Global Teak Resources and Market Assessment

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Background

Since 2010, the previous Teak Resources and Market Assessment (TRMA 2010) study conducted by FAO a decade ago, is faced with a large gap of data on the present status of global teak resources and trade.

This situation was addressed in the 4th World Teak Conference held in Accra, Ghana in Sept 2022 and called for an updated status of teak resources and trade globally.

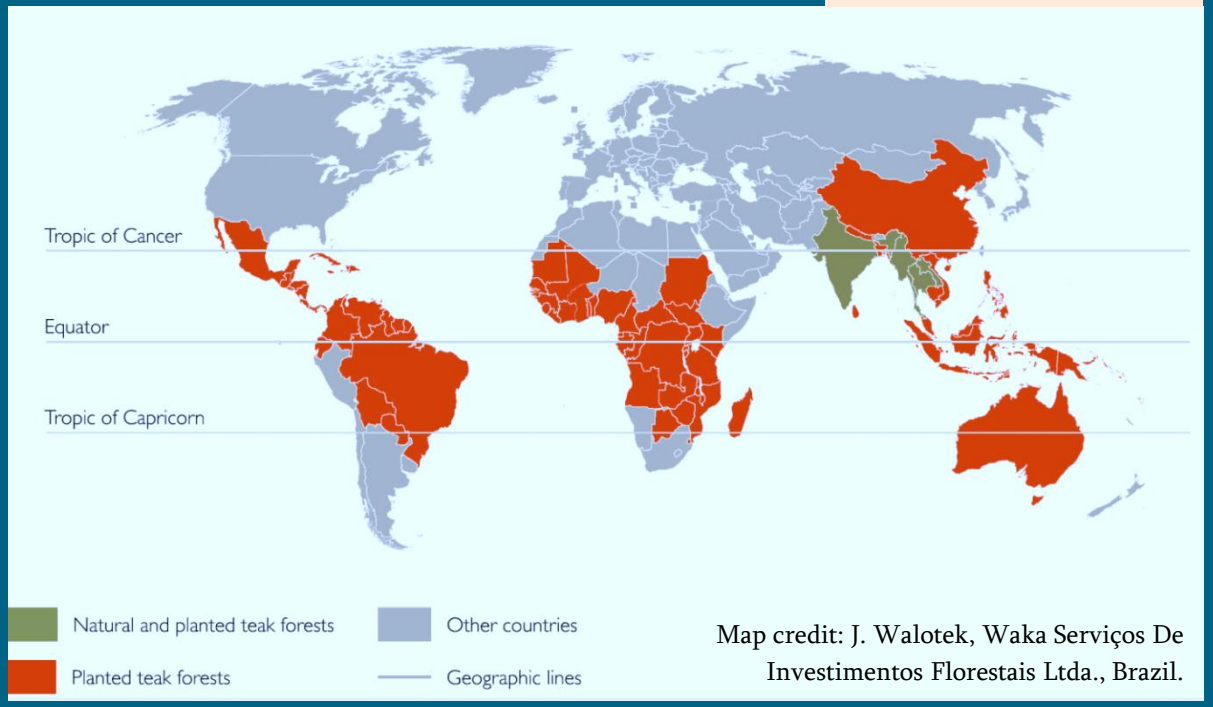
The current study is a follow up action of the above recommendation

Introduction

Teak grows in some 80 countries in tropical regions. In many of these countries, teak is considered as a priority species for large-scale cultivation as a fast-growing versatile timber for high value products and offers good livelihood options for forest dependent communities and smallholders.

It attracted large investments from the corporate sector in L. America, Africa and Asia where teak has made major contributions to the forestry economies

Teak World Map



Map credit: J. Walotek, Waka Serviços De Investimentos Florestais Ltda., Brazil.

Objectives

The Global Teak Resources and Market Assessment (TRMA 2022) was a collaborative initiative by TEAKNET, IUFRO, and FAO, aimed to update, evaluate and expand the available data and information on both natural and planted teak in all 80 teak growing countries.

It includes detailed information on the distribution of teak at country, regional, and global levels, the ownership status of plantations, productivity aspects, trade dynamics, major markets, and the market trend over the years.

Methodology

For TRMA 2022 study, data from all the teak growing countries was collected through a standardized questionnaire; prepared in five languages (Chinese, English, French, Portuguese and Spanish).

