

Review of trade in merbau (*Intsia* spp.) from major range States to Germany and the EU: A preliminary assessment

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1. Introduction

Timber of the tropical Asia-Pacific genus *Intsia*, most commonly referred to as merbau, is highly sought after for use in construction, including flooring, and other uses. There are concerns from NGOs such as Environmental Investigation Agency (EIA)(2005) that international trade in *Intsia* spp. exceeds sustainable levels, with evidence of population declines in some range States, and several species included in the IUCN Red List of Threatened Species and the World List of Threatened Trees.

The German Federal Agency for Nature Conservation (BfN) therefore commissioned a study by TRAFFIC of the status, management and trade of *Intsia* spp. with a focus on the main exporting range States of Indonesia, Malaysia and Papua New Guinea. Information on this study, including a summary of initial findings, is presented below. The research phase is ongoing, with completion due in October 2006. Should the final results indicate that current international trade volumes are leading to significant declines in *Intsia*, BfN may consider appropriate initiatives in close cooperation with the Plants Committee, international organisations (e.g. ITTO, IUCN) and range States, as well as proposing that the genus be considered for inclusion in CITES Appendix II at CoP 14.

The CITES Plants Committee, CITES Parties, particularly range States, and observers are invited to comment on the information provided, and to suggest additional information sources. The report will be completed by October 2006, and its findings discussed during a workshop being convened by BfN immediately after.

2. Methodology

Research for this study includes literature and internet research, analysis of trade statistics, and consultation with experts including scientists, government authorities, importers and exporters, international organisations, including International Tropical Timber Organisation (ITTO), Food and Agriculture Organisation (FAO) and *Association Technique Internationale des Bois Tropicaux* (ATITB), and non-governmental organisations in key range and importing countries. In Europe, a questionnaire was distributed to 40 pan-European and national trade associations and then to 120 of the largest EU companies that import, manufacture or otherwise sell products that comprise or could contain merbau. Selected field visits were also conducted in Papua New Guinea and the Indonesian Province of Papua.

Customs statistics, all of which follow the Harmonised Commodity Description and Coding system adopted by the World Customs Organisation, referred to as the Harmonised System (HS), were reviewed but found to have only limited usefulness as there is no specific HS code for the timber of *Intsia* spp. Trade volumes have therefore been estimated in several ways, including through estimating the proportion of *Intsia* spp. within various timber commodity groups for which HS codes are available, from information available through trade associations and trade journals, and from company-specific information (based primarily on internet searches and direct contact with companies).

3. Species characteristics

3.1 Botanical description

Intsia is a widely distributed genus of about nine species (Verdcourt, 1979). In New Guinea, three separate species have been recorded – *Intsia bijuga*, *I. palembanica*, and *I. acuminata*. The other known species are *I. amboinensis*, *I. bakeri*, *I. plurijuga*, *I. puberula*, *I. retusa* and *I. rhomboidea* (Soerianegara and Lemmens, 1994). *Intsia* has a number of common names but is most widely known as merbau; the genus is more commonly referred to as Kwila in Papua New Guinea (PNG).

3.2 Origin and geographic distribution

Merbau is widely found through tropical Asia, to the tropical islands of the Pacific Ocean and northern Australia, and in East Africa, where it was introduced (Verdcourt, 1979). The most widespread species is *I. bijuga*. The most widely used species appear to be *I. bijuga* and *I. palembanica*.

3.3 Biology and ecology

Intsia spp. (merbau) are small to large trees evergreen or deciduous, up to 42-50 m tall; bole sometimes of poor shape, branchless up to 20-25 m; slight buttress 60-75 cm to huge buttress up to 2m; diameter at breast height up to 160(-250) cm, with spreading crown. The nine species are similar in all aspects except for few minor differences in the number of leaflets per rachis and the shape of the leaflet apices (Soerianegara and Lemmens, 1994).

