







Keynote Presentation by Haigan Murray COCONUT KNOWLEDGE CENTER

Strengthening the Resilience of the Coconut Sector: **Policy Innovation** and Best Practices in Tissue Culture

Ministry of Foreign Affairs, Center for Education and Training, in collaboration with Roemah Kelapa Indonesia seminar, 3rd June 2025

Indonesia's Coconut Sector: **Strategic Context**

Bappenas: Coconut Downstreaming Roadmap Vision for 2045: A Modern, Inclusive & Competitive Sector



Increase coconut \checkmark production & productivity

Diversify coconut derivative products



Boost domestic consumption & export competitiveness



Strengthen the coconut downstream ecosystem

Scope & Focus

Aligns with domestic and global market trends







Bappenas: Dr Leonardo Teguh Sambodo

'Coconut Crisis' is well-documented

Coconut sector challenges have been discussed in conferences and forums for 20+ years.

ISSUE
Productivity
Ownership
Replanting
Market distortion
Circular economy

Investment

STATUS

Stagnant / declining

Smallholder-dominated

Negligible activity

Driven by whole nut exports

Rarely adopted

No new private investment





BUSINESS . MARKETS

CONFSIA'S COCONI IT EXPORTS SOAR IN FARLY 2025: CHINA LEADS AS TOP

Coconut processing firms axe 3,500 workers amid raw material dearth

The government has agreed to impose a levy on coconut exports and derivatives, but has vet to decide whether to impose an export moratorium as proposed by the industry

eoi Ghitari (The Jakarta Post)

(AA) () (# Git full Article





Indonesia Coconut Estate - National Overview



Senility Defined:

Age: >60 years (tall varieties)



Senile Trees: **30–40%** → **1.0–1.4 million** hectares





Critical 2025-2045 **National Priority**

Expand Nursery Capacity Scale required to meet 200M+ seedlings

Farmer Support

Incentives during non-productive years

Secure Market Linkage Avoid repeating commodity trap cycles



Climate-Smart Varieties

Ensure sustainability & future resilience

National Ambition for Coconut Sector Growth

Indonesia's Vision 2045:

Grow annual coconut production from

15.1B →32.1B coconuts

2045 Target

Doubling National Output



+17 Billion coconuts

/year within 20 years

In a practical context, how many years to accomplish?





How best to coordinate across a wide stakeholder network?

Global Benchmarks – What Others Are Doing Right

Philip	pines
--------	-------

India

Sri Lanka

Thailand

Strong goverment support

Strong farmer-led model

R&D and circular economy focus

Industry + government synergy

These nations have **well-funded**, **coconut-specific institutions** — a strong backbone for coordination, innovation, and industry development.

Toward a Coordinated Future – What Can Indonesia Learn?



Could an **"Indonesia** Coconut Development Authority" lead integration ?

India's model offers some key lessons

- FPOs are central to policy
- Gov't support flows through cooperatives and private sector
- Academia focuses on R&D, sustainability, and climate adaptation
- Regional processing hubs bring value addition closer to farmers

Indonesia can **adapt global best practices,** and build a local model that empowers farmers, drives investment, and supports innovation.

Strategic Investment Opportunity in Indonesia's Coconut Sector



Indonesia aims for **96% of coconut production** to support **domestic downstreaming** (value-added processing).

This shift may affect countries like **China, Vietnam, Thailand, and Malaysia**, which import large volumes of Indonesian whole coconuts.



Turn potential trade disruption into Foreign Direct Investment (FDI).



Invite partners to invest in Indonesia's coconut value chain, rather than just import from it.

Coconut Water — A Wasted Asset with FDI Potential



An estimated 3.68 million tonnes of coconut water are discarded annually in Indonesia.

Processors in **Thailand** and **Vietnam** are **actively seeking** coconut water solutions for expanding beverage markets. They are also **willing to invest** into coconut water supply chains.

Data: Predicting the future – A 20-Year Crisis?

We expect a deep inverse bell curve:

10–20 years

of decline/stagnation followed by a slow **gradual recovery**



The time to invest in good data is now!