Questionnaire was sent to each country through the 5 Regional Coordinators appointed (2 each for L. America and Africa, 1 for Asia) who were instrumental in the process of managing the communication with the identified resource persons, data collection and verification.

The country level experts have been identified with the support of IUFRO and TEAKNET and through the Regional Coordinators.

About 100 experts were directly involved in the data collection and verification process.

Parameters surveyed:

Forest area; forest function; age class distribution; year of establishing planted teak; ownership status; growth performance and MAI; rotation period; domestic and export market prices etc.

Data collection and Quality check

- The questionnaire was sent to the national experts in 80 countries. 9 out of of 80 countries, professional contact could not be established. Of the remaining 71 countries, 72% reported that teak is grown in their country, but only 52% returned the questionnaire with national teak resource data.

The data received was subjected to a thorough scrutiny, validation and data analysis. Checked for plausibility, with questionable data reviewed and corrected in collaboration with local contacts.

In this context, TRMA 2022 is a useful reference for assessing country situations and trends, and there is currently no better up-to-date information available on teak resources and markets.

Results of TRMA 2022

- Area of natural and planted teak forests has expanded, increasing the harvest of teak round wood and its share in the global timber market.

Area of natural teak forests by country			
	TRMA 2010 (1000 ha)	**TRMA 2022 (1000 ha)**	**Change from 2010 to 2022 (1000 ha)**
India	6,810	5,935	-875
Lao PDR	1.5	16	+14.50
Myanmar	13,479	15,424	+1,945
Thailand	8,744	8,840	+96
Total	**29,035**	**30,215**	**+1,180.50**

Area of planted teak forests by region					
	TRMA 2010		TRMA 2022		Change
Region	**1000 ha**	**%**	**1000 ha**	**%**	**1000 ha**
Africa	469.80	10.8	625.59	12.9	+155.79
Asia and Oceania	3,606.17	83.0	3,866.95	79.7	+260.78
Caribbean	15.32	0.4	24.10	0.5	+8.78
Mexico & Central America	132.78*	3.1	157.82	3.3	+25.04
South America	122.30	2.8	178.94	3.7	+56.64
World	**4,346.37**	**100**	**4,853.39**	**100**	**+507.02**

*Excluding Mexico (ca. 12.9 thousand ha reported for TRMA 2022)

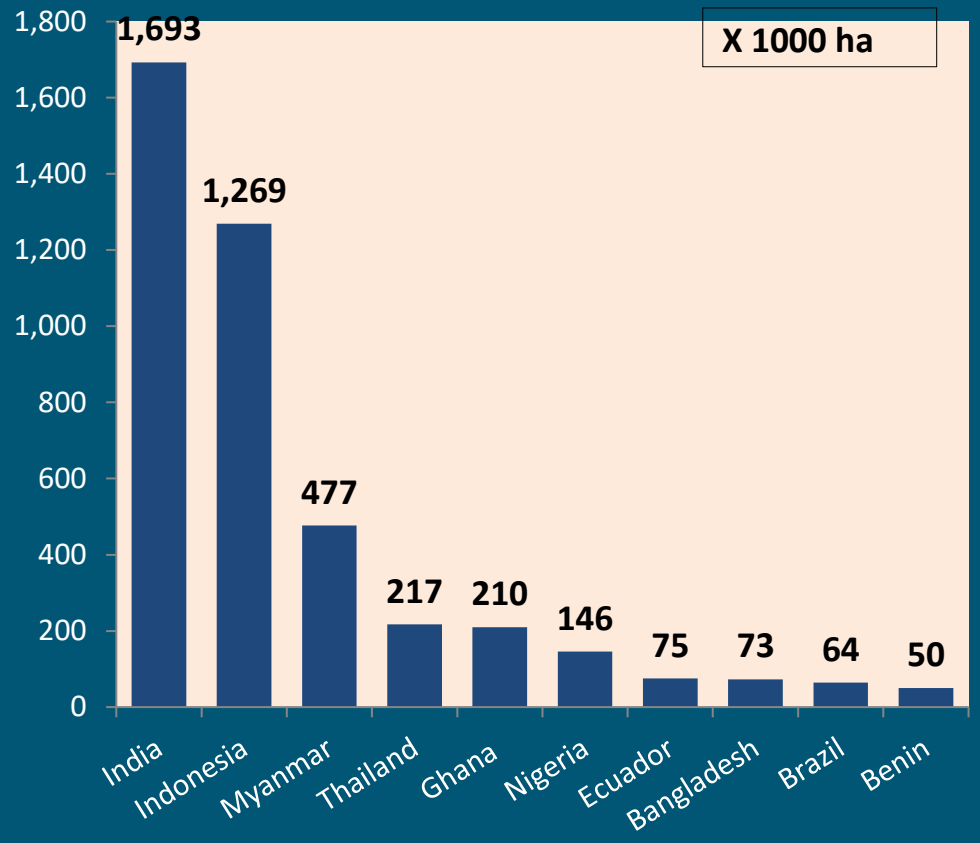
- Asia holds more than 97% of the world's natural and planted teak resources, and holds 80 % of the world's planted teak.
- The three teak heavy weights are India (1.693 million ha) of planted teak forests (35 % of the total); Indonesia (1.269 million ha) (26 %) and Myanmar (0.477 million ha) (10 %).