The genus is found in coastal forests and lowland tropical rainforest to an altitude of 1000 m. Seedlings require canopy opening for rapid initial growth typical of many secondary species. Once established, they require partial shade to grow. They can grow on a variety of soil types except on peat soils (Johns, *et al.*, 1994).

In all other lowland forests of Papua New Guinea stocking of commercial-sized trees (50 cm diameter at breast height (dbh) is much lower sometimes with 1 or 2 stems per hectare or only 1 stem within several hectares. In Indonesia, Papua, the density of occurrence is comparatively higher and a good stock of merbau occurs in all the forest areas. This would indicate a typical merbau monoculture stand. In forest inventories in Peninsular Malaysia in the 1990s, the standing stock was estimated at 2.8 trees/ha over 15cm diameter and 1.9 trees/ha over 45 cm diameter, suggesting that 50% of the smaller trees do not make it to maturity (Johns, *et al.*, 1994).

4. Status and trends

The IUCN Red List of Threatened Species 2006, listed *I. bijuga* as Vulnerable under the category VU A1cd but the genus has not been reviewed since 1994. This means that this species of *Intsia* is threatened and is facing a risk of extinction in the wild in the medium-term future, as defined by the criteria of population reduction in the form of either of the following: an observed, estimated, inferred or suspected reduction of > 20% over the past 10 years or three generations, whichever is the longer, based on (and specifying) a decline in area of occupancy, extent of occurrence and/or quality of habitat and actual or potential levels of exploitation. The species *Intsia acuminata* has been classified as VU A1d in the Red List 2006. Other species of *Intsia* spp. were not classified.

4.1 Presence in protected areas

According to the UNEP-WCMC Tree conservation information database, *Intsia bijuga* is protected in Indonesia in Ujung Kulon National Park, Java, Manusela Wai Nua/Wai Mual National Park (Maluku), as well as in the Philippines in St Paul Subterranean River National Park, Quezon National Park, and Calauit Island National Park of Philippines (http://www.unep-wcmc.org/trees/trade/int_bij.htm, viewed 25 May 2006).

4.2.Threats

Throughout their range, deforestation from a number of causes appears to be the greatest threat to the survival of the species. EIA (2005) noted illegal logging as a serious threat to the genus in Papua, Indonesia. In PNG, the status of legality of forestry operations threatens the sustainability of forest operations, including merbau (Forest Trends, 2006).

5. Utilisation and trade

Merbau is a heavy and hard wood which is not easy to work. In general, it is unsuitable for veneer and plywood. Merbau is a very good timber for general-purpose use. Merbau is used in construction work in house building, especially for high-class exterior joinery, such as windows, solid panel doors, framing, and weatherboarding. The most important use of merbau commercially is in flooring, such as parquet, but it is also widely used in doors and panels, and in marine environments as it is resistant to marine borers. Merbau is highly resistant to dry wood termites as well as subterranean termites. It is generally free of ship worm, and in the humid tropics under cover, can last for 30-40 years (Soerianegara and Lemmens, 1994).

6. Legal trade

6.1 Papua New Guinea

PNG merbau log exports amounted to 11,000m³ in 2004, valued at USD4.6 million, and accounting for around 2.6% of total export volume for PNG. For processed merbau, the total export volume for 2001 was 18,357 m³ with a value of US\$7.4 million. There was a slight increase in 2002, with total export of 23,468 m³ and total value of US\$8.9 million. And a sharp decrease in 2004 to 10,562 m³ (www.pngfia.org.bn).

China is by far the main importer of tropical logs, followed by Japan and Korea. Up to 60% of PNG sawn logs were exported to China between 2003 and April 2005. Of this total, up to 9% were merbau.

Of the processed merbau, Australia and New Zealand are the two biggest importers. Belgium, Denmark, Netherlands and Germany are the main importers into Europe and the European Union. Most of the processed merbau is exported as rough timbers, beams, flitches and as square logs.

