



# Coconut Multiverse

*Series* | by Haigan Murray

## Series Introduction:

The Coconut Multiverse is a regenerative, modular framework to transform coconut agriculture into a multi-sector platform for food, climate, and livelihoods.

An original language system:

- ✦ **Coconut Multiverse**
- ✦ **Regenerative Alpha**
- ✦ **Regen Nodes**
- ✦ **Alpha Module**
- ✦ **Platform Crop**
- ✦ **Coconut Multiverse Fund of Funds (CPMF)**

The Coconut Multiverse framework and its terminology represent original systems thinking developed by Haigan Murray, shared in the spirit of open innovation to unlock regenerative investment in coconut agriculture.

Haigan's aim is separating the signal from the noise, simplifying the core messages, and grounding them for different audiences so that complex innovation may become widely understood and adopted.

## The Coconut Multiverse Paper Series

This series introduces a new regenerative model for the global coconut sector, developed by Haigan Murray. Each paper presents a foundational layer in the strategic architecture of the Coconut Multiverse:



Paper 1:  
**A Coconut Multiverse  
– Overview**

Introduces the core concept of coconut as a platform crop, enabling modular, regenerative systems.



Paper 2:  
**Derivative Product Map  
for Modular Business Units**

Outlines the 80+ product streams and business modules within the Coconut Multiverse.



Paper 3:  
**Regenerative Alpha:  
The Coconut Palm as  
a Platform Crop**

Presents a new investment thesis linking ecosystem regeneration with superior financial returns.



Paper 4:  
**Generating Regenerative  
Alpha – The Coconut  
Multiverse Fund of Funds**

Describes the fund architecture to mobilize capital across modules and deliver real asset returns.

# A Coconut Multiverse – Overview

## What This Paper Is About:

This paper introduces a new idea: the **Coconut Multiverse** - a way to think about the coconut palm not just as a single crop, but as a **source of many interconnected** businesses. Each part of the coconut tree can become the foundation for a different type of product and each of these product areas can be treated as a **"module"** in a larger system.

The Coconut Multiverse helps investors, governments, and farmers see the **big picture** of what's possible with coconut. Instead of just growing coconuts and selling them cheaply (as many countries have done for decades), this model shows how we can turn coconut farming into a **modern, regenerative, and high-value industry** that benefits people and the planet.

It also explains how different kinds of investors - from big infrastructure funds to climate-focused donors can **plug into different "universes"** within the Multiverse, depending on their goals, values, and timelines.

### Glossary of Key Terms

| Term                      | Meaning                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Coconut Multiverse</b> | A system of multiple, separate but connected coconut-based businesses (called modules), all stemming from one crop - coconut palm. |
| <b>Platform Crop</b>      | A crop that supports many different industries and ecosystems, not just a single commodity product.                                |
| <b>Module</b>             | A self-contained business built around a part of the coconut palm.                                                                 |
| <b>Universe</b>           | Another word for a business module, used to emphasize how diverse and distinct each one can be.                                    |
| <b>Regenerative</b>       | A system that not only produces goods but also improves ecosystems over time.                                                      |
| <b>Capital Stack</b>      | A way to describe how different types of money are layered into a project or business.                                             |
| <b>Investor Profile</b>   | The type of investor suited to a specific module.                                                                                  |

# Coconut Multiverse Series : Paper 1

## A Coconut Multiverse Overview

\*This is a series of original writings developed by Haigan Murray.  
Please cite appropriately when referencing.

**A multiverse in physics describes a system of co-existing, diverse realities.**

**The Coconut Multiverse** describes a set of modular business domains emerging from the coconut palm, each with its own logic, capital needs, technologies, and market trajectories, yet interconnected through a shared biological and regenerative platform.

### Each “Universe” Represents:



#### Distinct business modules

– e.g. food & beverage, timber & biomass, activated carbon, seed genetics, functional health products, energy, climate services.



#### Unique technical ecosystems

– different know-how, infrastructure, and inputs.



#### Custom investor profiles

– from private equity and infrastructure to impact funds, VC, carbon finance, and blended capital stacks.



#### Diverse regenerative impacts

– ecological restoration, rural livelihoods, biodiversity, carbon removal, food security.

### Why This Framing Matters:

**1 Explains** coconuts versatility and complexity without overwhelming - investors can engage at the module level.

**2 Enables** modular capital deployment - funders can tap into individual universes or the whole multiverse.

**3 Reframes** the coconut sector from a legacy monoculture to a regenerative productivity platform with high optionality.

## Coconut Multiverse

**Rich, complex system of many interconnected but distinct opportunities and outcomes.**

Modular, regenerative system built around full-spectrum utilization of the coconut palm and designed as a proprietary modular framework of academic and field tested models.

### Requiring:

- A system where multiple venture models coexist synergistically.
- A innovative space of possibility and diversity of value streams.

### Modules Overview:

**Designed as a creative methodology to unpack complexity and communicate the full potential of the coconut sector in an accessible and dynamic way.**

**Modular framing** enables flexible and phased entry points to develop a regenerative, circular, inclusive agricultural economy. Each module represents a self-contained business unit attending to its unique skill requirements, capital and market access needs.

**Modules work-in** as innovation collabs with academia, SME's or startups, yet designed to integrate to a Platform Level Investment (funding integration and growth of the entire scaffolding).

### Modular Benefits:



#### Phased Investment

Modules can be developed sequentially or in parallel.



#### De-risked Entry

Investors back single modules or bundled clusters.



#### Flexible Capital

Tailor funding per module (low to high CAPEX).



