



phambili
energy





Who We Are

Phambili Energy is a South African based company that transforms local waste streams into verified, climate positive products. Founded in April 2008, we convert residues — sawdust, cane trash, timber offcuts, garden greens, sewage sludge, rubber, plastics and waste coal — into market ready biochar, pyrolysis oils, syngas and advanced carbon derivatives. Our modular, feedstock aware hubs keep value in rural communities while delivering auditable carbon outcomes for agriculture, energy and industry.

South African roots and regional role

Born from South Africa's practical need to turn abundant biomass residues into economic opportunity, Phambili progressed from early prototypes and an imported pyrolysis plant to a robust, optimised conversion platform. We apply that engineering and field experience across South African landscapes and neighbouring regions, partnering with farmers, processors and industrial buyers to create local jobs, diversify rural incomes and reduce open burning and landfill pressure.

Mission

Phambili Energy transforms local waste streams into verified, climate positive products that create rural value and measurable carbon outcomes. We convert sawdust, cane trash, timber offcuts, garden greens, sewage sludge, rubber, plastics and waste coal into market ready biochar, pyrolysis oils, syngas and advanced carbon derivatives using modular, feedstock aware hubs that keep jobs and revenue in local communities while delivering auditable environmental benefits.

Vision

To be a global leader in scalable, community anchored biomass conversion that decarbonises industry, regenerates soils and finances rural prosperity. We envision a world where modular BCT systems are deployed across regions, replacing fossil inputs, preventing open burning and landfill, and certifying durable carbon removals that underpin new value chains for agriculture, energy and heavy industry.

Strategic pillars



Local impact and jobs

Keep value in rural economies through factory built, containerised units and local deployment services.



Verified climate outcomes

Deliver auditable MRV, carbon removal and lifecycle emissions reductions.



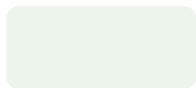
Product and market readiness

Supply consistent, lab validated biochar and downstream SKUs for agritech, fuels and industrial substitution.



Manufacturable scale

Standardised BCT units for repeatable quality, rapid shipping and global roll out.

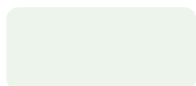


Feedstock intelligence

Configurable recipes and quality control to match regional biomass and buyer specifications.

Manufacturing and global roll out capacity

Phambili designs BCT as a manufacturable, export ready system. Our BCT units are modular and containerised by design, enabling efficient factory production, standardised quality control and rapid shipping. We have the capacity to manufacture BCT units for export, support international deployment and scale roll out worldwide through:



Factory production:

repeatable assembly lines and quality checks to deliver consistent BCT units.



Modular logistics:

containerised units sized for sea and land transport to simplify customs and installation.



Local adaptation:

configurable feedstock specifications and product recipes to match regional biomass and market needs.



Deployment services:

commissioning, operator training, spare parts supply and remote monitoring to ensure reliable operation.



Compliance and export readiness:

documentation, QC protocols and MRV integration to meet international buyer and regulatory expectations..

This manufacturing and service capability lets us move beyond pilots to commercial supply: we deliver equipment, technical support and product pathways so partners can scale locally and access global markets

At Phambili Energy, our science is intrinsically linked to dissecting and mimicking nature to create sustainable products that are climate-smart value.



Technology, validation and product suite

Our Biomass Conversion Technology (BCT) pairs a precision thermochemical core with advanced fractionation to produce predictable streams — biochar, bio oils, syngas, organic acids, sugars and carbon nanos precursors. Downstream, the Jenga Bio Suite refines those streams into engineered SKUs for agritech, renewable fuels and specialty industry. Independent laboratory validation and industrial approvals support our specifications and commercial readiness.



Impact and engagement

We deliver measurable outcomes: verified carbon removals, improved soil health and yields, lower lifecycle emissions and new revenue streams for rural communities. Engagement options include sample evaluation, scoped pilots, offtake frameworks and manufacturing partnerships for equipment supply and local hub roll out

Our Team



Musa S. Msimango: As CEO, he combines 15 years of mechanical engineering and regenerative farming experience to lead Africa's modular biomass conversion initiatives. He designs and commercializes technology that transforms agricultural waste into biochar and energy products to create sustainable economic value.