Natural and Planted Teak Forests

Development of the area of planted teak forests in the top ten countries (area > 50,000 ha) 2010 to 2022

	TRMA 2010	TRMA 2022	Change 2010 to 2022
Country	**1000 ha**	**1000 ha**	**1000 ha**
India	1,667	1,693	+26
Indonesia	1,269	1,269	--
Myanmar	390	477	+86
Thailand	128	217	+89
Ghana	214	210	-4
Nigeria	146	146	--
Ecuador	45	75	+30
Bangladesh	73	73	--
Brazil	65	64	-2
Benin	26	50	+24

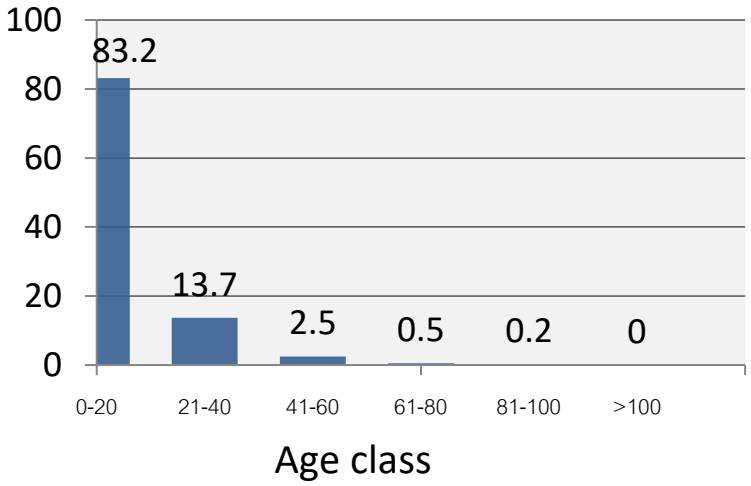
Top 10 countries with the largest area of planted teak forests (1,000 ha)



- Substantial increases can be observed in Thailand, Myanmar, Ecuador, India and Benin
- These ten countries account for 88 percent of the total planted teak forests

Age class distribution of planted teak forests

Age class distribution of planted teak forests



Age Class Distribution

Majority of planted teak forests are young.

> 80% fall under 0-20 years old.

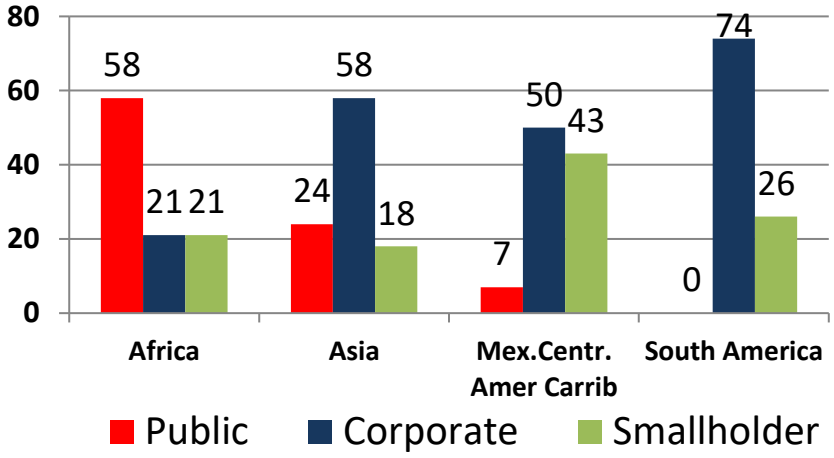
Nearly 14% within the age class 21-40 yrs, indicating increased planting efforts for short rotation management over the past 30 years. This pattern likely to continue in future.

