



# LKTS: Lesser-Known Timber Species - Untapped Potential, Huge Opportunities

# Our Speakers

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# Forest diversity... but a concentrated market

*The paradox at the heart of LKTS/LUTS development*

**Forest**



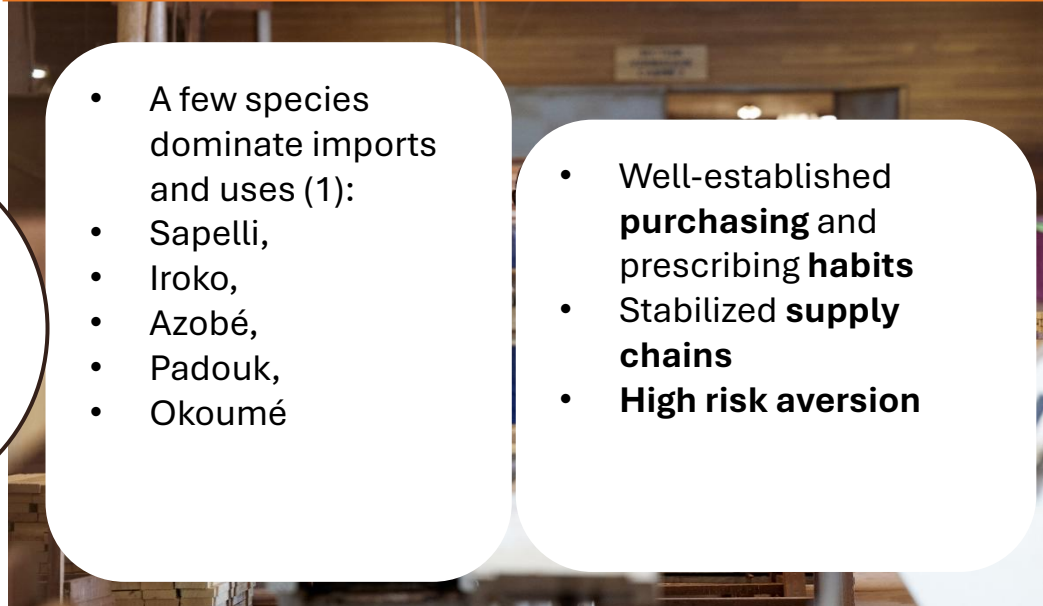
Congo Basin: the world's second-largest tropical forest

Several hundred potentially valuable tree species

An exceptional natural resource

**The paradox:**  
Enormous forest wealth, but very limited international value

**Market**



- A few species dominate imports and uses (1):
  - Sapelli,
  - Iroko,
  - Azobé,
  - Padouk,
  - Okoumé
- Well-established **purchasing** and prescribing **habits**
- Stabilized **supply chains**
- **High risk aversion**

A market focused on a limited number of species

Forest diversity does not guarantee **market diversity**.

The market doesn't just buy wood. It buys a **standard**, a specific **use**, and an **acceptable level of risk**.

# A trade bottleneck

*Despite immense forest biodiversity, international trade relies on a tiny fraction of tree species.*



A commercial bottleneck

Despite a forest of exceptional richness.

## Example - Congo Basin

Although **more than 50 species** are harvested, nearly **two-thirds (2/3)** of the **logs** come mainly from **two species: Okoumé and Sapelli**.

(Source: Timber Trade Portal - Congo Timber Sector (FRMI, 2018)) (2)

## CONSEQUENCES

- Increased **pressure** on certain commercial tree species
- **Underutilization** of a large portion of the forest resource
- Economic **opportunities** still largely untapped

# LKTS → LUTS: A Shift in Perspective

The challenge is not merely to **know** the timber species, but to create the conditions for its adoption by the market.

## LKTS

Lesser Known Timber Species

- Little known
- Knowledge challenge
- Species-centered approach
- Production of technical data
- Characterization of properties

Question: “What is the potential of this timber species?”

## LUTS

Lesser Used Timber Species  
(Less commonly used species)

- Rarely used
- Market integration challenge
- Product/market approach
- Establishing market benchmarks
- Reduction of perceived risk

Question: “In what applications can it be adopted?”

### **This trend reflects a view shared by the industry:**

Many wood species already have sufficient technical data.

However, their adoption remains limited due to a lack of benchmarks, visibility, and market confidence.

The transition from LKTS to LUTS marks a shift from a knowledge-based approach to a market-integration approach.



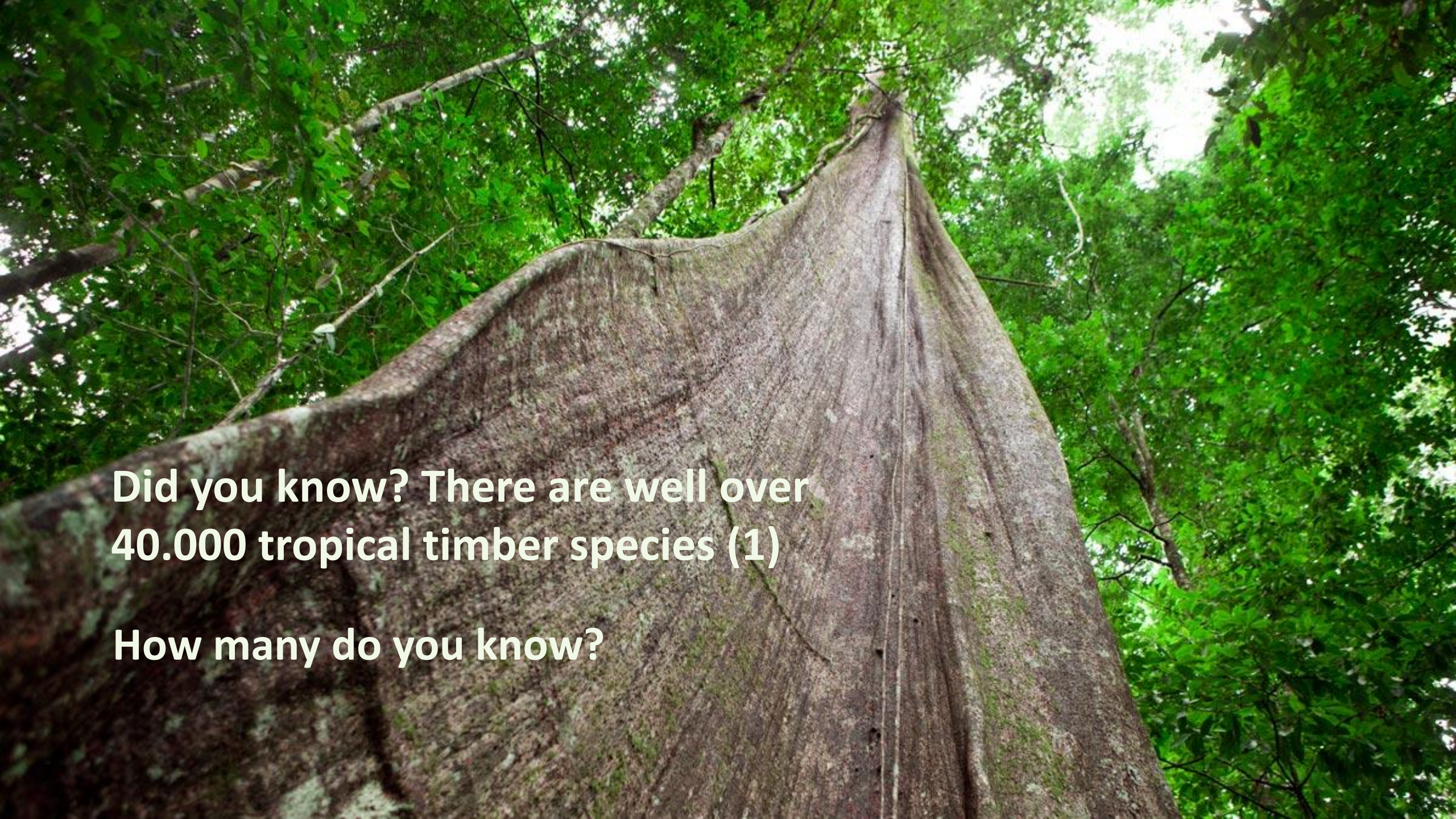
# LESSER KNOWN TIMBER SPECIES

Finding common ground between ecological and commercial goals

Presentation by Tijmen Hennekes, FSC Netherlands

© FSC Africa / Jonathan Perugia



A low-angle, upward-looking photograph of a massive tree trunk in a dense tropical forest. The trunk is thick and textured, with a vertical crease running down its center. The surrounding foliage is vibrant green and fills the upper portion of the frame, creating a sense of height and depth. The lighting is natural, filtering through the leaves.

**Did you know? There are well over  
40.000 tropical timber species (1)**

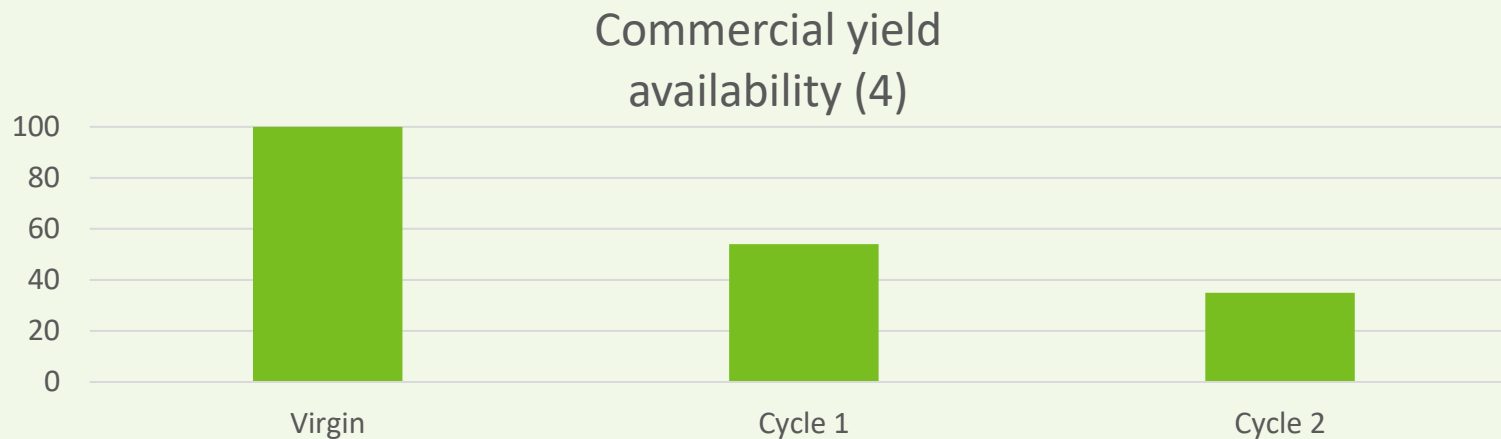
**How many do you know?**

# The Core Problem: 2 Sides to the Story



# Commonality in Commercial and Ecological Risks

- After low impact harvesting operations, forest are exceptionally well in recovering old-growth attributes (78% within 20 years) (3).
- The problem is not recovery of structure or species diversity, but species composition & biomass.
- Focussing only on commercial species will deplete certain key species that are an ecological niche, and a commercial niche.



LKTS = Lesser known Timber species

LKS = Lesser Known Species

LUS = Lesser Used Species

NTS = Non-traditional Species

LUTS = Lesser Used Timber Species

Secondary species

Under Utilized

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**Species Diversity**

# SO YOU THINK YOU KNOW YOUR TROPICAL SPECIES

## TROPICAL AFRICA



# Economic Considerations – Diversity is Agility



has a reduction FSC has existed for almost 35 years, meaning that the first rotation cycles are now ending and second rotations are beginning. Early signs already suggest that **forest composition** of high-value, large-diameter tree species (5). This creates significant financial risk for forest management organizations when no market exists for the remaining forest composition.

A growing number of tree species are being listed under CITES Appendix II, which is straining government capacity to process export and import licences. This is already pushing traders to seek alternatives to species such as **Afromosia (*Pericopsis elata*)** and **Cumaru (*Dipteryx odorata*)**, while **Azobé/Ekki (*Iophira alata*)** is also being discussed as a possible future candidate. LKTS could help reduce these legislative supply bottlenecks.

