

BAMBOO
FOR
**SUSTAINABLE
DEVELOPMENT**
IN CABO DELGADO



FPDP
Fundação para o
Desenvolvimento de Palma





TABLE OF CONTENTS

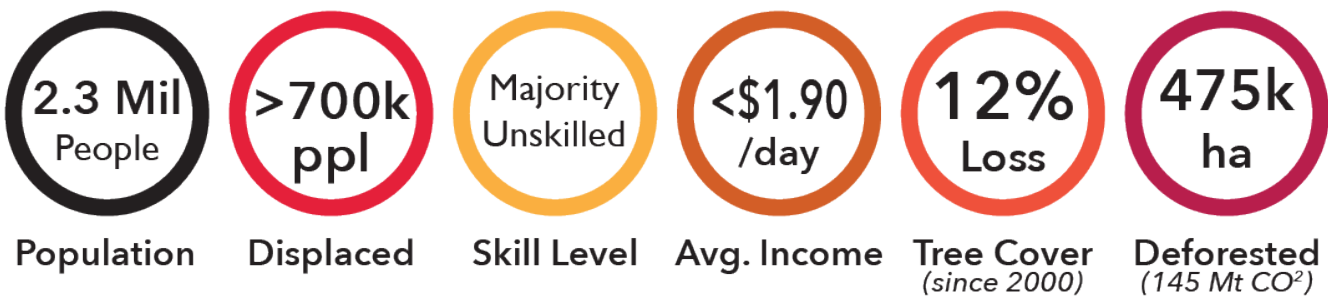
- 3. **The Context**
- 3. Socio-Economic Situation
- 3. Conflict & Environmental Degradation
- 3. **The Birth of a Foundation**
- 3. Vision
- 3. Mission
- 4. **The Rovuma Bamboo Belt**
- 6. **Cultivation Models**
- 6. **Community Engagement**
- 6. **Project Status**
- 7. **Impact on Local Communities**
- 8. **Bamboo Economy**
- 8. Why Bamboo?
- 8. Bamboo's Economic Potential
- 9. **Partnerships for Sustainable Impact**
- 10. **Call for Funding**
- 10. **The Team**
- 11. **Contact**

THE CONTEXT

Socio-economic Situation

Cabo Delgado, the northernmost province of Mozambique, is home to approximately 2.3 million people. Despite its rich natural resources and cultural diversity, the province faces considerable socio-economic challenges, with 58% of its population living below the poverty line - earning less than \$1.90/day - and another 35% living below \$3.10 per day. The economy is primarily based on subsistence farming and fishing, with maize as the dominant crop.

The discovery of significant off-shore natural gas reserves in 2010 in the Rovuma Basin initially sparked hopes for local economic growth and job creation. However, due to an exceedingly low skill/capacity level and lack of infrastructure, the benefits of initial investments in the region have largely bypassed local communities, instead favouring foreign companies and expatriate workers. This development has led to displacement of fishing and agricultural communities and the erosion of traditional livelihoods, exacerbating inequality and unrest, particularly among the youth who have been easily recruited into armed conflict against the State.



Conflict and Environmental Degradation

The chronic under-investment in education, infrastructure, and employment opportunities by the Government created a fertile ground for deep poverty, high unemployment, and the bitter disappointment of unmet expectations following the gas discoveries. In 2017, armed groups (OAGs) organized nominally under an Islamist banner began to stage organized attacks in the Province. Over the course of 7 years what started as local banditry gathered significant momentum and climaxed in March 2021 with a massive and well-planned attack in the region, killing over 1,300 people including many foreign workers. Along with disrupting the LNG project, this spate of violence also emptied the town of Palma, and led to the flight of over 700,000 people to the relative safety of southern Cabo Delgado and Nampula Province where many remain as internally displaced persons (IDPs). As of 2024, approximately 600,000 people remain displaced in northern Mozambique due to the ongoing conflict in Cabo Delgado province.