The increased effort to shorten the rotation age has led to a significant rise in the supply of small diameter logs for the international market

Ownership status of planted teak

- In Africa public ownership decreased from 70% in TRMA 2010 to 58% in 2022, private ownership is growing worldwide as more private companies and smallholder farmers recognize teak's commercial potential.
- Smallholders own and manage 25% of the world's planted teak forests, covering ca. 1.2 million ha.

Ownership (%) of planted production teak forests by region



Growth performance and rotation age

Mean Annual Increment (MAI) and rotation age by Region

Region	TRMA 2010				TRMA 2022			
	MAI (M^3/ha/yr)		Rotation age (yrs)		MAI (M^3/ha/yr)		Rotation age (yrs)	
	min	max	min	max	min	max	min	max
Africa	3	21	4	60	3.0	18.0	3	60
Asia, Oceania	2	14	20	80	0.4	28.6	15	80
Mexico & Central America	5	30	6	30	4.2	8.3	16	22
South America	10	27	20	30	5.0	19.0	5	40
World	**2**	**30**	**4**	**80**	**0.4**	**19**	**3**	**80**

In most countries : MAI <12m^3/ha/yr

Exceptions are :
China – high growth rate : 28.6 m^3/ha/yr
Lao PDR – 21.3 m^3/ha/yr
Brazil – 19 m^3/ha/yr

- The reported rotation periods is short between 20-30 years in most countries leading to production of small diameter logs.
- Small diameter logs are in high demand on the international market as multi-purpose timber for less demanding construction purposes, furniture, flooring, reconstituted wood products and transmission poles.
- Good quality for high end applications are retained for longer rotations- Benin, Togo, Tanzania, India, Sri Lanka, Thailand and Brazil (40 and 80 years).

Log removals

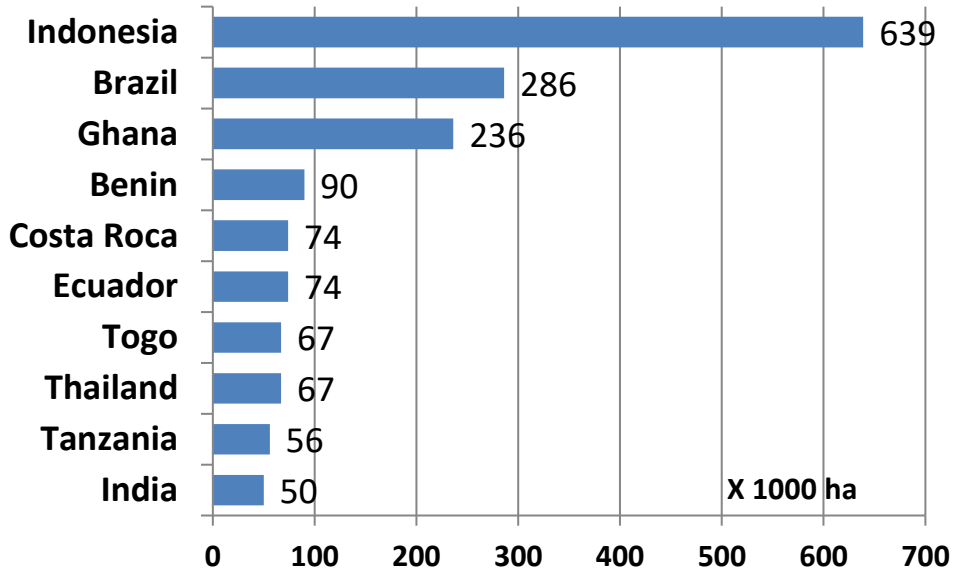
Log removals from planted teak forests by region 2010 and 2022

Region	Log removals (m^3)		Change	
	TRMA 2010	TRMA 2022	m^3	%
Africa	141,146	**454,991**	+313,845	+322
Asia, Oceania	522,710	**835,443**	+312,733	+160
Caribbean, Central America	141,845	**141,845**	--	--
South America	140,912	**359,684**	+218,772	+255
World	946,613	**1,791,963**	+845,350	+189

- Globally, roundwood removals in 2022 were nearly double (189%) the amount recorded in TRMA 2010. In 2010, 946,613 m^3 of wood were harvested, compared to 1,791,963 m^3 in 2022.