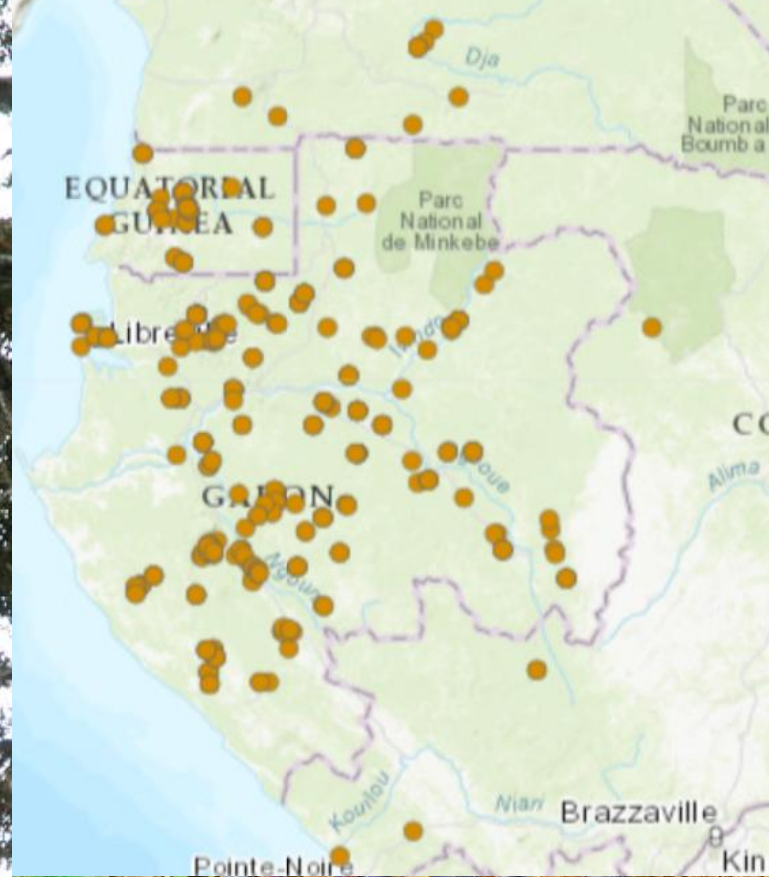


# Ecological Considerations

## Case study: Ozigo (*Dacryodes buettneri*)

- **Context:** tree species with great potential and history in the wood panel industry (6).
- **Ecological & social dependencies:** forest elephants and communities are highly dependent on the tree species (7)
- **Risk:** declining forest elephant population = less seed dispersal = lower regeneration rate = reinforcing feedback loop.

→ Need safeguards (HCV, monitoring), cannot exist without certification standards





# Why Species Diversification works & Why You Should Get Started Today



## FMU & Communities

Empower forest managers to manage their forest at optimal levels, improve market access & business cases



## Forest Resilience

Ensure future ecological integrity & healthy future harvest stocks



## Supply Chain Flexibility

Supply chains need to be resilient too

# MARKET AS WE KNOW IT



I'll get you  
some Azobé

I want  
some  
Azobé!



Azobé: Kaku, Ekki, Bongossi

# MARKET AS IT SHOULD BE



We also have: Mukulungu, Tali,  
Okan, Iroko, Karri, Eveuss, Eyoum,  
Congotali, Alep, Bilinga, Difou,  
Kosipo, Niové, Movingui, Padouk...  
and many more!

Tell me more  
about them



# Best Practices from the field

## Best practices of introducing new LKTS (8):

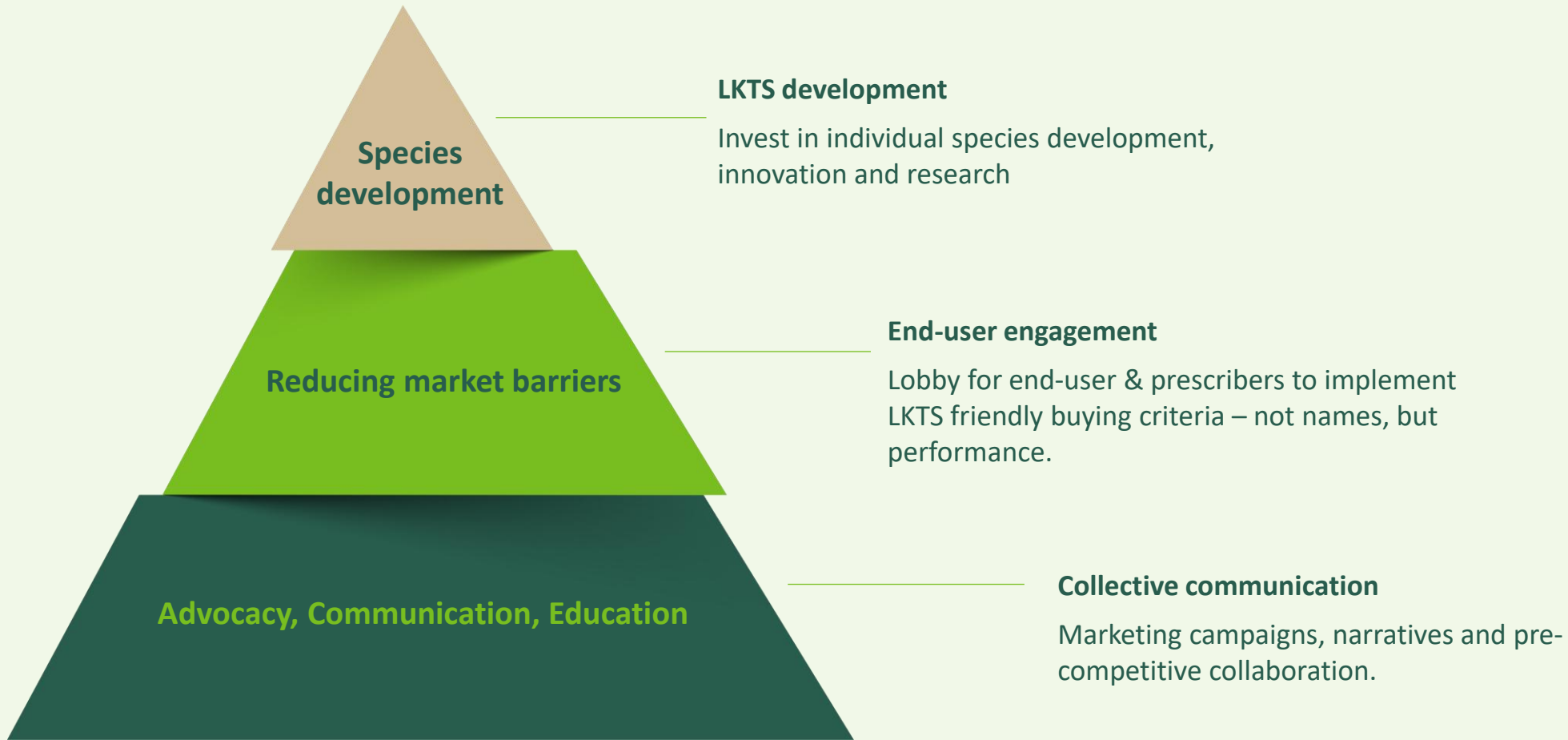
1. **Forest Inventories:** what is available, what is abundant
2. **Technical validation:** properties, durability, processing
3. **Market alignment:** match species to applications
4. **Supply assurance:** consistent availability & volumes
5. **Chain commitment:** from forest → processor → buyer
6. **Risk sharing:** early adopters invest in testing & pilots

→ Key insight: *It only works if the entire supply chain is involved*

## Timber Diversity Approach:

- Creating opportunities for all
- Taking away market barriers
- Popularizing the concept of adopting more species

# The Timber Diversity Approach



# Case Study: Forest lines by Paulussen Houthandel (9)

## Reaction to fire class B-s1,d0



# Rotterdam: Beterbanken (10)

Pilot project that included 6 species to investigate beyond the Cumaru only procurement policy.

Led to the final inclusion of 4 species in future tenders to improve timber diversity principles of the municipality.

Close engagement needed, Long term impact acquired – also creating opportunities for community forests.





## LKTS

This website and database have been developed as a guide for Lesser Known Timber Species (LKTS) – also sometimes described as Lesser Used Timber Species (LUTS) or just Lesser Known Species (LKS) – from the tropical regions of the world.

The main purpose of the website is to inspire and guide timber and wood users to look for a more diverse selection of timber species as a supplement or alternative to the more well-known ones. The aim is to develop a more diverse timber market to support sustainable forestry, improved pricing and regional development through the commercialisation of a greater variety of wood species.



250+ species  
documented

## Species search

Scientific, trade or local name

Origin

Search

[Advanced search](#)

### Andiroba

South and Central  
America

### Andoung

Africa

NO PICTURE  
AVAILABLE

### Angelim

South and Central  
America

### Angelim

### Rajado

South and Central  
America

### Angelim

### Vermelho

South and Central  
America

### Jelutong

Asia and Oceania

### Jequitiba

South and Central  
America

### Jutahy

South and Central  
America

### Júcaro

South and Central  
America

### Kamarere

Asia and Oceania

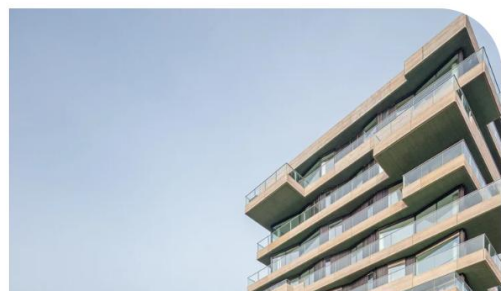
## Case search

Country

Species used

Type of cases

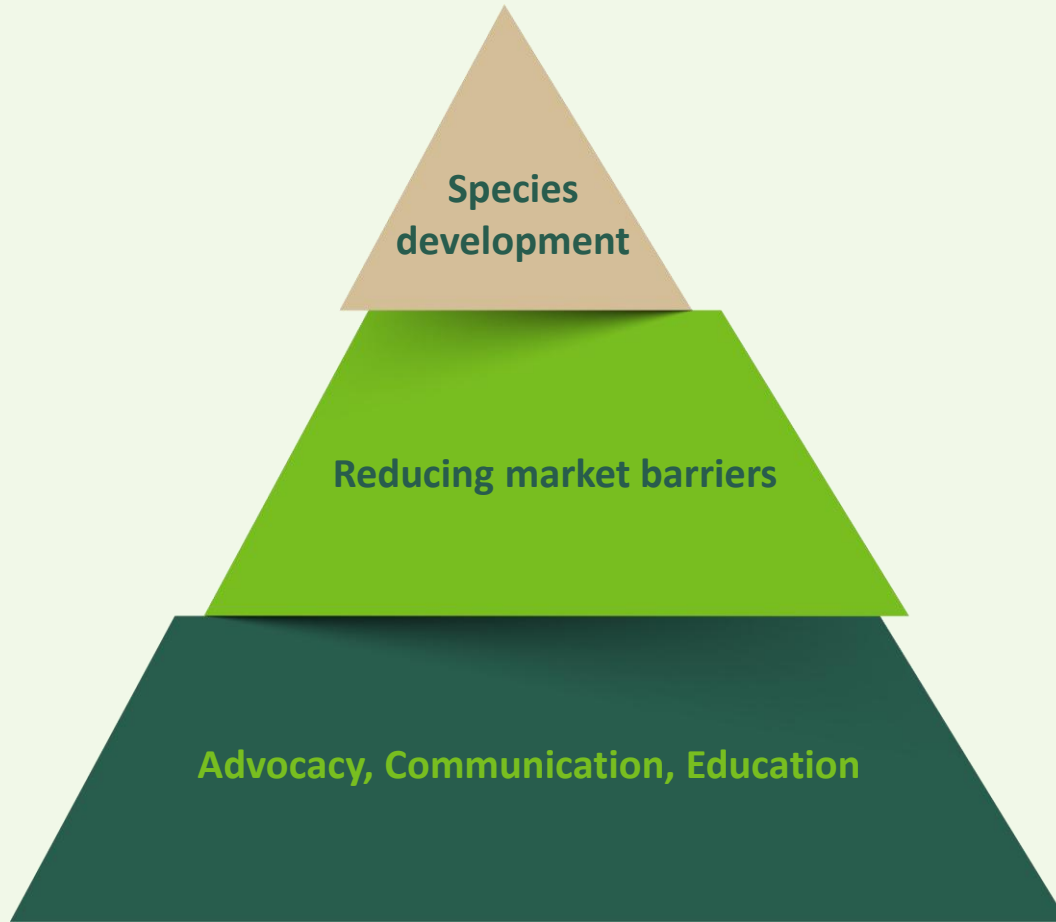
Search



150+ case studies  
collected

# Frontrunners of Diversity, 16 Members Total





## What can you do today?

1. Traders: add one more specie to your arsenal
2. Invest in research & innovation (also ecological!)
3. Communicate about timber diversity, including ecological benefits
4. Join the LKTS database as a partner
5. Share case studies – add to the history
6. Engage with FSC, ATIBT, Probos: market development is done as a collective

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# Tropical Timber Trade Facility (TTT) Project

An international project funded by the German government through the **German Federal Ministry for Economic Cooperation and Development (BMZ)** and implemented by the **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)**, the German agency for international development cooperation, with the participation of ATIBT and partners from the forestry sector. (3)

## Main objective:

- To reduce illegal logging and timber trade
- To promote legal and sustainable trade in tropical timber.