#### Regenerative System

Zero-waste principles across modules.



#### Inclusive Growth

Integrates smallholders.



#### Platform Investment

Integration services.

## Modular Roadmap:

- Starts with high-value, low-CAPEX modules.
- Build infrastructure for second-tier processing.
- Integrate circular systems as scale grows.
- Replicate regionally.

### Platform Crop and Regenerative Alpha:

By positioning as a **'platform crop'** coconut palm positions as a multi-output regenerative asset, a regenerative alpha offering high market returns across diverse value streams. As platform crop coconut palm offers up ecosystem services and functions such as agroforestry backbone, soil regeneration, intercropping scaffolding and climate change opportunities.

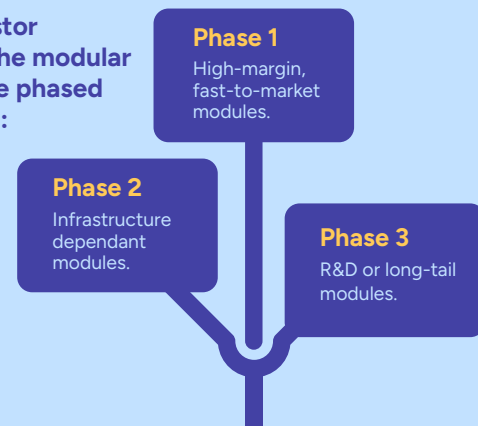
## New Investment Logic:

**Coconut is a mature industry and overlooked agri-business system.**

It is an extraordinarily versatile crop requiring multiple levels of knowhow and market access points.

Capital finds it difficult to unpack complex value systems and investors are nervous about complexity, finance becomes another barrier to execution.

**From an investor perspective the modular system can be phased and de-risked:**



## Allowing flexibility for:



**Different investor profiles**  
(impact, infrastructure, innovation)



**Risk management**



**Capital layering**

### Executing on modular impact supports enterprise level ESG investment opportunities:

- Livelihood creation across rural sectors.
- Climate-positive farming systems.
- Circular bioeconomy anchored in platform crop.
- In setting / decarbonisation of supply chains.

Applying this modular approach as **'systems thinking'** new coconut business models appeal to a wider range of strategic investors.



### Flexibility in investment deployment:



Single Module



Clustered Modules



Platform Investment

### Modular clarity allows for:



Easier syndication of capital



Targeted due diligence



Alignment with different investment themes  
(climate, rural development, consumer brands)

### Ongoing Module Development:

Multiverse innovation opportunities remain unserved: genetic conservation, planting materials, tissue culture, carbon credits, bioenergy and biogas are strong IP development opportunities for commercialisation.

### Recap: Why Coconut? Why Now?

**Global trends:**  
climate-smart agriculture,  
regenerative systems,  
zero-waste supply chains.

**Aging trees + unmet demand = supply gap acceleration**  
and transformation need

Gaps in capital, infrastructure, effective knowledge → **modular solutions.**



# Derivative Product Map for Modular Business Units

## What This Paper Is About:

This paper maps out the full range of **products and business units** that can be built from a single coconut palm. It shows how the coconut isn't just one product, it's the **source of over 80 product streams** across food, health, energy, climate, and agricultural sectors.

These products are grouped into **modular business units**, called "**Regen Nodes**", each with their own production logic and income potential.

The paper also introduces the "**Alpha Module**" - a central regenerative engine made up of farming systems, nurseries, agroforestry services, and carbon-related activities. This Alpha Module powers the entire Coconut Multiverse by providing seedlings, soil regeneration, and a resilient farming base.

The goal is to show investors, planners, and entrepreneurs how coconut can be transformed into a **modular regenerative economy**, with each module representing a self-contained opportunity.

### Glossary of Key Terms

| Term                                      | Meaning                                                                                                                                                    |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Alpha Module™</b>                      | The core regenerative unit of the Coconut Multiverse. It includes seedling production, agroforestry design, carbon services, and soil restoration.         |
| <b>Regen Node</b>                         | A modular business unit that turns a part of the coconut palm (or its system) into a commercial opportunity — e.g. processing, energy, or carbon projects. |
| <b>Modular Business Unit</b>              | A stand-alone business or value chain segment based on a part of the coconut palm. Can be scaled independently or linked together.                         |
| <b>Derivative Products</b>                | The many end products that can come from coconuts - like oil, water, flour, sugar, and even vinegar or energy pellets.                                     |
| <b>Coconut Biochar</b>                    | A soil additive made from coconut shells or husk, used for improving soil health and locking in carbon.                                                    |
| <b>Carbon Sequestration</b>               | The process of capturing and storing atmospheric carbon dioxide through farming or forestry activities - monetizable through carbon credits.               |
| <b>Coconut Farming Training Academies</b> | Education and capacity-building centres for farmers, technicians, and community leaders focused on regenerative practices.                                 |

# Coconut Multiverse Series : Paper 2

## Multiverse Modules

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**Derivative  
Product Map**  
for Modular Business Units:

**1** Alpha  
Module

**8** Regen  
Nodes

**85** Product  
Streams

MASTER MODULE: Central Regenerative Engine

### 'The Alpha Module' Source : Coconut Multiverse

Platform Crop - "Regen Node 1"