6.2 Indonesia

The Indonesian Badan Pusat Statistik (National Statistics Bureau) data show the total production of merbau in 1992 in Indonesia was about 137, 000 m³. The main production areas were Aceh and the Moluccas (each about 8000 m³/year), and particularly Papua Province, the western half of the New Guinea mainland and its surrounding islands (about 121,000 m³/year). In Papua, there was an increase in merbau production, reaching 252,000 m³ in 2002. More consistent and recent data will be sourced from the Government of Indonesia during the course of this research. Based on Free on Board (FOB) price of US\$400/m³, the total value of trade in 2002 would be around US\$1 billion. Indonesia's trade far exceeds the total volume produced in Papua New Guinea.

In 1990, the export of sawn merbau timber was 1,700 m³ with a value of USD 825,000. In 1991 the export was much larger, amounting to 17, 000 m³ with a value of USD7.8 million (National Statistics Bureau, Indonesia). Since merbau is not classified separately under the Customs HS code for Indonesia, there is no specific information on the volume of merbau exported. However, logs and woodchips were banned from export in 2001, and rough sawn timber and rail-road sleepers over 6 metres in length were similarly banned in 2004, and this includes merbau.

An NGO, EIA (2005), developed estimates of Indonesia merbau export values based on research in importing countries. They alleged that the Indonesia's merbau log export volumes increased from 50,000 m³ in 1998 to 660,000 m³ in 2001, more than a ten-fold increase in less than four years, quoting a WWF report to the G8 (Toyne, *et al.*, 2002). According to Customs data from China obtained by Greenpeace (2006), in 2004, China Customs recorded almost 900,000 m³ of merbau log imports, of which 870,000 m³ came from Malaysia, which does not appear to have a large standing stock of merbau. Since Indonesia has a log and sawn timber export ban, no statistics are collected by Indonesia even though these products are imported by other countries.

It was alleged by EIA that China was the biggest importer of merbau from Papua, Indonesia and PNG. EIA has alleged that a large quantity of merbau is smuggled out of Indonesia to be accepted legally into China. EIA (2005) reported that merbau logs are leaving Indonesia and entered China via the ports of Zhangjiagang, near Shanghai, and Shenzhen, near Hong Kong. China is not alone in its inability to take action against illegally logged merbau that finds its way to importing countries. All other countries in EU, USA, and Malaysia also do not have provisions to confiscate or take action against illegal exports from Indonesia.

6.3 China

The merbau trade is a typical example that illustrates the sensitive and quick-changing nature and dynamics of the importing log market in China. According to Shanghai Timber Association data, 634,000 m³ of merbau logs were imported into Shanghai in 2005, representing a decrease of 91% from the year before. Correspondingly, importing prices rose from CNY2000/m³ (USD249/m³)¹ in 2004 to CNY6000/m³ (USD750/m³) in May, 2005 reaching the highest price of CNY11600/m³ (USD1449/m³) in December, 2005. At present, the log price for merbau from Indonesia in Guangzhou Yu Zhu timber market is CNY4500-5200/m³(USD562-650/m³)(in March 2006)(Liu, X. Y., *in litt.* to TRAFFIC, 31 March 2006).

China's manufacturing of flooring for its own consumption and for export is projected to continue to increase (Chinese Agricultural Academy of Science's Center of Agricultural Policy and Butterworth, 2003). However, it is not known how much merbau goes into flooring material in China, and hence how much is re-exported.

6.4 European Union

Based on first estimates modified by industry comments, it is possible to present estimated quantities of merbau imported into, exported from, and entering end-use within selected EU member states (Table 1).