Adding to the crisis, environmental degradation has worsened due to illegal logging and climate change impacts, such as cyclones and floods. Between 2017 and 2020, over 2.6 million tonnes of logs were illegally exported.

Against this extremely challenging backdrop, there is a pressing need for sustainable economic models that offer both environmental restoration and long-term economic opportunities for Mozambicans living in Cabo Delgado.

THE BIRTH OF A FOUNDATION



The Fundação Para o Desenvolvimento de Palma (FPDP) was born in response to the devastation wrought by the insurgency in 2021. Following the attack on Palma, it became clear that sustainable economic alternatives were urgently needed for a medium and long-term solution to the chronic lack of opportunity for young men and women in Cabo Delgado. True North Lda, a Mozambican company operating as an oil & gas services provider active in Cabo Delgado, provided the initial funding and support for the establishment of a bamboo seedling nursery, multiple boreholes, community training and the administrative backbone which allowed the Foundation to become operational.

VISION

FPDP's vision is to **foster resilient communities built on the pillars of unity, peace and mutual benefit, while equipping vulnerable farming communities with the tools to adapt to climate change, diversify their resources, and effectively mitigate risks.**

MISSION

FPDP's mission is to empower vulnerable communities to build resilience against social, economic, and cultural risks, as well as climate change. It is deeply rooted in empowering vulnerable communities through sustainable bamboo cultivation, directly addressing the drivers of conflict.

FPDP operates on three core pillars:

1. ECONOMIC EMPOWERMENT:

Bamboo cultivation provides alternative livelihoods that can thrive in conflict-affected regions, creating jobs, promoting entrepreneurship, fostering gender equality, and providing training in the bamboo value chain.

2. ENVIRONMENTAL SUSTAINABILITY:

FPDP's bamboo-based projects focus on reforestation and land rehabilitation, using bamboo's rapid growth and regenerative abilities to combat deforestation and contribute to global carbon sequestration.

3. SOCIAL RESILIENCE:

FPDP engages communities through the formation of cooperatives and Community-Based Organizations (CBOs), ensuring inclusive participation in all aspects of the bamboo value chain. This model promotes social cohesion and equitable distribution of benefits, especially among displaced and marginalized groups.



THE ROVUMA BAMBOO BELT

A REGENERATIVE CATALYST FOR SOCIO-ECONOMIC TRANSFORMATION

The Rovuma Bamboo Belt Initiative is FPDP's flagship project, designed to drive environmental restoration and socio-economic upliftment. Spanning 320 km of interconnected roads, the belt connects key areas in the north of Cabo Delgado, providing access to infrastructure and markets. The project encompasses villages and smallholder farming lands, aiming to restore ecosystems while creating high-value bamboo products for regional and international markets. This vision will transform the region into a key player in the green economy.

ESTIMATED TIPPING POINT FOR FEASIBILITY OF INDUSTRY

- BIOMASS GASIFICATION & SOLAR POWER PLANT
- PULPING PLANT

1 000ha
(BAMBUSA BALCOOA)

ESTABLISHED BAMBOO PLANTATIONS:

1 50ha

Shortly after it's formation, FPDP initiated the pilot project which consisted of 3 villages close to the town of Palma, namely N'Cumbi, Matapata and Ngueo. Each village provided 50ha of land for each respective plantation. A nursery was set up, and the cultivation of bamboo began. 200 permanent jobs were thus created, and the stage is set for further reaching impact as FPDP transitions from proof-of-concept to project expansion.