**Agroforestry,  
Farming Systems &  
Regeneration Services**



| Category                                           | Details                                           |
|----------------------------------------------------|---------------------------------------------------|
| Intercropping Programs                             | Chillies, tomato, coffee, cacao, turmeric, banana |
| Agroforestry Design & Management Services          | Climate change project development                |
| Elite Seedling Nurseries                           | Hybrid coconut propagation, genetic conservation  |
| Soil Regeneration Inputs                           | Biochar + coir blends                             |
| Coconut Farming Training Academies                 | Education services                                |
| Carbon Sequestration & Climate Certification Units | Carbon markets                                    |
| Coconut husk biochar blends                        | Carbon-rich fertiliser                            |
| Coco-based compost teas                            | Microbial inoculants                              |
| Coconut sugar fermentation residues                | Organic fertiliser                                |
| Carbon credits                                     | Soil carbon, agroforestry biomass, biochar        |
| In-situ coconut husk mulching                      | Water retention, weed control                     |

*Regenerate land and monetise ecosystem services and scaffolding*

| Category                     | Details                                                                  |
|------------------------------|--------------------------------------------------------------------------|
| Coconut Water                | RTD drinks, concentrates                                                 |
| Coconut Water Powder         | Hydration formulations, sports, energy drinks                            |
| Coconut Milk & Cream         | Dairy-free canned, UHT, frozen                                           |
| Coconut Milk Powder          | Bakery, beverages                                                        |
| Desiccated Coconut           | Fine, medium, chips                                                      |
| Coconut Flour                | Gluten-free baking ingredient                                            |
| Coconut Sugar                | From sap – low GI sweetener                                              |
| Coconut Vinegar              | From sap - fermented product                                             |
| Nata de Coco                 | Gelatinous dessert base                                                  |
| Coconut Aminos               | Soy sauce alternative, soy-free seasoning sauces                         |
| RBD - Copra Oil / Paring Oil | Refined, bleached, deodorised                                            |
| RBD Oil Powder               | Bakery, beverages                                                        |
| Virgin Coconut Oil (VCO)     | Cold-pressed healthy oil                                                 |
| MCT Oil Fractions            | Medium-chain triglycerides C8/C10 fractions for keto & medical nutrition |
| MCT Oil Powder               | Sports nutrition                                                         |
| Coconut Yogurt/Ice Cream     | Plant-based dairy alternatives                                           |
| Coconut meat snacks          | Chips, jerky, granola inclusions                                         |

*FMCG - fast-moving, consumer-facing products*

Processing - "Regen Node 2"

**Food & Beverage  
Products**





Coconut oils, derivatives,  
and fermentation processes  
- "Regen Node 3"

## Functional Health, Nutraceutical & Pharmaceutical



| Category                      | Details                                         |
|-------------------------------|-------------------------------------------------|
| Lauric acid & monolaurin      | Anti-microbial anti-viral compound, supplements |
| MCT Capsules & Powders        | Sports nutrition, nootropics, clinical          |
| Coconut Protein Isolate       | Plant protein, plant based beverages            |
| Prebiotic Coconut fibre       | Gut health                                      |
| Immature Husk short fibre     | Metabolic health                                |
| Derived collagen alternatives | Cosmeceuticals                                  |
| Polyphenol Extracts           | Anti-aging, antioxidants                        |
| Peptide concentrate           | Cosmeceutical/anti-ageing                       |
| Phenolics & antioxidants      | Capsules, functional foods                      |
| Coconut sap inulin & FOS      | Prebiotics                                      |
| Shell polyphenols             | Nutraceutical extracts                          |

*High-margin speciality ingredients*

| Category                                 | Details                             |
|------------------------------------------|-------------------------------------|
| Natural Soap & Shampoo Bars              |                                     |
| Coconut Oil-based Lotions & Moisturizers |                                     |
| Lip Balm, Hair Oil, Body Scrubs          |                                     |
| Deodorants & Toothpaste                  |                                     |
| Skin Treatment Oils                      | Eczema, baby oil, etc.              |
| Essential Oils & Fragrance Extracts      | With co-distilled herbs             |
| Fatty alcohols & fatty acids             | C12-C14 lauric range                |
| Sodium lauryl sulphate                   | SLS/sodium coco sulphate (shampoos) |
| Coco aminopropyl betaine                 | Mild surfactant                     |
| Coco diethanolamine                      | Foam booster                        |
| Activated carbon facial masks & filters  |                                     |

*Feedstocks for beauty, home-care and industrial surfactants*

RBD, Virgin oil, MCT oil, derivatives  
- "Regen Node 4"

## Cosmetics, Personal Care & Oleochemicals



Waste Stream - Shell, husk, trunk,  
frond, coir pith - "Regen Node 3"

## Biomass Materials & Bioproducts



| Category                              | Details                                                  |
|---------------------------------------|----------------------------------------------------------|
| Activated Carbon                      | From shell - filtration, pharmaceuticals, industrial use |
| Charcoal Briquettes                   | Shisha, BBQ and industrial fuel                          |
| Shell Powder                          | Composites, bio-plastics                                 |
| Tender Husk                           | Short fibres, food & industrial use                      |
| Coir Fiber                            | Ropes, mats, brushes, geo-textiles, composite materials  |
| Coir Pith/Peat                        | Hydroponics, soil enhancer                               |
| Trunk Timber                          | Furniture, construction, engineered panels               |
| Coconut Wood Veneer & Plywood         | Furniture, construction, engineered panels               |
| Coconut Frond & Root Ball Handicrafts | Brooms, baskets, eco products                            |
| Coconut Leaf Plates & Utensils        | Biodegradable packaging                                  |