Top 10 countries producing teak roundwood from planted forests

- Asian countries reported the highest log volumes removals of about 835,443 m3, of which the largest volume is cut in Indonesia followed by Brazil and Ghana. These three countries account for 65% of the globally harvested teak.



Markets and Trade: Price and Quality of logs

- Reliable and meaningful teak prices are difficult to obtain.
- The domestic and export market prices in Africa and Asia have increased from TRMA 2010 to TRMA 2022 across all three dimensions, while the domestic market prices in Latin America, where prices have considerably decreased.
- Domestic and export market prices are highest in Asia followed by Africa. Latin America shows the lowest price level across all dimensions.

Average teak log prices for three different log dimensions

	Planted teak- Domestic market prices (USD m^3)					
	TRMA 2010			TRMA 2022		
Region	Small	Medium	Large	Small	Medium	Large
Africa	124	203	271	182	233	284
Asia, Oceania	149	282	448	281	720	1213
L. America	129	199	267	54	85	144
	Planted teak- Export market prices (USD m^3)					
	TRMA 2010			TRMA 2022		
Region	Small	Medium	Large	Small	Medium	Large
Africa	-	-	-	550	613	697
Asia, Oceania	-	-	-	-	513	870
L. America	-	-	-	203	285	463

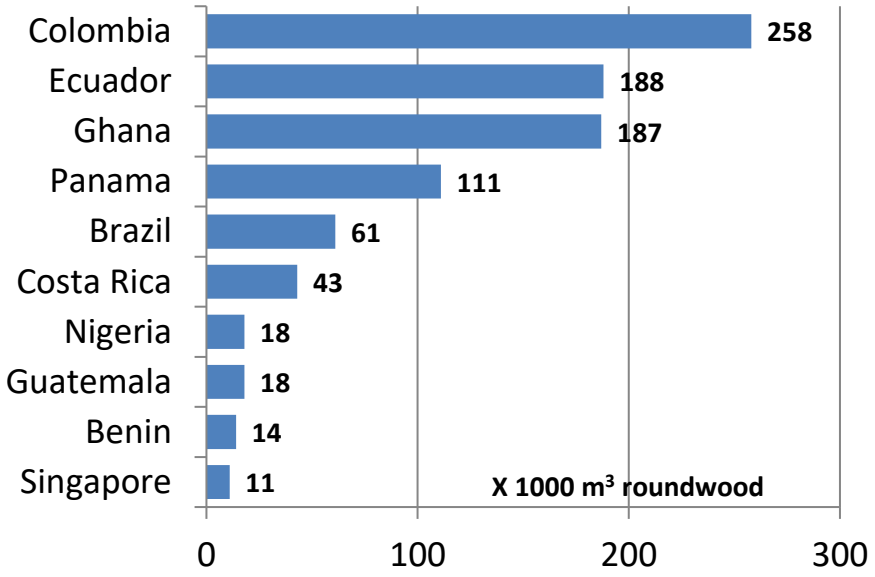
- In most countries, the domestic and export market prices show a distinct variation across small, medium and large logs. The domestic market prices of larger logs are 1.5 to 4 times higher than the prices of smaller logs.

International trade of teak roundwood

Since 1st January 2022, international trade of teak roundwood and sawn timber is reported under the new HS 2022 customs codes; 4403.42 (roundwood) and 4407.23 sawn timber). For example: UN Comtrade database available in https://comtradeplus.un.org/TradeFlow

- In 2022, the international trade in teak roundwood was governed by India that imported 97 percent of the total trade volume from 43 source countries.
- China imports 2.5% and the rest of the countries below 1 percent.
- More than two thirds (72.5%) of India´s import volume was sourced from Latin American countries and African countries covering the remaining one-quarter (25%).
- Major roundwood exporters in Latin America- Colombia, Ecuador, Panama, Brazil and Costa Rica.