## Areas of focus:

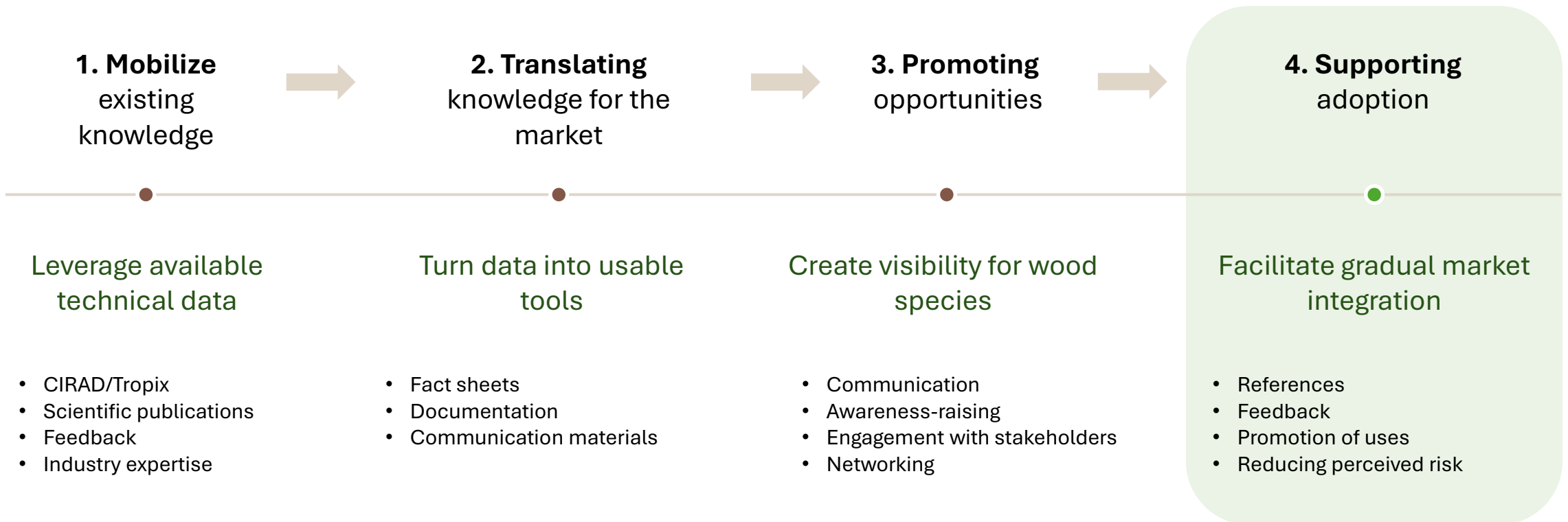
- Improving the **traceability and legality of timber**
- Support for **forest certifications**
- Dialogue among industry stakeholders
- Promoting **sustainable tropical timber on international markets.**



# ATIBT and the promotion of timber species:

## *An Evolution in Approaches*

An issue the industry has been addressing for several decades.



Today, the challenge is to transform this knowledge into applications, benchmarks, and commercial opportunities.

# Why is this issue becoming strategic?

*A convergence of factors that makes diversification essential*

## MARKET PRESSURE

- ✓ **Concentration of demand** on a limited number of species
- ✓ **Volatility in the availability** of certain species
- ✓ **Search for alternatives** to the most in-demand species
- ✓ Need to **secure supplies**
- ✓ A more cautious and demanding **European market**

## Diversification of timber species

is no longer just an opportunity.  
**It is becoming an economic, industrial and forestry necessity.**

## REGULATORY PRESSURE

- **EUDR:** Enhanced traceability and legality
- **CITES:** species control and international trade
- Growing traceability and documentation requirements
- **Verification of origin and compliance**

**Buyers are demanding more guarantees and transparency.**

Diversification is becoming a necessity. It is a response to changes in the market, regulations, and resources.

## RESOURCE PRESSURE

- **Maximizing the value** of available and underutilized wood species
- **Reducing pressure** on certain tree species
- **Better utilization** of forest diversity
- **Contribute to the sustainable management** of forest resources

## Benefits:

**For concessionaires:** greater value  
**For importers:** greater security  
**For forests:** more sustainable resource management

# But why are these species still rarely used?

*The obstacles are rarely technical: they are mainly commercial and related to perceived risk*

## What already exists

- ✓ **Technical data available from**  
CIRAD/Tropix and scientific publications
- ✓ **Available resources**  
Tree species present in the Congo Basin concessions
- ✓ **Suitable performance characteristics**  
Durability, density, and strength suitable for various uses
- ✓ **Certification available**  
FSC, PEFC, and EUDR compliance

**THE MAIN OBSTACLE**  
is not a lack of technical performance, **but a lack of references, visibility, and market confidence**

## What is still missing

- **Commercial references**  
Limited sales history and completed projects
- **Market confidence**  
Low awareness among buyers and specifiers
- **Promotional** and marketing tools
- **Market integration**
- **Purchasing habits**

# Wood or Products: That Is the Question?



For over **50 years**, the industry has been debating the **best way to promote these timber species**. The **product-based approach** often appears to be the **most relevant**.



The **goal** is not merely to **promote a wood species**, but to **identify relevant applications** that meet **market expectations**. A **product-focused approach** allows us to reconnect technical **properties** with **the market's actual needs**. However, this approach is still **being questioned today**.



We often refer to **decking by the species used**, such as Iroko or Padouk, rather than simply calling it decking. This demonstrates that the **wood species** remains a **key element of the marketing strategy**.



**In summary: the challenge is not merely to know a wood species, but to integrate it into applications that are relevant to the market.**

# Timber Species or Products: That Is the Question?

*The market doesn't buy a species. It buys a product that meets a need.*

## Traditional approach

### Species-driven

Species



Technical specifications



Market research



Uncertain integration



High risk, few references,  
difficulty in specification and market adoption.

VS

## Proposed approach

### Usage-driven

Market need



Product / application



Desired performance



Most suitable species



Risk reduction, creation of references, increased  
trust, and easier integration.



A single species can be used in multiple products.  
But the market **buys, above all, a solution to a need.**

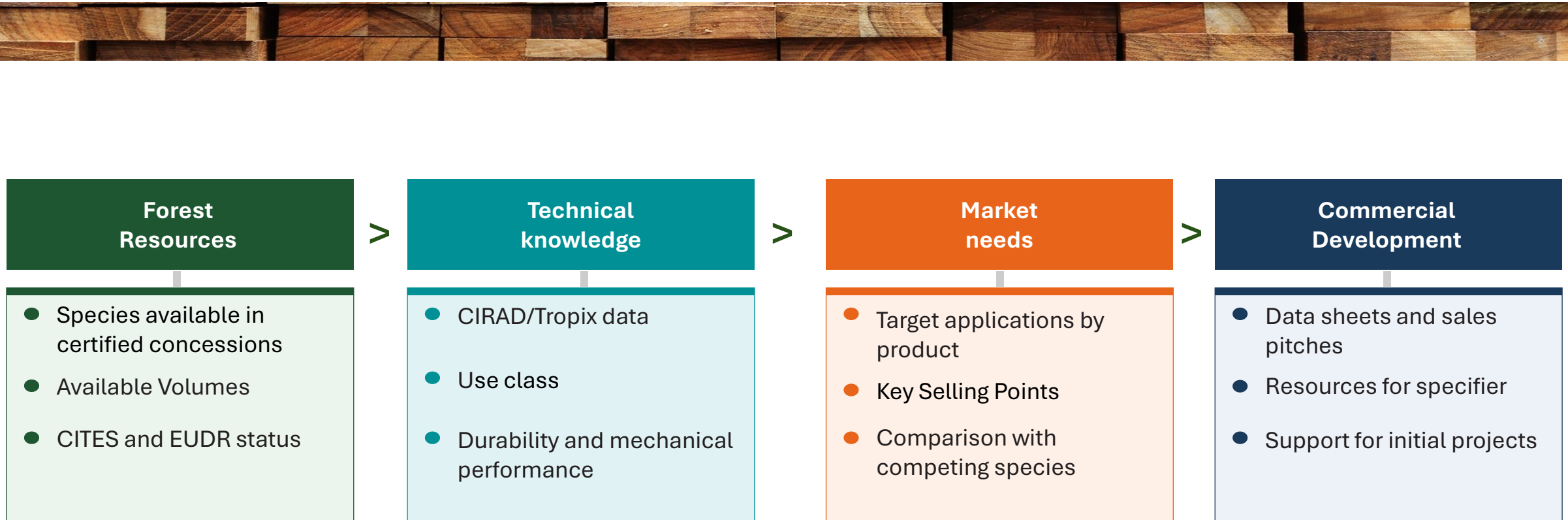
atibt

LA RÉFÉRENCE EN MATIÈRE DE BOIS TROPICAL



# ATIBT: LKTS Promotion Initiative

*Connecting forest resources, technical expertise, and the market*

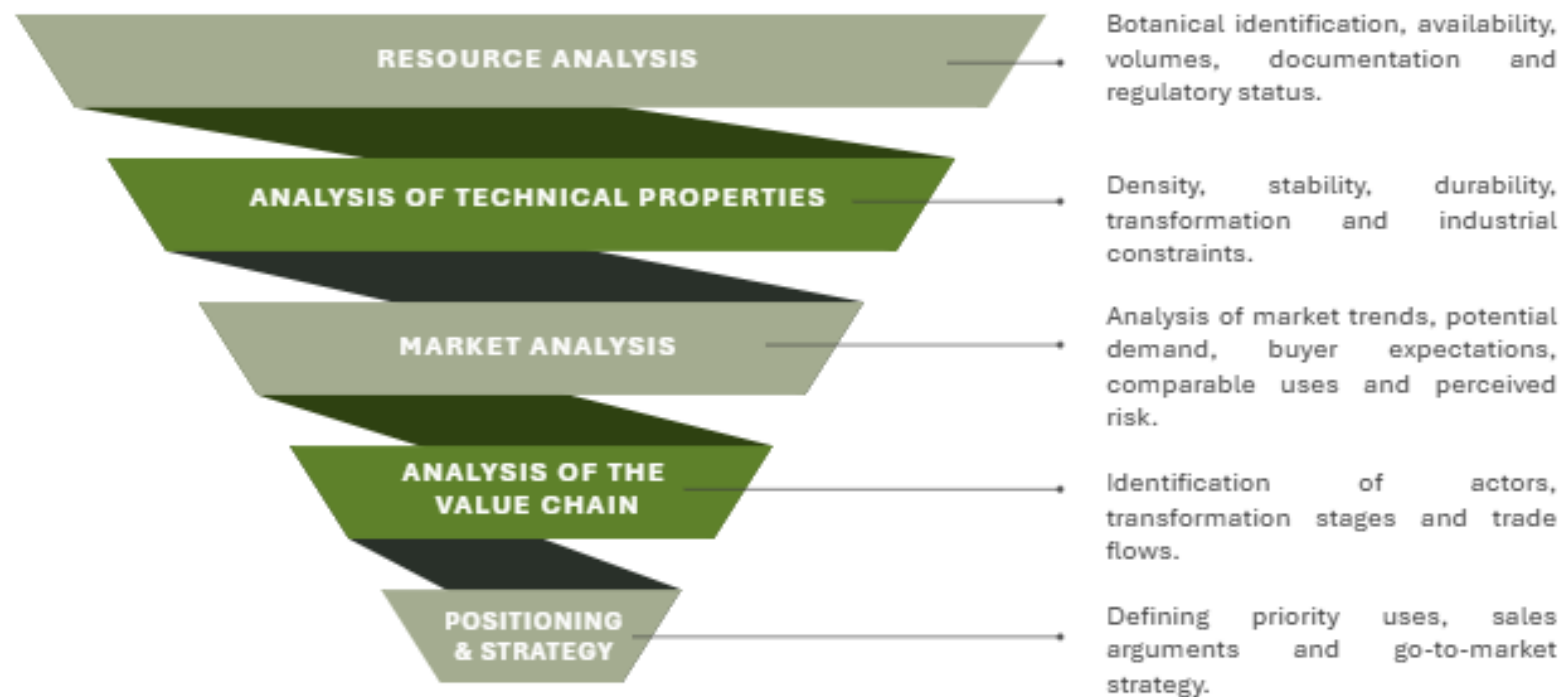


ATIBT bridges the gap between tropical forests and the European market:  
**by transforming technical knowledge into commercial value for less commonly used species**

# ATIBT: Methodology Development

Methodological approach used to analyze the potential of the tree species studied.