*Long-life physical assets, carbon removal and durable goods*

| Category                           | Details                                   |
|------------------------------------|-------------------------------------------|
| Biomass Pellets                    | Renewable energy, co-firing               |
| Gasification to Syngas Units       | Renewable energy, syngas, bioethanol, DME |
| Coconut-based Biogas Systems       | From coir waste or sap                    |
| Pyrolysis Oils                     | Biofuel intermediates                     |
| Waste-to-Energy Facilities         | Integrated with processing hubs           |
| Coconut shell charcoal             | Traditional                               |
| High-grade activated carbon        | Water & air filtration, supercapacitors   |
| Biochar                            | Soil amendment & carbon credit asset      |
| Biomass pellets / briquettes       | Industrial boilers                        |
| Coconut methyl ester               | Biodiesel                                 |
| Anaerobic digestion of husk liquor | Syngas & biogas                           |

*Low-carbon energy, fuels, and chemical intermediates*

Plantation & Processing Waste Streams  
- Shell, husk, fronds, processing residues  
- "Regen Node 6"

## Bioenergy, Green Chemicals & Circular Economy





Coconut derivatives processed to industrial standards "Regen Node 7"

Industrial & Technical Applications



| Category                                     | Details                                             |
|----------------------------------------------|-----------------------------------------------------|
| Bio-composites                               | Shell fibre + plastic for auto/interior use         |
| Green Construction Materials                 | Coir-reinforced panels, insulation, acoustic panels |
| Packaging Materials                          | Coir trays, moulded husk packaging                  |
| 3D Printing Bio-Fillers                      | Coconut shell powder                                |
| Coconut-based Adhesives, Resins, and Binders | Composite materials                                 |
| Coir fibre (brown & white)                   | Geotextiles, erosion control mats                   |
| Coir pith / coco peat                        | Horticulture substrate, hydroponics                 |
| Shell powder                                 | Polymer filler, biodegradable                       |
| Husk pulp mouldings                          | Egg cartons, cushioning, pallets                    |
| Fibre non-wovens                             | Automotive trunk liners, insulation                 |
| Nanocellulose & lignin fibres                | High-performance bio composites                     |

Circular, fibre-based alternatives to plastics and synthetics

| Category                               | Details                       |
|----------------------------------------|-------------------------------|
| Coconut supply-chain traceability SaaS | Blockchain provenance         |
| Coconut agri-climate data feeds        | Sold to insurers / carbon MRV |
| Regenerative-alpha impact dashboards   | Fund reporting tech           |

Digital, Data & Traceability Services

The Alpha Module - "Regen Node 8"

Technology



Multiverse Infographic EXAMPLE

Cross-Sell Waste Streams + Waste-to-Energy  
Waste Stream Cross-Selling

Regen Nodes convert by-products, biomass, and residues into feedstocks for other Regen Nodes

Key Coconut Waste Types:

| Source                                                                                                                      | Waste Output                        | Potential Cross-Use                                           |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------|
|  Coconut Husk                             | Fibre, pith                         | Coir module → agro module (peat substitute), packaging module |
|  Coconut Shell                            | Charcoal feedstock                  | Bioenergy module (charcoal, activated carbon)                 |
|  Coconut Water (from mature nuts)         | Often discarded in copra production | Fermented into vinegar or probiotics (F&B module)             |
|  Coconut Cake (from oil press)            | High-fibre residue                  | Livestock feed, flour module, fermentation input              |
|  Sugar/toddy fermentation residues        | Yeast slurry, solids                | Compost, biogas digester feed                                 |
|  Coconut Trunk sawdust                    | Biomass                             | Fuel for boilers (dryers, kilns), biochar, particle board     |
|  Rejected fruit, sap, or processing waste | Spoiled coconut or sugar waste      | Anaerobic digestion, composting, black soldier fly feed       |

# Waste-to-Energy Integration

Regen Nodes (partially or fully) by energy derived from coconut waste, reducing fossil energy use and improving cost resilience in decentralised, remote or island contexts.

1

**Shell**

sent to activated carbon plant

2

**Husk**

used as heat energy, sold as fuel

3

**Press-Cake**

sold as animal feed or gluten free flour ingredient

4

**Water**

fermented to probiotic drink

5

**Rejects**

go into biogas digester → powers cold press + lighting

6

**Residual sludge**

composted → sent to agriculture module



## Regenerative

- **Closes** nutrient and energy loops
- **Enhances** soil and agro-ecological productivity
- **Reduces** methane from unmanaged biomass waste