From Table 1, the results can be summarised as follows for 2005:

- The Netherlands and, to a lesser extent, Belgium and Germany were the initial destinations for roughly 60% or 15,400m³ of the merbau which was imported into the EU. Italy, Denmark, France and the UK each accounted for a further 25% or 6,500m³;
- Most of the merbau which a number of EU member States imported was supplied by other EU member States (which illustrates that there is a substantial volume of intra-EU trade);
- Germany seems to have imported more merbau (3,200m³) from within the EU than any other EU member State did, Denmark and Sweden were next in importance at 2,050m³ and 2,000m³ respectively;
- Together Germany and the Netherlands appear to have accounted for almost half of the merbau which entered end-use within the EU at 13,000m³;
- Several EU member States, primarily Belgium, Denmark, Finland and Sweden re-exported (either without further processing - Belgium - or after processing) most of the merbau which they imported;
- Parquet is likely to have been the leading end-use for merbau in most EU member States - with the exception of the Netherlands, where most of the end-use of merbau is as doors.

The proportion of the quantity of merbau which a given country imports from outside the EU and the quantity of merbau which that country exports either directly or after being processed into a more finished product varies from country to country.

¹ Chinese Yuan Renminbi = 0.12494 US Dollar, viewed on <http://www.oanda.com/convert/classic> currency exchange dated 6 May 2006.

Table 1 - Estimated quantities (m^3) of merbau imported into, exported from, and entering end-use within selected EU member states (2005)

Countries (see code below)	AT	BE	CZ	DK	FI	FR	DE	GR	IE	IT	NL	PL	PT	ES	SE	GB
Imports																
Parquet (441830 & 44092091)	500	1500	100	2500	1000	1000	3000	400	300	1500	1000	900	300	1200	2000	2000
Doors	50	100	-	50	-	50	200	-	-	-	3000	-	-	-	-	100
Sawn wood	50	1800	-	800	100	700	1500	-	100	500	3000	50	-	100	400	200
Other	50	1200	50	200	50	200	1500	50	100	200	2000	50	50	100	100	200
Sub-total	650	4600	150	3550	1150	1950	6200	450	500	2200	9000	1000	350	1400	2500	2500
of which from outside the EU	50	4400	50	1500	500	1500	3000	300	300	2000	8000	800	300	1000	500	1500
End-use																
Parquet	300	600	100	400	300	1200	3500	400	300	1800	1000	600	300	1200	400	2000
Doors	50	200	-	50	-	100	400	-	-	50	5000	-	-	-	-	100
Other	50	700	50	350	50	200	600	50	200	200	1500	100	50	100	-	200
Sub-total	400	1500	150	800	350	1500	4500	450	500	2050	7500	700	350	1300	400	2300
Exports and processing waste	250	3100	-	2750	800	450	1700	-	-	150	1500	300	-	100	2100	200
Population (million people)	8	10	10	5	5	60	82	11	4	57	16	39	10	41	9	59

Country codes:

AT	Austria	FI	Finland	IE	Ireland	PT	Portugal
BE	Belgium	FR	France	IT	Italy	ES	Spain
CZ	Czech Republic	DE	Germany	NL	Netherlands	SE	Sweden
DK	Denmark	GR	Greece	PL	Poland	GB	United Kingdom

Source: rough estimates based on Eurostat trade statistics, modified both to reflect industry comment and by an assessment of the product portfolios of 200+ EU-based companies which import, make, distribute, or otherwise sell products which contain merbau.

Units: cubic metres (wood volume)

Note 1: Records by weight have been converted into cubic metres by multiplying by 1.2 (m^3/tonne).

Note 2: The statistics shown for parquet in end-use take into account merbau's popularity and the area of tropical parquet reported by the European Federation of the Parquet Industry (FEP).

Note 3: Assumptions have been made concerning the proportion (and thickness) of merbau in each product group reported by Eurostat.

Note 4: The sum of imports is always greater than the sum of end-use – the difference being equal to exports and processing waste.

Note 5: More parquet would enter end-use in a given country than is imported into that country if more merbau parquet were manufactured from other products (notably sawn wood) than is exported.