Methodological approach of the study:



# Deep in the forests of Central Africa, exploring \*The Trees of Central Africa, Volume 1: Families A–F\*

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Jean-Louis Doucet- Gembloux Agro Bio-Tech

## LES ARBRES D'AFRIQUE CENTRALE

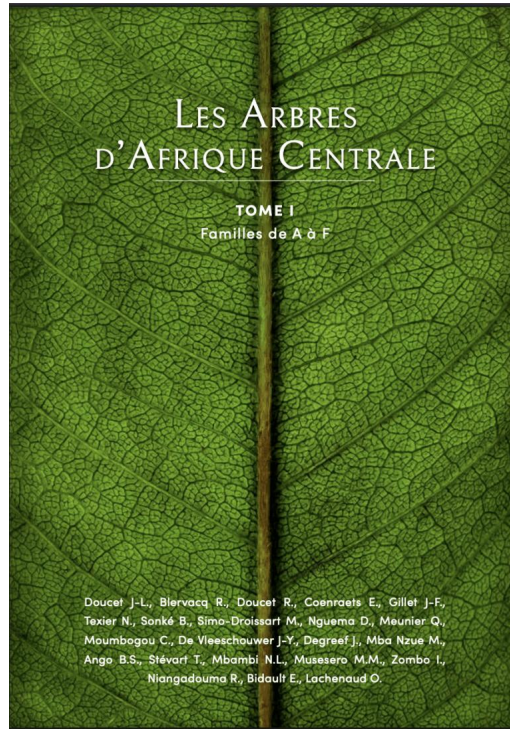
TOME I  
Familles de A à F

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# Trees of Central Africa

(Volume 1)—Families A  
through F

*A comprehensive, illustrated guide*



863 tree species  
divided into 39 botanical families

Over 4,000 photographs

Detailed entries for each species

- Leaves, flowers, fruits, bark
- Habitat and distribution
- Local uses
- Conservation status

Fabaceae Faboideae

## Pericopsis elata (Harms) Meeuwen



50 m



Odeur



Plantule



N<sub>2</sub>



Habitat et température



HVC



EN

### Caractères distinctifs

L'afroformosa atteint 50 m de hauteur et 1,5 m de diamètre. La cime a un feuillage léger et de grosses branches ascendantes. Le tronc est cylindrique, avec des empattements à la base. L'écorce est d'abord lisse gris-beige, elle a ensuite des écaillures irrégulières qui laissent, en tombant, des marques brun-rouge. La tranche de l'écorce, jaune clair a un fin cerne vert sur le pourtour, elle vire rapidement à l'orange. Elle dégage une odeur de haricot vert. Les feuilles sont composées imparipennées avec 7-11 folioles alternes pétiolulées et munies à leur base de stipelles filiformes. Les folioles sont ± elliptiques (3-9,5 x 2-4 cm), arrondies à aiguës à la base, acuminées au sommet, papyracées, glabres, vert clair ou glauques en dessous. Les nervures secondaires (8-12 paires) sont peu marquées et les tertiaires forment un réseau dense en petits carrés. Les inflorescences sont de courtes panicules, grêles et retombantes, avec des fleurs blanches papilionacées. Les fruits sont des gousses membraneuses, oblongues et aplaties (7-17 x 2,5-3 cm), indéhiscentes, avec une fine aile sur le pourtour et une pointe apicale. Ils contiennent 1-4 graines arrondies et aplaties brun luisant (1-1,5 cm de diamètre).

Il ne faut pas confondre l'afroformosa avec d'autres espèces à tronc écailleux et marques rougeâtres telles le movingui (*Distemonanthus benthamianus*, Dialioidae), les omvong (*Diolium* spp., Dialioidae) ou le zanha (*Zanha galungensis*, Sapindaceae) qui tous ont des feuilles dépourvues de stipelles. Le niowé (*Staudtia kamerunensis*, Myristicaceae) a aussi une écorce similaire mais ses feuilles sont simples.

### Plantule

La germination de l'afroformosa est épigée, phanérocotyle, à cotylédons charnus et arrondis de 1,5 cm de diamètre. L'hypocotyle mesure 4-7 cm et l'épicotyle, 4-5 cm. Les deux premières feuilles sont simples et opposées, les suivantes sont alternes, trifoliolées, avec des stipelles. Le limbe est cordiforme à elliptique, blanchâtre en dessous à long acumen. Les plants plus grands sont souvent penchés, à feuillage retombant d'un côté.

### Habitat et température

L'afroformosa est une espèce pionnière longévive, grégaire, caractéristique des forêts denses humides semi-décidues secondarisées. Il est souvent proche des zones humides. Il se régénère dans les grandes ouvertures telles les jachères. Ses jeunes tiges sont rares et sa régénération est souvent déficitaire. Il fixe l'azote grâce à des nodules bactériens.

### Utilisation et statut de conservation

L'afroformosa est classé En danger (EN) sur la Liste Rouge de l'UICN à la suite d'une diminution passée de plus de 50% de sa population au cours de 3 générations et qui pourrait continuer si des mesures de gestion ne sont pas appliquées. Cette espèce est reprise dans l'annexe II de la CITES, son commerce doit faire l'objet d'autorisations spéciales.

Le bois de l'afroformosa est en effet très apprécié sur le marché international, principalement pour le mobilier, les placages décoratifs, les menuiseries intérieures et extérieures, ainsi que la parqueterie. L'écorce est localement utilisée comme antalgique (HVC 5).

### Dispersion et interaction avec la faune

Les fruits ailés sont dispersés à faible distance par le vent. Aucune interaction particulière avec la faune n'est à mentionner.

### Phénologie

L'afroformosa est dédicé et hermaphrodite, son diamètre de fructification régulière est de 40 cm au Cameroun.

| Espèce          | UICN                       | HVC | Fructification  |      |         |         |
|-----------------|----------------------------|-----|-----------------|------|---------|---------|
|                 |                            |     | Cam             | Gab  | RC      | RCA RDC |
| <i>P. elata</i> | (Harms) Meeuwen<br>EN 2020 | 1,5 | 12-2            | 7-12 | 11-16-8 |         |
|                 |                            | DME | 90              | 60   | 70      | 60      |
|                 |                            |     | Recommandé : 80 |      |         |         |

## AFRORMOSIA



Tranche



Base du tronc



Feuilles



Inflorescence



Fruits



Plantule

# Trees of Central Africa (Volume 1)—Families A through F

## An Essential Resource



### Science

An up-to-date taxonomic reference, the result of an international collaborative effort



### Sustainable Management

Assists in tree identification for sustainable forest management



### Biodiversity

Contributes to the protection of rare species and forest ecosystems



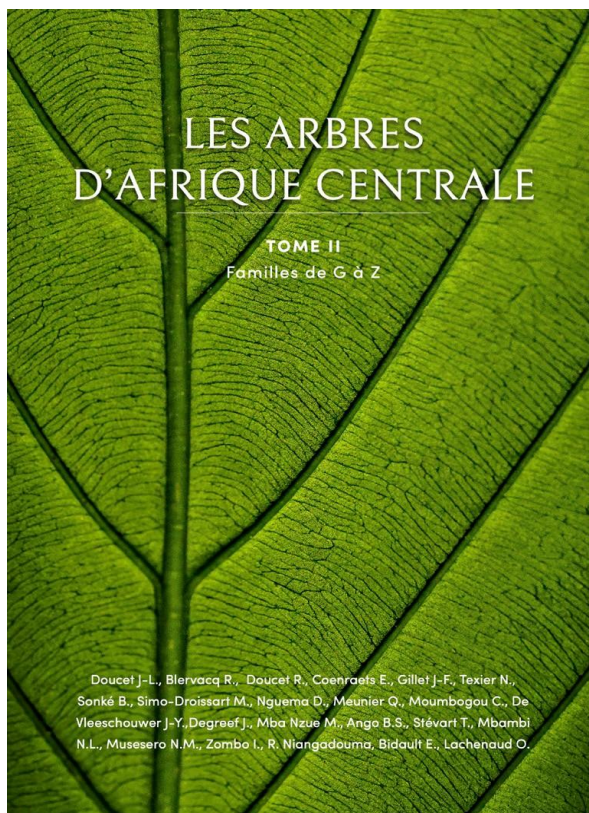
### Local Knowledge

Promotes traditional knowledge and strengthens partnerships with local communities

# Trees of Central Africa

(Volume 1)—Families A through F

Continued in Volumes II and III, with a focus on wood



## OKOUMÉ

*Aucoumea klaineana* Pierre  
Burséracées

| Diam. Min. d'exploitation (DME) |               |
|---------------------------------|---------------|
|                                 | 60 cm / 70 cm |
|                                 | 80 cm / 70 cm |
|                                 | 80 cm / 70 cm |
|                                 | 80 cm / 70 cm |

**Apparence du bois**

De couleur blanc-rosâtre à brun rouge, le bois fonce à la lumière pour prendre une teinte proche de celle de l'acajou. Le cœur est habituellement bien distinct, avec une couleur blanc à gris pâle, et ne dépasse pas 5 cm d'épaisseur. Le bois a un grain fin à moyen, et un fil droit ou un léger contrefil. Il contient de la silice (jusqu'à 0,3%) et de la résine. Il apparaît parfois lustré ou nacré, avec un aspect rubané ou pommelé sur quartier.

**Caractéristiques et transformation**

La grume ne se conserve que modérément en forêt, il est donc recommandé de la traiter en préventif. Le bois est léger, relativement tendre, et à durabilité moyenne. Les taux de retraits lors du séchage sont assez élevés mais sans risques importants de déformation. Les outils d'usinage à dentures stérilisées et au carbure de tungstène sont à favoriser. Un affûtage régulier améliore la finition, évite une surface pelucheuse et compense l'action combinée de la silice et de la résine. Le rabotage peut s'avérer difficile avec le contrefil, un angle de 20° est indispensable pour éviter les risques d'arrachement des fibres du bois. L'okoumé est l'un des meilleurs bois de déroulage. Le bois madré ou tacheté peut être tranché en placages d'intérieur très décoratifs. Un enduit bouche-pores est à appliquer pour obtenir une bonne finition.

Le module d'élasticité longitudinal est de 9690 N/mm<sup>2</sup>, la compression axiale de 36 N/mm<sup>2</sup> et le point de saturation des fibres de 40%.

**Anatomie de la face transversale**

Ses cernes de croissance sont indistincts à distincts, dépendant de la dynamique passée de l'arbre étudié. L'alternance de couches pâles et foncées apparaît globalement bisannuelle, mais un rythme annuel peut toutefois être détecté.

Le bois d'okoumé est de porosité diffuse : les vaisseaux (5-20/mm<sup>2</sup>) sont tous de diamètre similaire. Il n'y a pas de ponctuation particulière. Le parenchyme axial est généralement absent. Les rayons (4-12/mm) ont une largeur de une à trois cellules. Ces cellules contiennent des grains de silice, et sont couchées avec un rang de cellules marginales droites.