## Financial

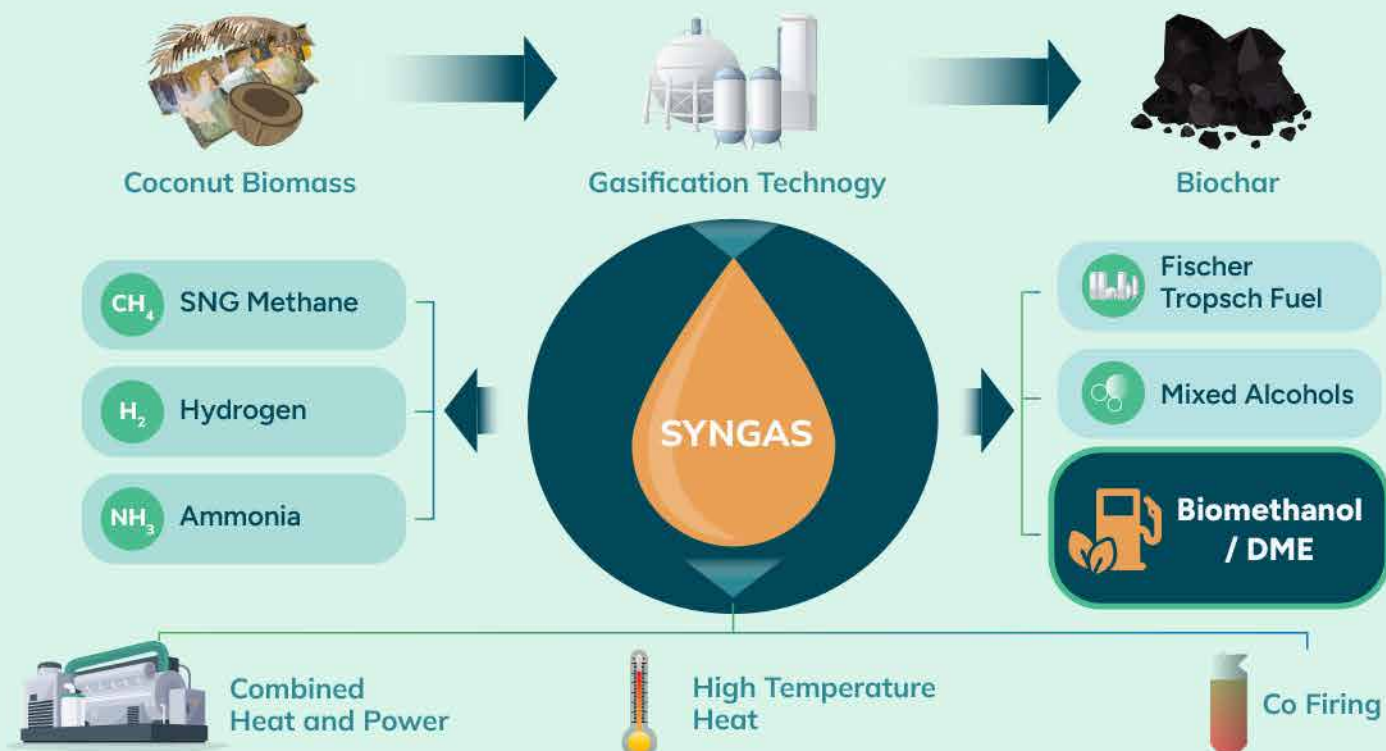
- **Cuts** external energy bills (esp. diesel-heavy regions)
- **Creates** new revenue lines (charcoal, pellets, compost, coir)
- **Enables** carbon credit stacking (biochar, avoided emissions)



## Operational

- **Localised** energy makes remote modules viable
- **Reduces** logistics cost of waste disposal
- **Modular** units become more self-reliant and bankable

## CASE STUDY (Coconut Multiverse in Action)



# Regenerative Alpha: The Coconut Palm as a Platform Crop

## What This Paper Is About:

This paper explains a powerful idea: that investing in coconut isn't just good business - it's an opportunity to create long-term, sustainable value for the planet, for communities, and for investors.

The term "Regenerative Alpha" is introduced to describe a new kind of return on investment: one that goes beyond just profit to include healthier ecosystems, climate resilience, and stronger local economies. In other words, doing good and doing well at the same time.

By reimagining the coconut palm as a platform crop - something that supports multiple industries and ecosystem functions - this paper shows how coconut can become a core part of solving global challenges like land degradation, rural poverty, and climate change.

It also highlights the urgent need to act: more than half of the world's coconut trees are too old to produce properly. Without a major replanting effort, global supply will continue to fall short of growing demand - creating a strategic window for regenerative investors to step in.

### Glossary of Key Terms

| Term                             | Meaning                                                                                                                                                   |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Regenerative Alpha</b>        | A type of investment return that includes not only financial gains, but also improvements in soil, ecosystems, livelihoods, and climate resilience.       |
| <b>Platform Crop</b>             | A crop that does much more than provide a single product - it supports entire ecosystems, multiple industries, and diversified value chains.              |
| <b>Agroforestry Backbone</b>     | The coconut palm can form the tall, central part of a multi-layered farm system that also grows crops like cacao, coffee, bananas, and spices underneath. |
| <b>Intercropping Scaffolding</b> | Using coconut trees as the physical and ecological "support system" to grow other valuable crops in the same space.                                       |
| <b>Soil Regeneration</b>         | Coconut trees help recycle nutrients and improve soil through their deep roots and leaf litter, which feeds beneficial microbes.                          |
| <b>Climate Resilience</b>        | Coconut palms can thrive on degraded or salty land, making them ideal for restoration and food production in the face of climate change.                  |
| <b>Senile Trees</b>              | Trees that are too old to produce economically valuable fruit, typically past 60 years for coconuts.                                                      |



# Coconut Multiverse Series : Paper 3

## Regenerative Alpha

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### 1 Strategic Objective

To attract large-scale investment into a Coconut Multiverse Fund by positioning Indonesia's coconut sector as a globally significant, regenerative opportunity.

### 2 Thesis: Coconut as Regenerative Alpha

Regenerative Alpha refers to long-term, superior investment returns derived from regenerating ecological, social, and economic systems - simultaneously. It extends beyond traditional financial metrics to include resilience, biodiversity, and circular value creation.

### By reimagining the coconut palm as a "platform crop,"

we unlock its potential to deliver diversified, compound returns across multiple sectors and time horizons

### 3 The Coconut Palm as a Platform Crop

A platform crop is a regenerative biological asset that serves as the productive and structural base for diversified value chains, ecological services, and modular industries.

