</i>	-	hewn log	400000	tonne	Jinghong	-
<i>Pterocarpus macrocarpus</i>	-	hewn log	30000	tonne	Kunming	d=1-2m
<i>Pterocarpus macrocarpus</i>	-	hewn log	10000	tonne	Ruili	d=10-30cm
<i>Pterocarpus macrocarpus</i>	2013, 2014	hewn log	20000	tonne	Ruili	short, sell at 1m
<i>Pterocarpus macrocarpus</i>	2013, 2015	hewn log	50000	tonne	Ruili	long, sell at 1m
<i>Pterocarpus macrocarpus</i>	2013, 2016	hewn log	30000	tonne	Ruili	Good quality moderate size sell at 1 yard
<i>Pterocarpus macrocarpus</i>	-	squared timber	7000	tonne	Ruili	-
<i>Pterocarpus macrocarpus</i>	-	squared timber	13000	tonne	Ruili	-
<i>Pterocarpus macrocarpus</i>	-	squared timber	20000-30000	tonne	Jinghong	Side length=20cm-30cm, length=2m
<i>Pterocarpus macrocarpus</i>	-	squared timber	40000-50000	tonne	Jinghong	Side length=10cm-20cm, length=3m
<i>Pterocarpus macrocarpus</i>	2018	squared timber	20000	tonne	Jinghong	Finished products, raw material entered from 2013 to 2015, received and produced in 2018 20-30cm*2m
<i>Pterocarpus tinctorius</i>	2014	hewn log	40000	cubic metre	Kunming	From Zambia, d=20cm-30cm, or favourable resin content and density
<i>Pterocarpus tinctorius</i>	2014	hewn log	10000	cubic metre	Kunming	From Congo, d=50-60cm, low resin content and density
<i>Pterocarpus soyauxii</i>	-	hewn log	30000	-	Kunming	-
<i>Pterocarpus soyauxii</i>	-	squared timber	9800	cubic metre	Kunming	Different from downstream merchants
<i>Pterocarpus soyauxii</i>	-	squared timber	9800	cubic metre	Kunming	-
<i>Millettia Laurentii</i>	-	squared timber	20000	cubic metre	Kunming	-

## REFERENCES

- Anon. (2016). Consideration of proposals for amendment of Appendices I and II: *Dalbergia cochinchinensis* is proposed for listing in Appendix II of CITES. CoP16 Prop. 60. Sixteenth meeting of the Conference of the Parties, Bangkok, Thailand, 3-14 March 2013.
- Winfield, K., Scott, M. and Cassandra, G. (2016). Global Status of *Dalbergia* and *Pterocarpus* Rosewood Producing Species in Trade. COP17 Inf. 48. Convention on International Trade in Endangered Species 17th Conference of the Parties – Johannesburg. September 2016. Global Eye.
- Attwood, C. (2020). Rosewood smuggling in The Gambia: Shipping firm halts timber export. BBC News, 8 July 2020. <https://www.bbc.com/news/world-africa-53325743>
- Bitonnete, K. and Ji Lin. (2015). Illegal Wood Trade in China and Myanmar Border-Survey on Supply Chain in Myanmar. Global Environmental Institute
- Cao, X., Dai, A., Tian, Y., Liu, Z., Lv, L., and Z, P. (2008). China Dark Precious Hardwood Furniture Industrial Standard QB/T2385-2008.
- China Green Times (2015). How to legalize the tendency of cross border wood trade. [http://www.greentimes.com/green/news/lscy/scdg/content/2015-04/30/content\\_297462.htm](http://www.greentimes.com/green/news/lscy/scdg/content/2015-04/30/content_297462.htm)
- Dong, M., Huang, Y., L, M., and Liu, D. (2016). Research on China-Myanmar wood trade. *Issues of Forestry Economics*, 36(2)3: 143–147.
- DownToEarth. (2017). India opposes CITES move to regulate trade in all species of *Dalbergia*. Online news article. 27 January 2017. <https://www.downtoearth.org.in/news/wildlife-and-biodiversity/india-opposes-cites-move-to-regulate-trade-in-all-species-of-Dalbergia-56884>
- Fu, Y. and Li Y. (2019). The taste of Hongmu. China Light Industry Press.
- Hartvig, I., Czako, M., Dahl Kjær, E., Rostgaard Nielsen, L. and Theilade, I. (2015). The Use of DNA Barcoding in Identification and Conservation of Rosewood (*Dalbergia* spp.). *PLoS one*. 10. e0138231. 10.1371/journal.pone.0138231.
- Lum, S. (2017a). Rosewood case: Boss convicted after 2 acquittals. *Straits Times online*. 31st March 2017. <https://www.straitstimes.com/singapore/courts-crime/rosewood-case-boss-convicted-after-2-acquittals>.
- Lum, S (2017b). Jail, \$500k fine for S'porean boss who imported \$70m worth of rosewood logs without permit. *Straits Times online*. 29th April 2019. <https://stomp.straitstimes.com/courts-crime/jail-500k-fine-for-sporean-boss-who-imported-70m-worth-of-rosewood-logs-without-permit>.
- Lum, S. (2019). Rosewood case: Court of Appeal clears businessman and firm of importing logs without a permit. *Straits Times online*. 8th April 2019. <https://www.straitstimes.com/singapore/courts-crime/rosewood-case-court-of-appeal-clears-businessman-and-firm-of-importing-logs>
- Mao, J. (2015). Discussions on current situation and future tendency for Hongmu resources. *Modern Decoration (Theory)*.
- TRAFFIC. (2016). TRAFFIC Recommendations on the Proposals to amend the CITES Appendices at the 17th Meeting of the Conference of the Parties (CoP17).
- UNODC. (2020). World Wildlife Crime Report 2020. United Nations.
- Yang, Y. and W, S. (2022). Rosewood Products and Consumption in China. TRAFFIC.
- Zhai, D., Jiang, X., and Y, Y. (2014). Current situation and future tendency for Hongmu resources. *China Wood industry*, 28(2): 26–30.
- Zhang, K. and Chen, HK. (2022). Rosewood Policy in China, TRAFFIC.
- Zhang, K., Y, Y., and Zeng, Z. (2018). Potential CITES Regulated Tropical Hardwood Species Import and Utilization in China. TRAFFIC internal research report for China CITES Management Authority.

## IMAGE CREDITS

Cover	Jasper Doest / WWF
2	Wikicommons CC 2.0
10	Jasper Doest / WWF
30 - 39	TRAFFIC
63	TRAFFIC





MAY 2022

OUR MISSION IS TO ENSURE THAT TRADE  
IN WILD PLANTS AND ANIMALS IS NOT A  
THREAT TO THE CONSERVATION OF NATURE

**TRAFFIC** is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

**For further information contact:**

TRAFFIC  
Global Office  
David Attenborough Building  
Pembroke Street  
Cambridge CB2 3QZ  
UK

+44 (0)1223 277427  
traffic@traffic.org  
traffic.org

UK Registered Charity No. 1076722,  
Registered Limited Company No. 3785518.

**TRAFFIC**