Advocate Rory Michael Loader: An international legal executive and High Court Advocate with 25 years of experience, Rory manages legal strategy, compliance, and complex deal structuring. He bridges the gap between law and green energy to de-risk transactions and accelerate the commercial rollout of biomass technologies.



Dr. William Makwinja: An aerospace technologist with over 40 years of cross-sector experience, William leads high-tech commercialization and quality assurance efforts. He implements rigorous risk-based frameworks and leverages deep policy influence to ensure product reliability and regulatory compliance.



Lucky F. Mbanjwa: A finance executive blending public sector stewardship with commercial leadership, Lucky structures project finance and establishes robust internal controls. His expertise ensures that multi-site renewable energy rollouts are investor-ready, financially sustainable, and compliant with regulatory standards.



Niel Pretorius: With over 15 years in renewable energy, Niel drives the commercialization and nationwide rollout of the company's Biomass Conversion Technology (BCT). He focuses on structuring project finance and forging strategic partnerships to turn technical innovations into scalable, community-centered deployments.



Marthinus "Marlo" Badenhorst: A strategic architect and entrepreneur, Marlo designs mission-driven business models that balance commercial growth with measurable social and environmental impact. He leads investor engagement and global networking to expand climate-resilient initiatives across rural communities.



Victor van Zyl Taylor: A co-founder and technologist with two decades of R&D experience, Victor designs and commercializes diverse renewable energy and circular-economy systems. He combines technical engineering with operational leadership to convert prototypes into commercially deployable, carbon-negative infrastructure.



Wade Tanner: A biomass and supply chain specialist, Wade secures the sustainable feedstock required for the company's conversion plants through extensive forestry industry networks. He oversees procurement and compliance to optimize supply chains and support the commercialization of biochar and carbon products.

Products

The JengaBio Suite



At Phambili Energy, we don't just process waste; we engineer value. Through our proprietary Biomass Conversion Technology (BCT), we transform agricultural residues into the JengaBio Suite—a diverse range of high-performance, carbon-negative products. Our suite is designed to bridge the gap between industrial necessity and environmental restoration, providing sustainable alternatives for agriculture, livestock, and heavy industry.

Agricultural & Soil Health



JengaBio Fusion

A "smart" regenerative fertilizer that combines biochar with essential minerals and beneficial microbes. It acts as a permanent "sponge" for water and nutrients, revitalizing depleted soil and ensuring long-term crop productivity.



JengaBio NutreeBag

A biodegradable planting sachet designed for forestry and orchards. By creating a localized microhabitat for roots, it has been proven to reduce seedling mortality by over 90% while boosting early-stage growth yields.



JengaBio Granule

High-quality biochar produced in easy-to-handle grains. Designed for seamless blending with existing commercial fertilizers, it allows for the large-scale application of carbon-rich soil enhancers.



JengaBio Acid

A potent organic biostimulant captured during the pyrolysis process. Rich in biological compounds, it strengthens root systems and improves nutrient uptake, helping plants thrive naturally.

Industrial Energy & Materials



JengaBio Forge

Engineered biocarbon pellets designed as a direct, renewable substitute for anthracite (coal). Forge allows steelmakers and power plants to meet rigorous heat and carbon specifications while drastically reducing their fossil fuel footprint.



JengaBio Preserve

An eco-friendly wood treatment that naturally extends the life and durability of timber. This non-toxic alternative protects wood from decay without the environmental hazards associated with traditional chemical preservatives.

Livestock & Crop Protection



JengaBio Vital

A specialized charcoal-based feed additive for livestock. It improves gut health and digestive efficiency in cattle while simultaneously reducing enteric methane emissions, supporting climate-smart farming.



JengaBio Shield

A natural, liquid pest-control formula. By combining wood vinegar with botanical compounds, Shield protects crops from nematodes and pests without damaging the surrounding ecosystem or soil biology.



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Donnybrook Facility

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<https://maps.app.goo.gl/TFhuGy3mRw9oZhPJ8>