Coconut's platform potential includes:



Plant-based food and beverages



Dietary fibres and functional oils



Green energy, biochar, and biomass



Agroforestry and climate-smart agriculture



Carbon credits and biodiversity markets



Genetic conservation and seed systems

### 4 Ecosystem Services & Regenerative Functions

Coconut palms, replanted and managed properly, offer:

- Agroforestry Backbone:**  
Vertical canopy enabling system design for water, wind, and soil management.
- Intercropping Scaffolding:**  
Optimized for spices, legumes, cocoa, coffee, bananas, and herbs.
- Soil Regeneration:**  
Deep roots cycle nutrients; leaf litter feeds microbial soil ecosystems.
- Climate Resilience:**  
Ideal for degraded, saline, and drought-prone land.

### 5 The Supply-Side Imperative

The industry faces a **crisis**:



# 60%

of global coconut palms are becoming **senile** with low productivity



**No coordinated** global replanting or genetics deployment strategy.



**High accelerating** global demand for coconut oil, water, milk, fibre, and carbon products.



**Smallholders lack** planting materials and new business models of training, finance and offtake.



**Corporates lack** access to land and capital for large plantation project execution.

**Supply-side failures will only accelerate over the short term.**

A widening supply gap opens an opportunity window for strategic investors to lead restructuring into a sellers market - Regenerative Alpha - aligned with nature and resilience.

6

## Replanting as Strategic Infrastructure

Replanting should be viewed as **green infrastructure development** - not a cost.

**Plantation investment as a price maker not a price taker.**



**2–4x productivity** with elite hybrids.



**Early revenue** from intercropping (year 1–2).



**Embedded value creation and livelihoods** through decentralised processing hubs.



**Regenerative land** use boosts ecosystem scaffolding.



It's the foundation for a **future-proof, multi revenue agro-industrial ecosystem.**

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## Investment Model: Modular Capital Deployment

Replanting execution as modules:

### Core Plantation Assets:

Elite cultivar replanting as anchor infrastructure.

### Upstream-Downstream Integration:

Nurseries, seed gardens, research, genetics conservation / food & beverage, edible fats, dietary fiber, oleochemicals and energy production.

### Agroecology + Ethnobotany + Carbon:

New standard linking cultural heritage to regenerative values.

### Smallholder Integration to Capital:

NES offtakes with corporates, decentralized processing hubs, intercropping systems, training, finance. Each module can attract targeted capital pools—from VC to ESG to climate finance.

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## Why Now? Why You?

The transition to a critical regenerative economy is a capital moment. This **Platform Crop** aligns with:



Climate goals and net **zero commitments**



Rising demand for circular and **ethical products**



Resilience mandates amid **agricultural commodity volatility**



The urgent need to invest in **natural capital systems**

## Your capital can:

**Lead** the green transition in a high-demand commodity

**Unlock** impact + alpha through blended finance stacks

**Build deep**, long-term optionality across diverse value chains

**Deliver** measurable outcomes across ESG, biodiversity, livelihoods, and land restoration

9

## Conclusion: Coconut as Regenerative Alpha

This is a once-in-a-generation opportunity:



**Unlock multi-market value** through modular activation



**Finance green infrastructure** that regenerates land, communities, and industry



**Create regenerative alpha** with the coconut palm as the anchor of the 21st-century tropical economy

## What This Paper Is About:

This paper presents a new type of investment fund - the **Coconut Multiverse Fund of Funds** - designed to finance the full potential of coconut agriculture through a combination of ecological regeneration, modular industries, and smart capital structuring.

FoF strategy begins with one of the most urgent needs: replacing the world's aging coconut trees. This is done by creating large-scale nurseries and seedling programs (the **Alpha Module**), which form the foundation for long-term productivity.

From there, the fund supports a **portfolio of regenerative businesses** built around coconut, including food and beverage production, climate-related services (like carbon credits), energy (like biochar), and agricultural materials (like husk-based products). Each business area can be developed as a **separate investment**, allowing flexibility and focus.

The Coconut Multiverse Fund is designed for **institutional investors, ESG funds, and DFIs** who are looking for high-impact, real-asset investments that align with sustainability goals (like SDGs and TNFD), but also generate cash flow and long-term returns.

In essence, this paper shows how coconut can become the **backbone of a new tropical investment class** - one that delivers financial performance while regenerating land, communities, and ecosystems.

### Glossary of Key Terms

| Term                                                            | Meaning                                                                                                                                           |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fund of Funds (FoF)</b>                                      | An investment fund that holds a portfolio of other investment funds or special-purpose vehicles (SPVs), each focused on a specific business area. |
| <b>Coconut Multiverse Fund (CPMF)</b>                           | A proposed fund structure that brings together multiple coconut-related business units under a unified regenerative investment strategy.          |
| <b>Alpha Module™</b>                                            | The seedling and replanting core that enables future productivity and regenerative value creation across the Coconut Multiverse.                  |
| <b>SPV (Special Purpose Vehicle)</b>                            | A standalone legal entity used to isolate and invest in a specific business unit - like coconut water or carbon credits.                          |
| <b>Real Assets</b>                                              | Physical, tangible assets like land, trees, factories, and infrastructure - often used in long-term investment strategies.                        |
| <b>Circular Value Chains</b>                                    | Business systems where waste is reused or turned into new value - like husk becoming biochar or energy.                                           |
| <b>TNFD (Taskforce on Nature-related Financial Disclosures)</b> | A global framework for investors to assess and report their environmental and nature-related impacts.                                             |
| <b>ESG Forward</b>                                              | An investment approach that prioritizes Environmental, Social, and Governance outcomes alongside financial performance.                           |
| <b>White Space</b>                                              | An untapped or underdeveloped investment opportunity — a market gap with little competition and high potential.                                   |



# Coconut Multiverse Series : Paper 4

## Coconut Palm Multiverse Fund (CPMF)

\*This is a series of original writings developed by Haigan Murray.  
Please cite appropriately when referencing.