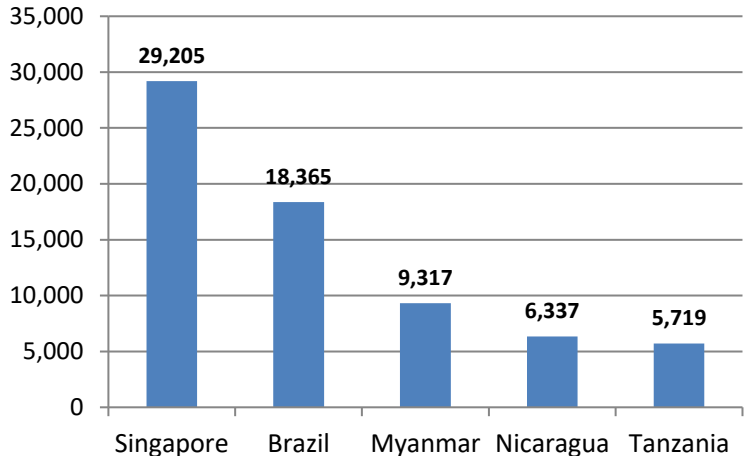
Top ten countries exporting teak roundwood to India in 2022 (*Source*: UN Comtrade database)



- Major roundwood exporters in Africa - Ghana, Nigeria and Benin. South Sudan and Tanzania did not show up in the statistics as there is a ban on log exports.
- The roundwood quality of the imports appears to be good with average values (CIF) ranging from 363 USD/m^3 for logs imported from Latin America to 458 USD/m^3 from Africa.

Contd…….International trade in teak sawntimber

Top 5 Exporters of teak sawntimber (m^3) in 2022



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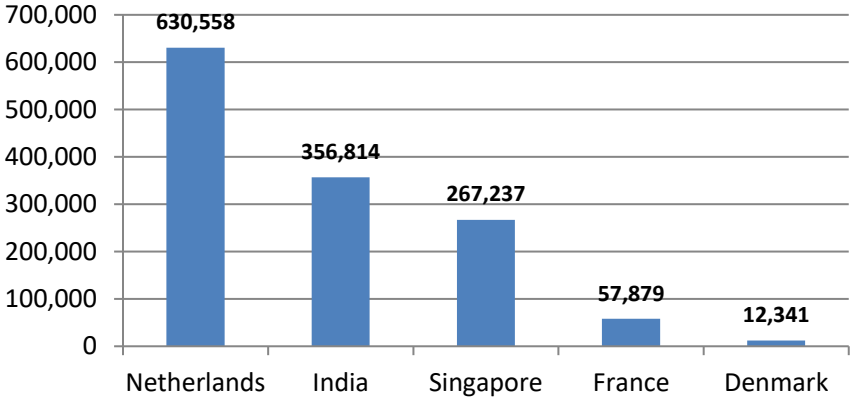

- The leading sawntimber exporter is Singapore covering 38 percent of the total exports. Singapore is reported to be the business hub of 261 active teak wood companies that trades with 200 suppliers worldwide (Volza Grow Global, 2023).
- The major exporter in S.America is Brazil accounting for 24% of the total trading volume, while Nicaragua in Central America covers 8% of the total. In Asia, besides Singapore, Myanmar is an important sawntimber exporter (12% of the total). The biggest exporter in Africa is Tanzania accounting for 7% of the world exports.
- The Netherlands serve as an inter-European trading hub for teak sawntimber. The country imports teak sawntimber from 29 countries and re-exports it to many other European countries.
- India imports sawntimber from 39 countries, mainly from Africa and Latin America.
- UAE and Singapore are important trading hubs without having teak resources on their own.

Environmental and social features of planted teak forests

The global area of planted teak forests is continue to grow in future and the increase of about 500,000 ha from 2010 to 2022 raises concerns about the resulting environmental and social impacts, particularly in areas where teak is not an indigenous species. However, these systems can provide a multitude of positive environmental and social features as:

Socio-economic significance: The vast majority (99%) of planted teak forests are grown for timber production. As such, planted teak forests can support rural livelihoods, help communities improve their standard of living, provide a financially attractive option for forest landscape restoration and contribute to sustainable development.