The Urgency of Predictive Data

Key Questions for Sustainability



How fast is coconut productivity declining?

Will the processing sector reach commercial collapse?



What is the actual timeline for recovery?

Who will survive the long downturn?

Proposal: Creation

of a new predictive model to map:

- Production decline
 Replanting timelines
 Policy intervention points
 Farmer aging & labor trends
 Seedling & tissue culture
 - Seedling & tissue culture development windows

Accurate data model to support **strategic decision-making** for government, industry and investors.

Replanting Indonesia's Senile Coconut Estate

Reviving Productivity through Coordinated National Action





Without rapid replanting, **commercial processing and export markets could collapse** within 5–10 years Density 150 seedlings /hectare

Area (Low-High) **1.0M - 1.4M** hectares

Seedlings required 150M - 210M seedlings Spacing 7-9m (variety)

Replanting

Needs

Varieties Tall, Dwarf, Hybrid



Conventional replanting cost & timeline

Seedling Cost: USD 1.5–3.0 each	Total Planting Cost: USD 225M - 630M	Full Program (training, logistics): USD 1,5 - 3.0 Billion
Variety	Maturity	Peak Yield

Time to Productivity

Variety	Maturity	Peak Yield
Hybrid/Dwarfs Talls	5-6 years 8-10 years	10-25 years 10-25 years

Wide acceptance of an Action Plan

Accelerate Replanting

Large-scale programs using high-yield & resilient varieties



Expand Nursery Capacity

Invest in quality seedling production & tissue culture



Support Smallholder Farmers

Incentives, training, replanting grants



Policy Reform

Shifting the upstream - smallholder to corporate ratio from $99:1 \rightarrow 70:30$

Promote inclusive & sustainable NES (nucleus estate schemes)

action... mapping what, where and who?

Coconut Tissue Culture: Current Use & Future Potential

Clonal propagation is still under development. Coconut is difficult to propagate in vitro and requires extensive research

Embryo Culture Applications

- Used to rescue high-value mutant coconuts:
- Like Kopyor (Indonesia) and Macapuno (Philippines)
- These varieties cannot germinate naturally; must be cultured in vitro
- The market is small but growing, for drinks and desserts from these high value varieties



- Transporting embryos instead of whole nuts for germplasm exchange
- Breeding and selection tool to develop elite planting material



- Clonal propagation is also not yet commercially viable for replanting
- ✓ Used strategically to propagate parental palms
 → seed gardens → semi-/bi-clonal seeds

Conclusion

Tissue culture is a long-term strategy

2 Curr

Current focus should be on R&D, elite line conservation, and breeding programs

Current Status of Tissue Culture

Commercial Use Research Adoption Bottlenecks Viable Plantlet Yield Field Roll-out (IDN) India Benchmark Very limited, pilot level Protocol Improvements, Inconsistent Mainly public institutions Contamination, low success, slow pace <5% of embryo Minimal CPCRI-ied, low deployment



The **coconut crisis is immediate**: action needed now

Short-term needs (Replanting, Supply Gap)



Tissue Culture

Long-term solution requires both time & capital

Key Challenges of Tissue Culture



Recalcitrant Nature: Difficult in-vitro regeneration



High Production Costs: Labor + Infrastructure heavy

Low Conversion Rates: Few embryos = viable plants



Genetic Fidelity: Requires strict quality testing



Strategic Value – But with Focus

Germplasm Conservation

Long-term preservation of genetic diversity

Elite Planting Material

– High yield, disease-free hybrids for targeted zone

Explore More from the CKC Jakarta Conference

To deepen your understanding of the key themes and insights shaping the future of the coconut sector, we invite you to explore the CKC Jakarta Conference Wrap-Up Document.



Access Full Speaker Presentations



Strategic discussions and expert recommendation



sions Additional resources and n ongoing updates



Stay connected and keep the momentum

www.coconutknowledgecenter.com

"Coconut is a versatile plant that can create a sustainable economic chain. However, this potential will be meaningless without synergy."

— Prof. (Ret.) Tun Tedja Irawadi