### Generating Regenerative Alpha

1 

2 

3 

Establishment of the first Fund of Funds anchored in the coconut palm - not as a commodity crop - but a regenerative platform crop. A long-life, biological infrastructure asset that supports a diversified portfolio of modular industries across food, climate, energy, and materials.

Strategy begins with planting materials production - cultivating large volumes of essential seedlings to meet high demand for commercial scale replanting of senile coconut palms - creating the regenerative 'APLHA Module'. Followed by layering of investable verticals: food & beverage, activated carbon, husk-based biomaterials, biochar, carbon credits, and regenerative agroforestry inputs/outputs and ecosystem services. Each of these being structured as a stand-alone sub-fund or SPV, with its own return profile and exit pathways.

**CPMF is an ESG-forward, nature-based, cash-generating portfolio that delivers Regenerative Alpha**, compounding returns through ecological restoration, smallholder inclusion, and circular value chains. The timing is right - global demand for coconut is rising, but over 60% of coconut palms are in a productivity decline. The opportunity of the accelerating supply gap and building of multi-sector real-asset exposure - that aligns with SDG, TNFD, and institutional ESG mandates is an investment white space.

## Palm Oil Investment & Coconut Palm Investment

**Coconut palm is a high-value, lower-risk, and underpriced regenerative opportunity** that has been overlooked due to legacy misperceptions - not fundamentals.

### What Investors Already Know

Palm oil is a proven, vertically integrated tropical agribusiness with:



Corporate-scale plantations + smallholder off-take models



Co-located processing and export infrastructure



Deep commodity markets and pricing benchmarks

### What Investors Overlook

Despite palm oil's maturity and scale, it also comes with:



Complex processing timelines (within 24-48 hrs of harvest)



Perishability and logistic dependency



Reputational risk (deforestation, social license, EU compliance)



Exposure to ESG backlash and stranded asset risk

**Coconut Palm is a high return and lower-risk regenerative asset class when compared to palm oil investment.**

Coconut is the tropical perennial that offers more outputs, less ESG exposure, and easier integration - but has never been systematized.

Palm Oil is Successful Because It Was Structured - Large-scale investment + processing + market coordination.

# Coconut Palm Investment Can Outperform Palm Oil Investment

What palm oil has in capital and coordination, coconut palm makes up for in diversity, resilience, and premium end-uses.

| Theme                                                                                                   | Palm Oil                                   | Coconut Palm                                        |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------|
|  Market Maturity       | Commodity-priced, fully built out          | Under-capitalized, pre-institutional, supply gap    |
|  Derivatives           | CPO, PKO, biodiesel                        | >30 products: F&B, biochar, fibre, oil, sap, carbon |
|  Processing Constraint | Must process within 24–48 hrs              | Flexible: harvest-to-processing window is longer    |
|  ESG Risk              | High (EU deforestation laws, NGO pressure) | Low: excluded from EU deforestation regulation      |
|  Deforestation Legacy  | Often plantation-driven                    | Grown by smallholders, culturally embedded          |
|  Carbon Footprint      | Emission-intensive (peatlands, mills)      | Regenerative potential (soil carbon, biochar)       |
|  Investor Access      | PE funds, infra, REITs                     | Untapped by structured capital - white space        |

## Coconut Palm Needs What Palm Oil Had

Coconut Palm is not lacking in value - it is lacking in structure. The CPMF is building what palm oil had: integration, processing, logistics, and financial architecture - but doing so across regenerative, modular, future-proof value chains.

Palm oil’s success ➡ capital + coordination + confidence

Coconut is now at the **same inflection point palm oil was in the 1980s** — but with:

-  A global and accelerating supply-side gap
-  No deforestation baggage
-  Premium, consumer-facing product verticals
-  More regenerative upside

**Investors have poured billions of dollars into palm oil** - a commodity that depends on fast processing, carbon-heavy land use, and carries rising regulatory baggage. Coconut Palm offers lower entry investment, more outputs per hectare, better consumer alignment, and exempt from EU deforestation rules.

**Coconut Palm lacks the structured capital stack palm oil had and that’s CPMF.**

Over \$70 billion has flowed into the palm oil sector - an industry with high operating complexity, ESG scrutiny, and a single-product commodity profile. Yet investors routinely achieve IRRs of 15–20% in vertically integrated models. Coconut requires far less capex per hectare, has more diversified outputs, and fewer ESG headwinds - yet remains structurally underfunded.

**CPMF unlocks the same integration logic that made palm oil investable, while stacking regenerative returns across food, fibre, energy, and carbon.**

# Palm Oil Sector Investment – Financial Context

Scale of Capital Invested:



Estimated  
**\$70–100 billion**

in global palm oil value chain investments over the past two decades.