Multiple values: Planted teak forests can reduce the pressure on natural teak forests for forest products and allow them to be designated for other protection and conservation purposes. They can also complement and supplement the REDD and REDD+ initiatives.

Ecological landscape element: Planted teak forests form ecological corridors and maintain biological connectivity in the landscape, particularly where intact remnants of natural forest are maintained within the planted area as reservoirs for biodiversity conservation.

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High carbon sequestration: Planted teak forests are a fast-growing resource with the capacity to sequester carbon on a large scale, helping to mitigate climate change.

- A model calculation based on IPCC technical specifications shows that the area of 4.85 million hectares of planted teak in the world would have the potential to sequester annually 22.54 million tonnes of carbon or 82.64 million tons of CO2 (Table below).

Hence, from investors point of view, carbon sequestration is an additional environmental service that add value to the resource. Even after harvesting teak, the durable end products is a choice for generating carbon credits.

Potential annual carbon capture by planted teak forests

Continent	Area 1000 ha	MAI m^3/ha/yr	Carbon capture	
			10^3 tons C/yr	Gg CO_2/yr
Africa	625.59	10.5	2,162.94	7,930.78
Asia and Oceania	3,866.95	14.5	18,462.98	67,697.61
Latin America	360.85	16.1	1,913.01	7,014.38
World	4.853.39	14.1*	22,538.94	82,642.77

Notes: *weighted average; Gg = Gigagrams; 1 Gg is equivalent to 1,000 tons.
Calculation method according to the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG-LULUCF). *Source: Glauner, 2024.*

Summary and Conclusions

- **The global situation:** Teak grows in nearly 80 countries in tropical regions.
- **The growing importance of teak:** The global import value of teak roundwood is estimated at USD 311.6 million (UN Comtrade database) and represents 10.1% of the total import value of non-coniferous tropical industrial roundwood from all tropical countries (323.9 Million M^3 , ITTO, 2023)
- **Natural teak forests**: The area of natural teak forests in India, Lao PDR, Myanmar and Thailand combined was estimated at 30.215 million ha, of which more than half is in Myanmar. Over a decade, natural teak forests have increased by 1.180 million ha globally (+4.1 percent).
- **Planted teak - an emerging global hardwood resource**: The global area of planted teak forests is estimated at 4.854 million ha, of which 80 percent is in Asia, 13 percent in Africa and 7 percent in Latin America. The global area of planted teak forests has increased by 507 thousand ha compared to 2010. Significant increases were recorded in Asia (+261 thousand ha) and Africa (+156 thousand ha).
- **Age class distribution and rotation age:** The majority of planted teak (94 percent) is less than 40 years old resulting in a significant increase in the supply of small diameter logs to the international market as a general utility timber.
- **Ownership:** Public ownership is still prevalent in Africa, but a shift towards private ownership is evident in many countries. A quarter of the world's planted teak forests (1.2 million hectares) are owned and managed by smallholders.

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- **Growth performance:** The vast majority of planted teak (99 percent) is grown and managed for timber production. The mean annual increment (MAI) reported in most countries for TRMA 2022 does not exceed 12 m^3/ha/year.
- **Log harvesting:** The TRMA 2022 report suggest that the supply of high quality teak from natural forests is declining to below 0.5 million m^3, while the supply of teak from planted forests is estimated to be around 2 million m^3 annually.
- **Prices:** Reliable and meaningful teak prices are difficult to obtain. Domestic and export prices of teak in Africa and Asia increased in all dimensions (small, medium and large) in spite of low domestic price for planted teak in L. America.
- **Trade:** The international teak market has been and will continue to be governed by trends in the Asian market. Asia holds more than 95 % of the world's teak resources.

The salient points in the timber trade are:

a. India imports 97% of the total trade volume from 43 source countries. The second largest importer is China with 2.5% of the total. All other importing countries together account for <1%.

b. Singapore is an important trading hub for teak roundwood and sawntimber, and in the Netherlands for teak sawntimber; without having teak resources on their own.

c. An increasingly important issue affecting the trade in plantation teak is forest management certification and legality.

d. Meeting consumer expectations and legal requirements significantly influence growers and processors, particularly those dependent on the markets in North America and Europe.

Thank you !

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