**Utilisations industrielles**

Contreplaqué, panneau latté ou aggloméré, placage tranché, menuiserie intérieure légère, construction navale (surtout intérieure), équipement sportif, boîte à cigares et caisse d'emballage.

**Utilisations traditionnelles**

Fabrication de pirogue monoxyde peu durable, combustible (bois de chauffe), écorce et résine utilisées en médecine traditionnelle (résine pour soigner les plaies et désinfecter l'eau), résine pyrogène employée comme encens et torche indigène. Décoration d'écorce employée comme anti-dysentérique et antibiostatique en interne, et contre les infections buccales (antiseptique et analgésique) en gargarisme.

**Propriétés pharmacologiques et chimiques**

La résine est valorisée en cosmétique. Son huile essentielle présente des activités anti-oxydantes et inhibe la peroxydation des lipides. Elle contient principalement des monoterpénoïdes (96%) dont le delta-3-carène (72%), le terpinolène (6%), le p-cymène (4%), le limonène (4%) et l'alpha-terpinolène (4%). Des colles naturelles à base de tannin et/ou de lignine sont valorisées pour l'industrie des panneaux à partir des sous-produits ligneux d'okoumé vert. Les teneurs en tannin varient selon l'origine et la partie de l'arbre.

**Croissance**  
Croissance assez rapide de 0,73 ± 0,05 cm/an, tous diamètres confondus. Les arbres prélevés dans les classes diamétriques [10 cm - 50 cm] et [50 cm - 90 cm] ont un accroissement moyen de 0,34 ± 0,14 cm/an et 0,86 ± 0,06 cm/an respectivement.

2 Guide des Arbres d'Afrique Centrale
Autour 3

LA RÉFÉRENCE EN MATIÈRE DE BOIS TROPICAL

**CARREFOUR**  
INTERNATIONAL

**DU BOIS**

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JUN 2026  
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# *Trees of Central Africa* (Volume 1)—Families A through F

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# Manilkara: The African Massaranduba

---

Presentation and feedback from the field  
Luana Ilenich with Stéphane Glannaz (Rougier Mokabi)

# Potential Applications for Manilkara

## Application 1: Decking and Exterior Applications

- Dense, naturally durable wood
  - Suitable for outdoor applications with high exposure
  - A credible alternative to tropical woods already used for decking
- 

## Application 2: Boardwalks & Outdoor Structures

- High mechanical strength
  - Potential for piers, walkways, and hydraulic structures
  - Suitable for engineered wood infrastructure
- 

## Application 3: Heavy-duty / industrial flooring

- Very good wear resistance
- Suitable for high-traffic areas
- Positioned as “high-resistance tropical hardwood flooring”

What if Manilkara, a rarely used species, already had a place in applications the market is already familiar with?



Image source: Rougier

# Manilkara: Why Do These Products Work?

## What the European market is looking for

- Density
- Natural durability
- Mechanical strength
- Stability
- Aesthetics
- Technical reliability
- Certification & traceability
- Price

## Market context

Market already structured around a few species:



Source: CIRAD/Tropix

## Manilkara's positioning

- Manilkara already meets the desired criteria
- No need to create a new use
- “Usage-driven” rather than “species-driven” approach

# Manilkara: A Familiar Profile for the Market

Manilkara



Massaranduba



## Comparison of Manilkara and Massaranduba

| Criterion   | <i>Manilkara p.p</i><br>Manilkara                           | <i>Manilkara bidentata</i><br>Maçaranduba                        |
|---|---|--|
| Continent   | Africa  | Latin America  |
| Use class   | Class 4 - in contact with soil or fresh water               | Class 4 - in contact with soil or fresh water                    |
| Log diameter (cm)   | 80–100  | 60–120   |
| Specific gravity <sup>1</sup> (12%)                           | 1.00  | 1.10   |
| Monnin hardness <sup>1</sup>                                  | ≈ 10  | ≈ 12.9   |
| Modulus of elasticity <sup>1</sup> (MPa)                      | 21,300  | 24,410   |
| Static bending strength <sup>1</sup> (MPa)                    | 162   | 170  |
| Crushing strength <sup>1</sup> (MPa)                          | 86  | 89   |
| Resistance of heartwood to xylophagous fungi                  | Class 1 – very durable                                      | Class 1 – very durable   |
| Heartwood treatability  | Class 4 - not permeable                                     | Class 4 – not permeable  |
| Total radial shrinkage (Sr) / Total tangential shrinkage (St) | 6.6% / 10.1%  | 7.1% / 9.4%  |
| Description of wood   | Colour reference. Red-brown, Texture. Fine, Grain. Straight | Colour reference. Red brown, Texture. Fine Grain. Straight       |
| Uses  | Decking, bridges, Hydraulic works (fresh water)             | Decking, bridges, Heavy carpentry, Hydraulic works (fresh water) |
| Regulations   | Non-CITES (2025), EUDR                                      | Non-CITES (2025), EUDR   |
| Certification / Compliance                                    | FSC / EUDR Compliance                                       | FSC / EUDR Compliance  |

<sup>1</sup> At 12% moisture content, with 1 MPa = 1 N/mm<sup>2</sup>

Sources: CIRAD/Tropix - Manilkara Fact Sheet (4),  
CIRAD/Tropix – Massaranduba fact sheet (5)

## Key idea

Manilkara does not require the market to invent a new product; it can be integrated into existing applications:

- Decking
- Outdoor structures
- Heavy-duty flooring

## Why is this important?

- Reduction in perceived risk
- Comparable technical specifications
- Easier for importers and specifiers

The market consists of products and applications, not species names.

# Manilkara: But why is it still rarely used?

## What works

- High density (~1.00) (4)
- Class 1 EN 350 (4)
- Use class: Class 4 - in contact with soil or fresh water, this species naturally covers the use class 5 (4)
- Very good mechanical strength
- Credible outdoor potential
- FSC certification / EUDR compliance possible
- Resource available under concession

## What's holding things back

- Few commercial references
- Documentation still limited
- Risk perceived by buyers
- Lack of visible pilot projects
- Very conservative European market

The main obstacle is not only technical, it is also commercial.

# Manilkara: Feedback from the Field

## Initial findings

- ✓ **Confirmed interest** in decking and outdoor applications
- ✓ **Good alignment** with European market expectations
- ✓ **Mechanical properties and durability** perceived as credible
- ✓ **Potential identified** for technical outdoor projects
- ✓ **Positioning aligned** with trends toward supply diversification
- ✓ **Compatibility** with FSC/EUDR requirements and traceability

## What the market expects now

- ✓ Visible **pilot references**
- ✓ **Consistent supply**
- ✓ Accessible **technical documentation**
- ✓ **Standardized products** in European formats
- ✓ **Technical data** easily accessible to specifiers
- ✓ **Clear and secure offering** to reduce perceived risk

### Why is this species attracting attention?

- Resource already available in certified concessions
- Profile similar to wood species already known in the market
- Potential to diversify and secure supply chains
- Compatible with existing and well-established uses

**Manilkara does not seek to create a new market; it addresses an existing need.**

# Rougier: Company Overview

Website: [www.rougier.fr](http://www.rougier.fr)

**Country/Operating Area:** Gabon and Congo

**Concession area:** 1.5 million hectares of FSC®-certified forests

**Years in operation:** Founded in 1923

**Certifications:** FSC®

**Main activities:** Logging operations by Rougier Gabon and Rougier Congo (Mokabi SA)

Local industrial processing in Gabon and Congo

International marketing of products via Rougier Afrique International (RAI)



Source: Rougier (6)

# Rougier: Key Figures

540,000 m<sup>3</sup> of logs per year

2 African subsidiaries

3 processing plants

1,500 employees

40 wood species

Shipments to 40 countries worldwide

## Our products

Logs



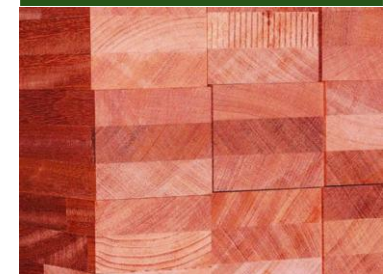
Plywood



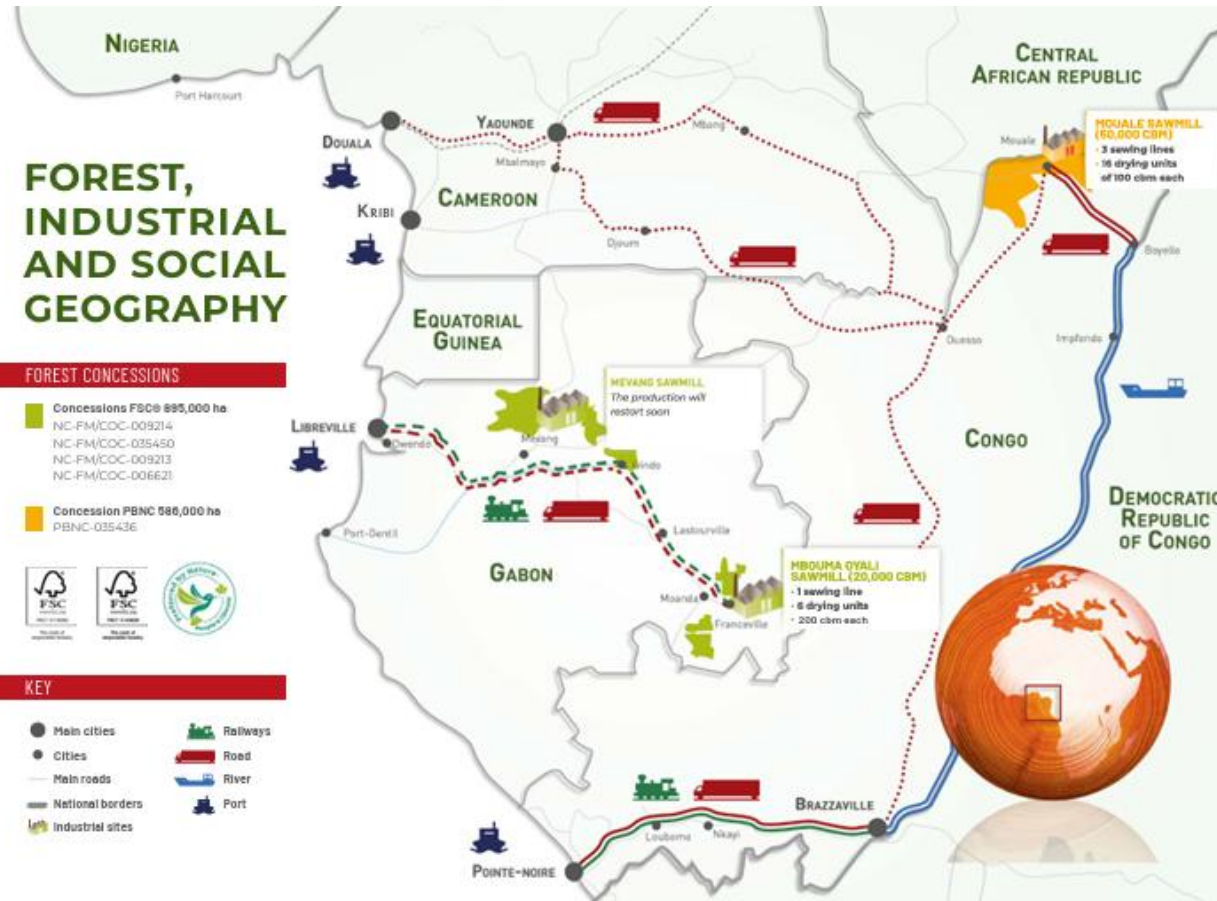
Sawn timber



Glued laminated timber



Source: Rougier (6)



Source: Rougier (6)

## ROUGIER GABON

"Le Narval" Building,  
Tahiti "Gué Gué" P.O. Box 130  
Libreville

## ROUGIER CONGO

Les Tours Jumelles  
Amilcar Cabral Avenue P.O. Box  
14512  
Brazzaville

# Manilkara p.p. (Manilkara)

September 2024

## Key indicators

|                         |         |
|-------------------------|---------|
| Density (stems/ha)      | 14.619  |
| Annual growth (cm/year) | 0.40    |
| DFR (cm)                | Unknown |
| DME (cm)                | 60      |