## This includes:

- **\$30–40 billion** in plantation and upstream infrastructure (Indonesia, Malaysia, West Africa, Papua New Guinea)
- **\$10–20 billion** in milling and downstream processing
- **Billions more** in logistics, refining, biodiesel, derivatives and trade finance

## Major Investors include:

- 1 Development finance institutions
- 2 Sovereign wealth funds
- 3 Private equity
- 4 Listed palm oil giants

## Upstream (plantations):

- **IRR:** ~12–20% over 25+ year cycles (with land appreciation)
- **Payback period:** ~7–10 years depending on yield, price, and maturity profile
- **MOIC:** Often 2.0–3.5x over full asset life
- **Cost of development:** ~\$4,000–\$8,000/ha (land prep, planting, infrastructure)

## Integrated operations (plantation + processing + off-take):

- **IRR:** 18–25%+ in high-efficiency, vertically integrated models
- **ROI** driven by:
  - Mill throughput margins
  - Offtake pricing (captive refineries, forward sales)
  - Carbon and renewable fuel credits (in biofuel-linked operations)

## Coconut Palm vs Palm Oil Investment Comparison.

| Metric                                       | Palm Oil                                 | Coconut                                                |
|----------------------------------------------|------------------------------------------|--------------------------------------------------------|
| Estimated Global Capital Deployed            | \$70–100 billion+ (over 20 years)        | < \$5 billion globally (fragmented, under-capitalized) |
| CapEx per Hectare (Plantation Establishment) | \$4,000–\$8,000/ha                       | \$2,000–\$5,000/ha                                     |
| Product Diversity                            | Low (CPO, PKO, biodiesel)                | High (>30 derivatives across 8+ sectors)               |
| Primary Revenue Drivers                      | Bulk oil, commodity markets, biofuel     | Food, beverage, biochar, carbon, fibre, sap            |
| Typical IRR (Upstream Only)                  | 12–20%                                   | 15–22%                                                 |
| Typical IRR (Integrated Operations)          | 18–25%+                                  | 20–30% (with modular integration)                      |
| Payback Period                               | 7–10 years                               | 4–7 years                                              |
| MOIC (Multiple on Invested Capital)          | 2.0–3.5x                                 | 2.5–4.5x                                               |
| Processing Time Sensitivity                  | High (24–48 hr window)                   | Low (weeks between harvest & processing)               |
| ESG / Reputational Risk                      | High (deforestation, land rights, labor) | Low (smallholder-driven, no deforestation legacy)      |
| Regulatory Exposure (EU Deforestation Rules) | Included – High exposure                 | Excluded – Not subject to EU rules                     |



# CPMF Architecture

Sophisticated fund design with a compelling regenerative investment thesis grounded in real assets, modular value creation, and measurable impact.

## 1. Lead

Platform Crop of real-asset investments originating from a single regenerative biological asset infrastructure, structured into scalable, modular, income-generating businesses across food, materials, energy, and climate services.

## 2. Architecture "Fund of Funds"

Parent Fund - Multiverse Infrastructure Fund Deploys capital to Platform Crop (Alpha Module):

- **Planting materials** capacity development
- **Replanting senile** coconut palms across large, underutilized lands
- **Build-out** agroforestry systems
- **Establish** core processing/logistics infrastructure
- **Returns** via: Planting materials, land productivity, carbon, off-take agreements, leasing, royalties

### Satellite Funds

(Sub-funds or SPVs)

Each is a vertical venture spun off from the Alpha Module:

- Can operate independently or synergistically
- Can attract specific investors (ESG, agri-tech, climate, hubs)
- Has distinct return horizons, risk profiles, and KPIs



## 3. Institutional Investors Key Messaging Pillars:

| Theme                                                                               |                            | Message                                                                                    |
|-------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------|
|  | Real Assets                | Underlying coconut plantations are long-life biological infrastructure with inherent value |
|  | Diversification            | Multi-vertical strategy across food, energy, carbon, and materials                         |
|  | Modularity                 | Ability to scale or replicate successful sub-modules across geographies                    |
|  | Climate Resilience         | Agroforestry, drought tolerance, soil rehab – meets TNFD/TCFD concerns                     |
|  | ESG Credentials            | Measurable impact: smallholder uplift, biodiversity, female employment, soil carbon        |
|  | Blended Finance Compatible | Attracts catalytic capital, green bonds, carbon funds alongside PE                         |
|  | Exit Options               | Aggregation, acquisition by F&B majors, IPO of modules, revenue securitisation             |

Author's Note:

## On the Origins and Purpose of This Work

This is a series of original writings developed by Haigan Murray to reframe the coconut palm not as a marginal tropical commodity, but as a platform crop — a long-lived, multi-output regenerative asset with the capacity to deliver financial, ecological, and cultural value across modular value chains.

The strategic architecture presented represents years of independent thinking, sector engagement, and field-based experience to address long-standing structural limitations of the global coconut industry.

This series of four position papers are intended to support engagement with DFIs, ESG-aligned private capital, sovereign wealth, climate funds, and with global brands seeking to secure long-term supply and climate-aligned sourcing strategies. An investor-focused fund architecture, the Coconut Palm Multiverse Fund, is proposed to direct institutional capital across upstream and midstream value modules.

The concepts, language, and models introduced in this work are original contributions authored by **Haigan Murray**. The Coconut Multiverse™, Regenerative Alpha™, and Platform Crop modular architecture are original frameworks shared in the spirit of system redesign and regenerative sector transformation. Please cite appropriately when referencing.



### About the Author:

Haigan founded the Coconut Knowledge Center (CKC) in 2014, to address the systemic decline in plantation-level productivity and its long-term consequences on smallholder livelihoods and corporate supply chains. CKC is comprised of experts and organisations driving innovation to enhance coconut palm productivity and sustainability upstream.

His own work bridges the gap between traditional commodity thinking and next-gen regenerative investment - unlocking opportunities in food systems, carbon markets, circular materials, and climate resilience. Grounded in on-the-ground realities and understanding of the coconut's unique biology, socioeconomics, and latent potential as a tropical infrastructure asset, Haigan is committed to reshaping how the world understands and invests in coconut - not as a fragile sunset commodity, but as a regenerative backbone for future-ready, nature-aligned economies that value coconut palm agroecology and ethnobotany.