7. Illegal trade

EIA's investigative report claimed there was large-scale illegal logging of forests in Papua, Indonesia, (EIA, 2005). The report prompted the Indonesian Government to increase action to combat illegal logging and timber trade coming out of Papua. A number of seizures of logs, mostly merbau timber, equipment and ships were undertaken following the release of the report in 2005 (EIA, 2005).

8. Legal instruments

In Papua New Guinea, Indonesia and Malaysia, the three main exporting countries for merbau, no specific protection is given to merbau. Each of the countries has adequate forestry regulation for forestry in general and that also applies to merbau: the PNG Forestry Act 1991 as amended in 1993, 1996, 2000 and 2005; the Basic Forest Law (*UU 41/99*) and its implementing regulations (*PP 34/2002*) governing forest management, planning and use in Indonesia; and the National Forestry Act 1984, Sarawak Forests Ordinance 1954, and the Sabah Forest Enactment 1968 in Malaysia.

In PNG, the effectiveness of the Forestry Act was recently reviewed with regard to compliance by current logging companies. Evidence from the reviews indicates that although all timber harvesting operations may be officially licensed, there are serious issues of non-compliance at almost every stage in the development and management of these projects (Forest Trends, 2006). For these reasons the majority of forestry operations are considered unlawful. Most, if not all companies have not complied with the national laws and regulations. The most widespread and manifest problems are the failure to secure informed consent and the inability of the State to ensure sustained yield management in natural forest areas.

Indonesia, in 2001, banned logs and woodchips from export under a joint Ministerial Decree Forestry 1132/*Kpts-II/2001* and Industry and Trade No 292/Kep/2001 and PP 34/2002. This was followed by a ban in export of rough sawn timber and rail-road sleepers over 6 metres in length (Decree No. 250/Menhub-VI and 598/MPP/Kep/9/2004) in 2004.

Malaysia banned the import of logs from Indonesia in 2002, and in 2003, extended the import ban to cover Large Squares and Scantlings (LSS) whose cross-section is greater than 60 in² or 375 cm². This effectively means that logs and LSS, if they do make their way into Malaysia, are mostly smuggled or misclassified. Since merbau as a timber is not a prohibited export from any range State, Malaysia could in-practice accept merbau from Indonesia without restrictions, as long as it is not in the form of logs and LSS. No data are available to support this possibility.

9. Control measures:

9.1 International

There are no international measures in place to control movement of specimens of the species across international borders.

9.2 Domestic

Merbau does not appear to be listed under any national legislation but comes under general forestry provisions and regulation.

10. Consultations

Assistance from the CITES Plants Committee, range and trading countries are requested, for example in the following issues:

Range States

- Habitat and population trends – Since *Intsia* is found in coastal and lowland forest up to 1000m altitude, where development is most intensive, how much habitat is expected to remain available for merbau by 2010? The stocking density appears to be available for PNG, Papua, Indonesia and Malaysia but what is the population trend given the decrease in habitat?
- Legal trade – are current merbau trade statistics available? Are there any statistics for domestic consumption of merbau?
- Illegal trade - Any seizures, prosecutions and penalties in relation to illegal merbau trade and if so, details of what law/regulation is applicable?
- Artificial propagation – Is there any potential or expected plantation production of merbau in range States?

Importing countries

- Are there any regulation for merbau imports?
- Are there any statistics for import of merbau as a result of tariff requirements, etc.?
- Are there any records of statistics for the utilization of merbau?
- Are there any records of seizures of merbau domestically?

Additional information should be submitted to the Government of Germany

11. Additional remarks

Work on this study is ongoing and additional and new information will be incorporated into the final report to be ready by October 2006. Funds have been raised from a foundation and BfN to hold a workshop towards the end of 2006 to review and discuss the results of the final report.

In 2005, Indonesia considered the listing of merbau in Appendix III and was in the process of obtaining range States support. A listing in CITES could ensure that better statistical data will be available for analysis in future.

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