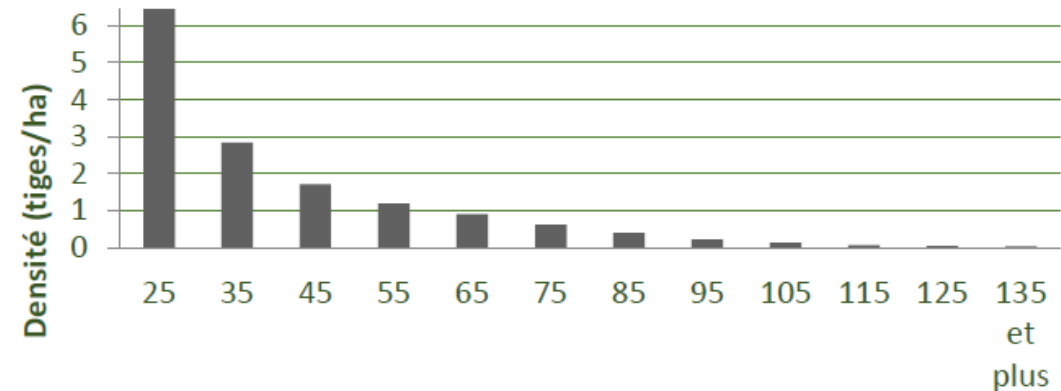
## Structural indicators

|                 | DMA       | CE          | %RE  | %RS            |
|-----------------|-----------|-------------|------|----------------|
| <b>Current</b>  | 80        | 0.60        | 97.3 | DFR<br>unknown |
| <b>Proposed</b> | <b>80</b> | <b>1.00</b> | 58.4 | DFR<br>unknown |

Density is very good. The population structure indicates long-term sustainability of the stand. The regeneration rate is high. Maintaining the DMA at DME+20 at 80 cm and increasing the utilization rate to 100% is justified.

*Data source: management inventory*

## Density (tiges/ha) by diameter class (cm)



Points centraux des classes de diamètre (cm)

## Recovery rate

| DMA \ CE | 1,00 | 0,95 | 0,90 | 0,85 | 0,80 | 0,75 | 0,70  | 0,65  | 0,60  | 0,55  | 0,50  | 0,45  | 0,40  |
|----------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| DME      | 42,6 | 44,8 | 47,3 | 50,1 | 53,2 | 56,8 | 60,8  | 65,5  | 70,9  | 77,4  | 85,1  | 94,6  | 106,4 |
| DME+10   | 50,4 | 53,0 | 56,0 | 59,3 | 63,0 | 67,2 | 71,9  | 77,5  | 83,9  | 91,6  | 100,7 | 111,9 | 125,9 |
| DME+20   | 58,4 | 61,5 | 64,9 | 68,7 | 73,0 | 77,9 | 83,4  | 89,8  | 97,3  | 106,2 | 116,8 | 129,8 | 146,0 |
| DME+30   | 70,1 | 73,8 | 77,9 | 82,5 | 87,6 | 93,5 | 100,2 | 107,9 | 116,9 | 127,5 | 140,2 | 155,8 | 175,3 |

# Rougier : Timber Species

## A

Acajou (*Khaya*)

Aiele (*Canarium schweinfurthii*)

Alep (*Desbordesia insignis*)

Andoung (*Monopetalanthus spp.*)

Angongui (*Assamella / Pericopsis elata*)

Ayous (*Triplochiton scleroxylon*)

Azobé (*Lophira alata*)

## B

Beli (*Julbernardia pellegriniana*)

Bilinga (*Nauclea diderrichii / Nauclea gillettii*)

Bossé (*Guarea cedrata*)

## D

Doussié (*Afzelia bipiendensis / Afzelia pachyloba*)

## E

Eyong (*Eribroma oblonga*)

Ekaba (*Tetraberlinia bifoliolata / Berlinia bifoliolata / Tetraberlinia tubmaniana*)

## F

Fraké (*Terminalia superba*)

## I

Iatandza (*Albizia ferruginea*)

Iroko (*Chlorophora excelsa*)

## K

Kosipo (*Entandrophragma candollei*)

## M

Manilkara (*Manilkara p.p*)

Moabi (*Baillonella toxisperma*)

Movingui (*Distemonanthus benthamianus*)

Mukulungu

## N

Niové (*Staudtia stipitata*)

## O

Okan (*Cylicodiscus gabunensis*)

Okoumé (*Aucoumea klaineana*)

Osanga (*Pteleopsis hylodendron*)

Ovengkol (*Guibourtia ehie*)

Ozigo (*Dacryodes buettneri*)

## P

Padouk (*Pterocarpus soyauxii*)

Pao Rosa (*Swartzia fistuloides*)

## S

Sapelli (*Entandrophragma utile*)

Sipo (*Entandrophragma utile*)

## T

Tali (*Erythrophleum suaveolens / Erythrophleum ivorense*)



# **Eveuss: The Untapped Potential of African Hardwood**

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*Presentation and feedback from the field*  
Luana Ilenich with Laurent Monnier and Michel Rougeron (Pallisco)

# Eveuss: *Klainedoxa gabonensis* a resource that remains largely untapped



A species little-known in the European market, available in significant volumes from FSC-certified sources

Mechanical properties and density among the highest of African species

Pallisco-CIFM has real-world industrial experience with **joists**: ~4 years of production

Applications identified as promising candidates for future development

Approach: cautious, well-documented, market-oriented

Eveuss is a resource with high technical potential, for which Pallisco-CIFM has now mastered an initial industrial application.



Image source: Pallisco-CIFM

# Eveuss Varieties



| Criteria                  | <i>Klainedoxa gabonensis</i>       | <i>Klainedoxa trillesii</i>  |
|---------------------------|------------------------------------|------------------------------|
| Common name               | Large-fruited Eveuss               | Small-fruited Eveuss         |
| Biological susceptibility | Less susceptible to fungal attacks | Highly susceptible to fungi  |
| Leaves                    | More lateral veins                 | Fewer lateral veins          |
| Fruits                    | Larger—dark green when ripe        | Bright orange, smaller       |
| Tree size                 | Large tree—up to 50 m              | Medium-sized tree—up to 30 m |
| Commercial potential      | More favorable                     | More limited                 |

Source: Doucet, J.-L. et al. *Descriptive sheets for Klainedoxa gabonensis and Klainedoxa trillesii prepared as part of Volume II of the book The Trees of Central Africa*. Unpublished working paper.

Preferred variety: Large-fruited Eveuss - *Klainedoxa gabonensis*

- More commonly used species
- Fewer problems observed
- Higher potential for value-added use
- Two Eveuss varieties: small-fruited and large-fruited

Pallisco-CIFM ensures rigorous sorting starting at the logging site through a specialized field team, guaranteeing the quality of the supply.

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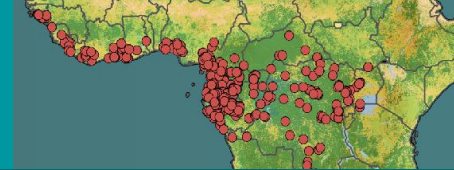
**More limited** use - small fruited Eveuss - *Klainedoxa trillesii*

- Less well-documented species
- Little field data available
- High susceptibility to fungi
- May present more issues with durability and stability

*Klainedoxa gabonensis*

Pierre ex Engl.

## Eveuss à gros fruits



50 m



Odeur

**Caractères distinctifs**

L'**eveuss à gros fruits** atteint 50 m de hauteur et 1,5 m de diamètre. La **cime** est **sphérique**. Le tronc est droit, non ramifié avant 20-25 m, avec de **hauts contreforts atteignant 5 m**. Les **jeunes arbres ont des épines**. L'écorce est gris-brun à rougeâtre, rugueuse et écailleuse. La tranche de l'écorce, brun clair devenant rose orange à l'extérieur et blanche à l'intérieur, est granuleuse, dure, mouillée et inodore. Les **feuilles** sont simples, alternes, entières et glabres. Le limbe, de dimension très variable, est largement ovale à étroitement elliptique (6-20 x 3-10 cm ou plus chez les jeunes arbres), **très coriace**, à base aiguë à cordée, atténué au sommet, avec **14-22 paires de nervures secondaires et des aréoles entre les nervilles de 0,2 mm de diamètre**. Les **stipules striées et recourbées** sont longues de **5-15 cm**, elles persistent longtemps au sol. Les inflorescences sont des panicules terminales pouvant atteindre 13 cm de longueur. Les **fleurs** pédicellées ont 5 sépales roses, 5 pétales blancs teintés de rose (2,8-3,5 mm) et 10 étamines à **anthères mauve foncé**. Les **fruits** sont des **drupes globuleuses plus larges que longues** (3,5-6,1 x 4,5-9,2 cm), **vert foncé à maturité**, dures et très fibreuses. Ils contiennent **5 noyaux (pyrènes)** très durs renfermant chacun une graine elliptique (6-12 x 3-5 mm).

L'eveuss à gros fruits se différencie de l'eveuss à petits fruits (*K. trillesii*) par ses feuilles avec plus de paires de nervures secondaires (14-22 contre 11-12) et des aréoles du limbe deux fois plus petites, ainsi que des fruits plus aplatis et généralement verts à maturité.

**Plantule**

La germination de l'eveuss à gros fruits est épigée, phanérocotyle, avec des cotylédons foliacés, allongés, à nervation rosée (3,5 x 0,8 cm). L'hypocotyle aplati de 7-10 cm est brun violacé. L'épicotyle aplati fait 3-4 cm. Les deux premières feuilles sont simples et opposées. Le limbe est coriace, oblong (9 x 3,5 cm), à base obtuse et sommet atténué. Le pétiole est épais et court. Une très longue stipule est présente.

**Habitat et tempérament**

L'eveuss à gros fruits est une espèce héliophile longévive, non grégaire. Il vit dans les forêts denses humides sempervirentes et semi-décidues, ainsi que dans les galeries forestières. Sa plantule se développe souvent dans les bouses d'éléphants et prospère sous un couvert végétal léger.

**Utilisation et statut de conservation**

L'eveuss à gros fruits est classé Préoccupation mineure (LC) sur la Liste Rouge de l'UICN.

Le bois est réputé très durable et utilisable en construction lourde extérieure. Toutefois, la présence d'un aubier peu différencié semble problématique, celui-ci semblant sensible aux champignons. Les graines sont comestibles crues ou cuites, et la chair du fruit est utilisée dans les sauces. L'écorce est employée pour soigner certaines maladies de la peau, les infections bactériennes et les cancers. L'eveuss permet également de traiter les rhumatismes, les inflammations, les infections cutanées, les fractures, les maladies vénériennes, la stérilité, l'impuissance et la diarrhée (HVC 5). En laboratoire, l'écorce a montré des activités anticancéreuses, antioxydantes et antimicrobiennes.

**Dispersion et interaction avec la faune**

Les graines de l'eveuss à gros fruits sont dispersées par les animaux. L'éléphant est le principal disperser. Le fruit est important pour le gorille en période de disette et il disperse la graine. Le céphalophe à dos jaune pourrait recracher le noyau lors de la rumination. Les rongeurs consomment les graines et occasionnellement les dispersent sur de courtes distances. Les petits singes peuvent consommer la chair du fruit, sans disperser la graine.

**Phénologie**

L'eveuss à gros fruits est brièvement décidu (parfois seulement une partie de la cime) et hermaphrodite. Il peut fructifier presque toute l'année.

| Espèce               | UICN            | HVC      | Fructification |     |       |      |     |            |
|----------------------|-----------------|----------|----------------|-----|-------|------|-----|------------|
|                      |                 |          | Cam            | Gab | RC    | RCA  | RDC |            |
| <i>K. gabonensis</i> | Pierre ex Engl. | LC       | 2018           | 5   | 2,4-5 | 1-12 | 2-3 | 12-1,4,7-8 |
|                      |                 | DME (cm) |                | 50  | 70    | 60   | 70  | 60         |



Tranche



Epines



Feuille



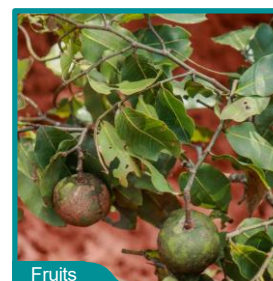
Nervation



Feuilles et stipules



Feuilles et inflorescences



Fruits



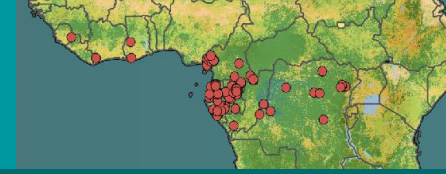
Plantule

Source: Doucet, J.-L. et al. *Klainedoxa gabonensis*. Fiche préparée dans le cadre du Tome II de *Les arbres d'Afrique centrale*. Document non publié.

*Klainedoxa trillesii*

Pierre ex Tiegh.

## Eveuss à petits fruits



30 m



Odeur



Odeur



Odeur



HVC



LC

**Caractères distinctifs**

L'**eveuss à petits fruits** atteint 30 m de hauteur et 1,2 m de diamètre. La cime est sphérique, dense, avec un feuillage sombre. Le tronc est droit, non ramifié sur 8-20 m, avec des contreforts atteignant 2 m de hauteur. L'écorce, gris-brun à rougeâtre, est écailleuse. La tranche de l'écorce, brun orangé à l'extérieur et blanche à l'intérieur, est granuleuse, fine, mouillée et inodore. Les feuilles sont simples, alternes, entières et glabres. Le limbe est largement elliptique à obovale (5-13 x 3-7 cm), **coriace**, à base aiguë parfois révolue, atténué au sommet. Les **11-12 paires de nervures secondaires** sont insérées à 45° par rapport à la nervure médiane et les **aréoles** formées par les nervilles font **0,5 mm de diamètre**. Les **stipules courbées et pointues, longues de 4-9 cm**, sont visibles au sol. Les inflorescences sont des panicules terminales, atteignant 10 cm de longueur. Les **fleurs (sub)sessiles** ont 5 pétales blanc-vert (2-2,5 mm) et 10 étamines avec des **anthères crème**. Les **fruits** sont des **drupes** sphériques à ellipsoïdes, généralement **plus longues que larges** (3,5-4,5 cm de diamètre), dures et très fibreuses, vertes devenant **orange brillant**. Ils contiennent 5 noyaux (pyrènes), avec des saillies en pointes, renfermant chacun une graine largement elliptique à circulaire (2,4-3 x 0,4-0,6 cm).

L'eveuss à petits fruits se différencie de l'eveuss à gros fruits (*K. gabonensis*) par ses fruits plus allongés et de couleur orange, ses feuilles avec moins de 14 paires de nervures secondaires et des aréoles deux fois plus grandes. La taille des feuilles n'est pas un bon critère car celles de *K. gabonensis* sont très variables.

**Plantule**

La germination de l'eveuss à petits fruits est épigée, phanérocotyle, avec des cotylédons foliacés, épaissis et allongés (4 x 0,5 cm). L'hypocotyle anguleux de 6-7 cm est brun violacé. L'épicotyle de 6 cm est vert. Les deux premières feuilles sont simples et opposées. Le limbe (11 x 4 cm) est obtus à la base et atténué au sommet. Le pétiole est épais et court (3 mm). Une stipule pointue et longue de 3 cm est présente.

**Habitat et tempérament**

L'eveuss à petits fruits est probablement une espèce pionnière longévive et non grégaire. Il vit dans les forêts denses humides sempervirentes et semi-décidues.

**Utilisation et statut de conservation**

L'eveuss à petits fruits est classé Préoccupation mineure sur la Liste Rouge de l'UICN.

Le bois pourrait être exploité sans distinction avec celui de l'eveuss à grandes feuilles (*K. gabonensis*), mais il est peu commercialisé. Le fruit ne semble pas être consommé et les éventuelles utilisations traditionnelles ne sont pas connues.

**Dispersion et interaction avec la faune**

Les graines de l'eveuss à petits fruits sont dispersées par les animaux. Les éléphants sont probablement les disperseurs principaux, mais aucune observation n'a été réalisée. Des noyaux ont été retrouvés dans des fèces de gorilles. Les rongeurs consomment la pulpe des fruits et les graines, qu'ils peuvent occasionnellement disperser.

**Phénologie**

L'eveuss à petits fruits est hermaphrodite et probablement brièvement décidu.

| Espèce              | UICN             | HVC      | Fructification |       |         |     |     |    |
|---------------------|------------------|----------|----------------|-------|---------|-----|-----|----|
|                     |                  |          | Cam            | Gab   | RC      | RCA | RDC |    |
| <i>K. trillesii</i> | Pierre ex Tiegh. | LC       | 2021           | 11-12 | 9-2,6-7 |     |     |    |
|                     |                  | DME (cm) |                | 50    | 70      | 60  |     | 60 |



Tranche



Base du tronc



Feuilles et stipules



Nervation



Fruits

Graine



Plantule

Source: Doucet, J.-L. et al. *Klainedoxa trillesii*. Fiche préparée dans le cadre du Tome II de *Les arbres d'Afrique centrale*. Document non publié.

# What Pallisco-CIFM specializes in today:

Eveuss joists made from large-fruited Eveuss (*Klainedoxa gabonensis*) large-fruited Eveuss



**Product: Eveuss joists (*Klainedoxa gabonensis*) for outdoor decks**

### Real-world industrial experience:

- ~4 years of production at Pallisco-CIFM
- Current moisture content: ~20%
- Standardized, commercialized product with field feedback

### Why it works for this product:

- The high density (~1.06) is a direct advantage for support structures (8)
- Current moisture content (~20%) consistent with joist applications
- Joist applications are compatible with the current technical profile of *Klainedoxa gabonensis* (small-fruited and large-fruited )
- For an importer, diversifying into joists means securing their decking supply without changing the final product



An application now well-established, with solid industrial experience and positive field feedback.

Image source: Pallisco-CIFM

Competitive positioning - joists: **Niové, Bilinga**

# Eveuss: Potential Applications and Future Prospects



Applications identified as potentially promising, still requiring technical and industrial validation prior to market launch.

## Technical interior joinery (stairs, thresholds, solid wood interior fittings)

- ✓ Very high mechanical performance: suitable for heavy-duty applications
- ✓ Indoor environments: reduced risk of dimensional changes
- ✓ Distinctive aesthetics: brown, fine grain, light and dark grain patterns, suitable for high-end cabinetry and luxury furniture

### Requirements for validation:

Additional drying tests, dimensional validation, machining, gluing, and pilot references

## Engineered wood flooring / technical flooring

- ✓ Monnin hardness ~12.2: among the most wear-resistant
- ✓ Identified potential for high-traffic areas
- ✓ Potential positioning as an alternative to species currently under pressure due to supply and price constraints

### Requirements for validation:

Specific drying tests, machining/stability validation, in-service performance, supervised pilot projects.

Technical properties that open up prospects for future targeted developments.

# Eveuss: Technical Specifications & Market Positioning



## Key Technical Data

| Parameter                            | Value   |
|--------------------------------------|---|
| Specific gravity <sup>1</sup>        | 1.06  |
| Monnin hardness <sup>1</sup>         | 12.2  |
| Modulus of elasticity <sup>1</sup>   | 25,620 MPa  |
| Static bending strength <sup>1</sup> | 168 MPa   |
| Natural durability                   | Class 2   |
| Use class                            | Class 3.2   |
| Regulations & compliance             | Non-CITES<br>EUDR Compliance -<br>FSC Pallisco-CIFM |

<sup>1</sup> At 12 % moisture content, with 1 MPa = 1 N/mm<sup>2</sup>  
Source: CIRAD/Tropix - Eveuss 2025 Data Sheet (8)

## Why the market should pay attention now:

- **Growing pressure** on major commercial timber species: increasing scarcity and price volatility
- **Good technical potential**
- Competitive **pricing** relative to reference timber species
- **Not listed in CITES appendices**- no trade restrictions on imports
- **Volumes available** from certified sources, potential for second-growth timber



A technically high-performing species, available from certified sources and without CITES restrictions.



# Eveuss: But why is it still rarely used?



## What works

- Very high density (~1.06) – among the heaviest tropical woods (8)
- Monnin hardness ~12.2 – wear resistance (8)
- Very good mechanical properties (MOE 25,620 MPa, MOR 168 MPa) (8)
- Credible technical profile for multiple applications
- Controlled drying following technical adjustments
- Volumes available from certified concessions
- FSC and OLB certified

## What's holding things back

- Very conservative European market regarding new species
- Lack of visibility
- Lack of dissemination of technical data to the market
- Few commercial references on the European market

*The main challenge is not technical: it relates to managing perceived risk and the gradual rollout of the product to the market.*

# Eveuss: Field Experience



## Initial insights

---

- ✓ **Industrially validated production**- joists have been on the market for ~4 years, controlled drying protocol
- ✓ **Confirmed interest** from European buyers for controlled applications
- ✓ **Good alignment** with European market expectations
- ✓ **Good alignment** with indoor or semi-exposed applications
- ✓ **Positioning aligned** with trends toward supply diversification
- ✓ OLB and FSC **certified** - documented traceability and legality, compliant with EUDR requirements

## What the market expects now

---

- ✓ **Pilot references** visible in supervised projects
- ✓ **Consistent supply**
- ✓ Accessible **technical documentation**
- ✓ **Standardized products** in European formats
- ✓ **Technical data** easily accessible to specifiers
- ✓ **Clear and secure offering** to reduce perceived risk

# Pallisco-CIFM: Company Profile



Website: <https://pallisco-cifm.com/>

**Country/Area of Operation:** Cameroon

**Concession area:** 7 forest concessions (UFA),  
388,949 ha managed

Operating in Cameroon **since 1972**

**Certifications:** FSC® since 2008 - OLB since 2005

## Main activities:

- Forestry company
- Sale of logs and processed products
- Primary and secondary processing
- International marketing

Source: Pallisco-cifm (7)

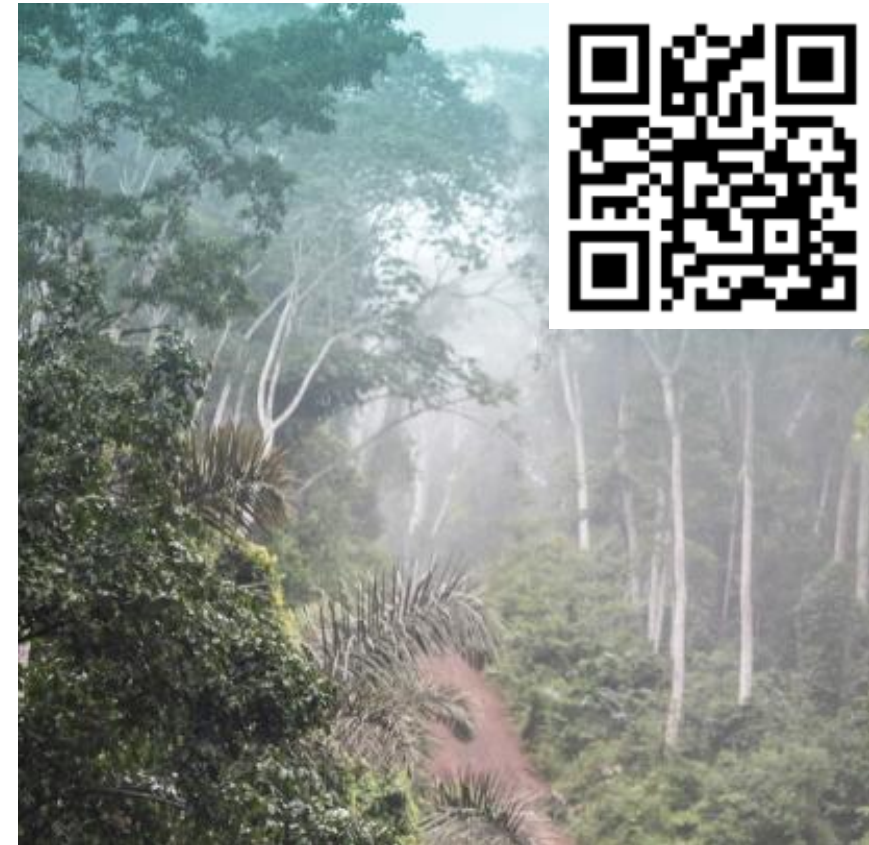


Image source: fair-and-precious

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LA RÉFÉRENCE EN MATIÈRE DE BOIS TROPICAL



# Pallisco-CIFM: Key Figures



## Our products

115,000 m<sup>3</sup> of timber harvested per year  
510 employees  
Over 25 wood species sold  
Shipments to 30 countries  
(Africa, Europe, the Americas, and Asia)

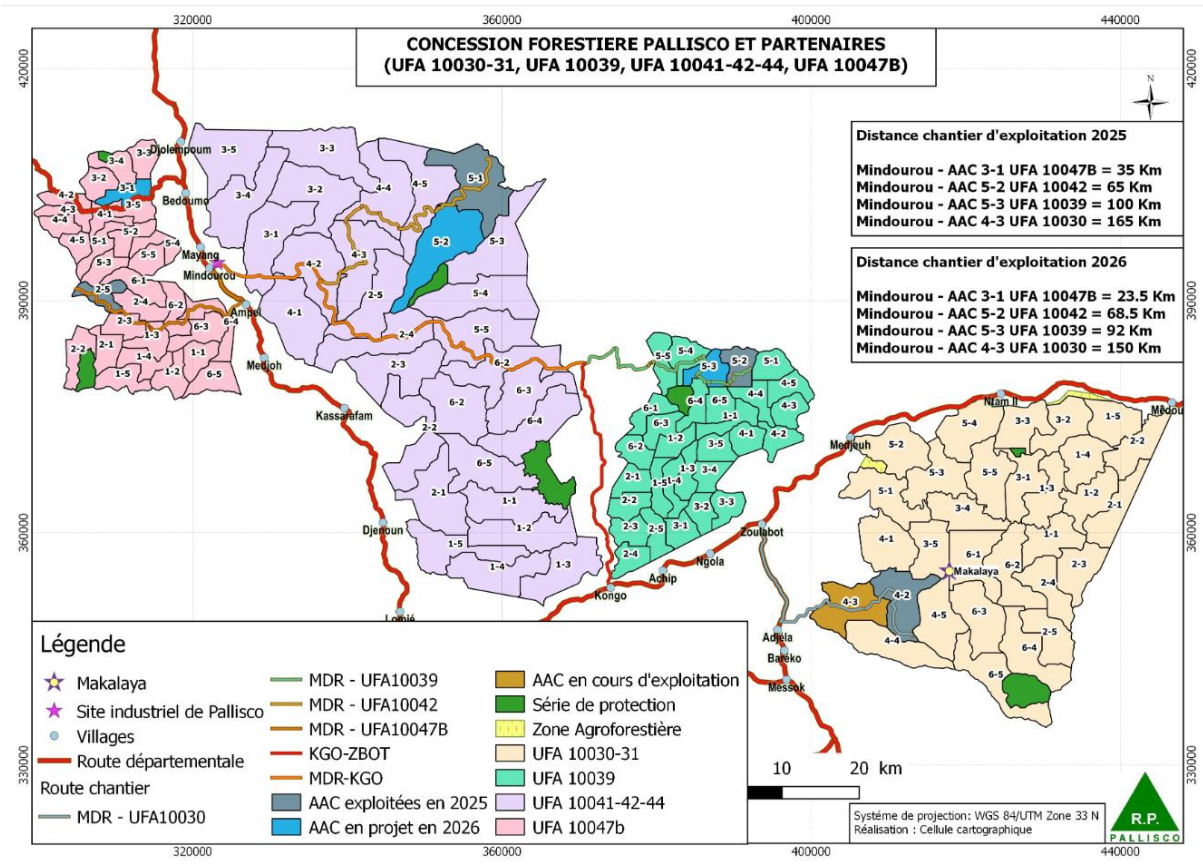


Source: Pallisco-CIFM

Source: Pallisco-CIFM (7)



# Pallisco-CIFM



**Headquarters**  
Alfred Saker Street  
Akwa – Douala, Cameroon

**Forestry & Industrial Site**  
Mindourou  
Haut-Nyong Department  
Eastern Region – Cameroon

Source: Pallisco-CIFM – Annual Logging Quotas for Fiscal Year 2026. (7)

# Pallisco-CIFM : Timber Species



## A

Acajou (*Khaya ivorensis*)  
Aiélé (*Canarium schweinfurthii*)  
Alep (*Desbordesia glaucescens*)  
Amouk (*Detarium macrocarpum*)  
Assamela (*Pericopsis elata*)  
Ayous (*Triplochiton scleroxylon*)

## B

Bété (*Mansonia altissima*)  
Bilinga (*Nauclea diderrichii*)  
Bossé clair (*Guarea cedrata*)

## D

Dabéma (*Piptadeniastrum africanum*)  
Dibétou (*Lovoa trichilioides*)  
Doussié rouge (*Azelia bipindensis*)

## E

Essia / Abalé (*Petersianthus macrocarpus*)  
Eveuss (*Klainedoxa gabonensis*)  
Eyek (*Pachyelasma tessmannii*)  
Eyong (*Eribroma oblongum*)

## F

Fraké (*Terminalia superba*)

## I

Iatandza (*Albizia ferruginea*)  
Ilomba (*Pycnanthus angolensis*)  
Iroko (*Milicia excelsa*)

## K

Kosipo (*Entandrophragma candollei*)  
Kotibé (*Nesogordonia papaverifera*)  
Koto (*Pterygota macrocarpa*)

## L

Lati (*Amphimas ferrugineus*)

## M

Moabi (*Baillonella toxisperma*)  
Movingui (*Disthemonantus bentamianus*)

## N

Niové (*Staudtia kamerunensis*)

## O

Okan (*Cylicodiscus gabunensis*)  
Olon (*Zanthoxylum heitzii*)  
Osanga (*Pteleopsis hylodendron*)

## P

Padouk rouge (*Pterocarpus soyauxii*)  
Pao rosa (*Swartzia fistuloides*)

## S

Sapelli (*Entandrophragma cylindricum*)  
Sipo (*Entandrophragma utile*)

## T

Tali (*Erythrophleum ivorense*)  
Tiama (*Entandrophragma angolense*)

## W

Wamba (*Tessmannia anomala*)

# Gluing Applied to Solid Wood

Jean Gérard - CIRAD





atibt

POUR UNE GESTION DURABLE DES FORÊTS TROPICALES

# COLLAGE APPLIQUÉ AUX BOIS MASSIFS :

## UN LEVIER TECHNOLOGIQUE AU SERVICE DES BOIS TROPICAUX AFRICAINS

Jean Gérard, CIRAD / Emmanuel Groutel, WALE

[www.atibt.org](http://www.atibt.org)

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Décembre 2025

*Ce guide a été élaboré par Jean Gérard (CIRAD) et Emmanuel Groutel (WALE), avec l'assistance de l'ATIBT, dans le cadre du projet ASP Cameroun, et a été réalisé avec le soutien financier de l'Union européenne. Son contenu relève de la seule responsabilité de ses auteurs et ne peut en aucun cas être considéré comme reflétant la position de l'Union européenne.*

# Gluing Applied to Solid Wood: A Technological Lever for African Tropical Woods

- ***Origin of the initiative***: several questions raised with ATIBT regarding technical aspects, quality labels, and certification systems applied to finger-jointed glued laminated timber.

- ***Implementation fram***



# Gluing Applied to Solid Wood: A Technological Lever for African Tropical Woods

- **General objective:** to assess the current state of knowledge regarding the gluing of solid tropical timber, its opportunities, associated constraints, and to provide a descriptive typology of existing products.
- **Specific objectives:**
  - ✓ To formalize the technical terminology of glued products and associated technologies.
  - ✓ To study the main types of adhesives based on the application categories of glued products.
  - ✓ Analyze the classification of glued products and the associated regulatory aspects (Europe, non-Europe).
  - ✓ Examine the physicochemical mechanisms of wood gluing and the corresponding recommendations.
  - ✓ Identify available quality marks and certifications (Europe, non-European).

# Gluing Applied to Solid Wood: A Technological Lever for African Tropical Woods

## DOCUMENT OUTLINE

- **1. General context and issues**
- **2. Specific challenges and benefits of reconstituting solid wood through gluing**
- **3. Objectives, context, and scope of the study**
- **4. The origin of solid wood reconstituted by gluing**
- **5. Technical terminology of glued solid wood and related technologies**
- **6. Adhesives for gluing solid wood**
- **7. Characteristics of adhesives and physicochemical mechanisms of wood bonding**
- **8. Implementation of wood gluing**
- **9. Summary: Application areas for solid wood gluing, corresponding adhesives, and associated gluing and pressing equipment**
- **10. Quality marks and certifications available in Europe for solid wood gluing**

## Outlook



LA RÉFÉRENCE EN MATIÈRE DE BOIS TROPICAL



| Continent       | Pays                             | Nombre de titulaires | Essences   |
|-----------------|----------------------------------|----------------------|--|
| Europe          | France                           | 13                   | Châtaignier, Chêne, Chêne Blanc d'Amérique, Chêne Rouge d'Amérique, Douglas, Frêne, Hêtre, Mélèze, Pin laricio, Pin maritime, Pin radiata, Pin sylvestre<br>Bossé, Kosipo, Limbali, Lotofa, Moabi, Mavingui, Niangon, Sapelli, Sipo<br>Louro Vermelho, Tauari<br>Red Grandis |
|                 | Espagne                          | 2                    | Chêne, Eucalyptus globulus, Pin maritime, Pin radiata  |
|                 | Italie                           | 1                    | Chêne, Chêne blanc d'Amérique, Hêtre, Mélèze, Pin sylvestre<br>Sapelli<br>Red grandis  |
|                 | Pologne                          | 1                    | Chêne, Hêtre, Pin sylvestre<br>Red grandis   |
|                 | Ukraine                          | 1                    | Hêtre, Chêne   |
| Afrique         | Côte d'Ivoire                    | 1                    | Acajou d'Afrique, Bilinga, Bossé, Cordia d'Afrique, Dabéma, Difou, Doussié, Ebiara, Framiré, Iatandza, Iroko, Kotibé, Limbali, Lotofa, Makoré, Mavingui, Niangon, Onzabili, Sapelli, Sipo, Tiama<br>Hévéa  |
|                 | Ghana                            | 1                    | Acajou, Bossé, Cedro, Doussié, Framiré, Iroko, Kosipo, Kotibé, Limbali, Lotofa, Makoré, Niangon, Mavingui, Sapelli, Tiama  |
|                 | République du Congo              | 2                    | Bossé, Kanda, Kosipo, Limbali, Sipo, Sapelli   |
|                 | République Démocratique du Congo | 1                    | Kosipo, Sipo, Sapelli  |
| Amérique du sud | Uruguay                          | 1                    | Red grandis  |
| Asie            | Malaisie                         | 1                    | Acajou d'Afrique, Kosipo, Sapelli<br>Red grandis,  |

**Holders of the  
CTB Quality Mark  
for Finger-Jointed  
Laminated Timber  
for African  
Tropical Woods  
(as of June 1,  
2026)**

# Gluing applied to solid wood: a technological breakthrough for African tropical hardwoods



# Gluing applied to solid wood: a technological breakthrough for African tropical hardwoods



# Gluing applied to solid wood: a technological breakthrough for African tropical hardwoods



# Gluing applied to solid wood: a technological breakthrough for African tropical hardwoods



# Conclusion

- Tropical woods offer **excellent technical performance and a wide range of applications.**
- Tropical forests are home to **a wide variety of tree species that** are still underutilized.
- Today, the market remains **focused on just a few species.**
- **LKTS represent an opportunity to diversify resources and materials.**
- Their development can **open up new possibilities for projects and wood professionals.**

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**THANK YOU**

The logo for atibt features a small globe icon above the lowercase text 'atibt'.

LA RÉFÉRENCE EN MATIÈRE DE BOIS TROPICAL

|  |                            |               |
|--|----------------------------|---------------|
|  The logo for Carrefour International du Bois, featuring the text 'CARREFOUR INTERNATIONAL' in a dark box, 'DU BOIS' in large yellow letters, and 'INTERNATIONAL' in smaller letters below. | <b>2   3   4</b>           | <b>NANTES</b> |
|  | <b>JUN 2026</b>            | <b>FRANCE</b> |
|  | <b>AU CŒUR DES MARCHÉS</b> |               |
| <b>TIMBERSHOW.COM</b>  |                            |               |

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