FPDP Nursery

Beneficiaries in
The Nursery

Careful hands plant a
bamboo sapling

1.5 yr old row of bamboo



100ha Plantation of N'Cumbi and Matapata



CULTIVATION MODELS

- **AFFORESTATION (*Bambusa balcooa*)**
Community-managed *Bambusa balcooa* plantations provide high-yield bamboo for industries like pulp, construction, and bioenergy. Intercropped with food crops, this system enhances food security, diversifies income streams, and ensures local ownership and long-term community benefit. The objective is to expand the bamboo plantation and add more communities to benefit from this model.
- **REFORESTATION (*Oxytenanthera abyssinica*)**
Native and wild *Oxytenanthera abyssinica* bamboo species are used to restore degraded lands, enhancing biodiversity, climate resilience, and sustainable income generation through agroforestry practices. This stream of activities is still only at a very early stage and the goal is to increase the area of reforestation and learn from the process.
- **BAMBOO NURSERIES**
FPDP operates a 2,700 sqm bamboo nursery, producing 80,000 seedlings/plantlets per year, with plans for expansion to meet increasing demand for seedlings and to scale up afforestation and reforestation efforts.

COMMUNITY ENGAGEMENT

- **COOPERATIVES**
To foster strong community ownership of the bamboo project, FPDP has supported the establishment of three cooperatives, ensuring that local communities are the primary beneficiaries and decision-makers in managing plantation land. The cooperative will need more and ongoing support to be successful. Potentially other cooperatives can be supported to establish.
- **WATER PROVISION**
Boreholes have been installed to provide reliable water access for both plantations and households. These water initiatives improve health, agricultural productivity, and overall community well-being, with further expansions planned.
- **FAIR COMPENSATION & TRAINING**
Smallholder farmers are compensated for cultivating bamboo seedlings, while FPDP provides comprehensive training in sustainable practices and intercropping techniques. This training enhances food security, boosts income, and ensures responsible management of bamboo resources. Ongoing and expanded such as tailored training (e.g. for women) is need to ensure the success of the project.

PROJECT STATUS

Project Status Goals are based on estimated tipping points for self-sustainability.

PLANTATION AREA (ha): 150 / 1000

NURSERY CAPACITY (/yr): 80,000 / 500,000

WILD REFORESTED (ha): 0 / 5000



BENEFICIARIES



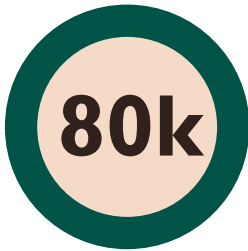
PERMANENT JOBS



LIVELIHOODS



HECTARES ESTABLISHED



SEEDLINGS / YEAR



Avg. AGE of CULMS



IMPACT ON LOCAL COMMUNITIES

FPDP's Rovuma Belt initiative is designed to benefit Cabo Delgado's communities in multiple impactful ways, aligning with most of the UN Sustainable Development Goals (SDGs) and creating a ripple effect of positive change.

Job Creation and Economic Empowerment: 1 8

Thousands of income opportunities are expected to be created across the bamboo value chain, from cultivation to product manufacturing, ensuring significant employment through partnerships with Rovuma Inc. This initiative directly supports SDG 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth) by creating sustainable jobs and promoting inclusive economic growth.

Food & Water Initiatives 2 3 6

FPDP, in collaboration with its partners, delivers vital access to clean water for communities in and around Palma through its borehole initiatives, SDG 6 (Clean Water & Sanitation). These programs not only supply drinking water but also support the irrigation of bamboo plantations. By incorporating intercropping of seasonal crops within the irrigated bamboo fields, FPDP enhances food security for the region, SDG 2 (Zero Hunger). Additionally, FPDP promotes nutritional education and monitors the health and well-being of the communities through regular data collection programs, in line with SDG 3 (Good Health & Well-Being).

Gender Equality: 5

FPDP aims for equal representation of women and men in the project, ensuring women take leadership roles in cooperatives and have a voice in decision-making processes. This approach not only promotes economic empowerment for women but also enhances overall community well-being, in alignment with SDG 5 (Gender Equality).

Skills Development and Entrepreneurship: 4 8

FPDP's training programs foster entrepreneurship, equipping cooperatives and micro-enterprises with the skills they need to thrive within the bamboo economy. This initiative aligns with SDG 4 (Quality Education) and SDG 8 (Decent Work and Economic Growth), providing education that leads to employment and supports lifelong learning opportunities.

Strengthening Community Autonomy: 10 16

FPDP supports the establishment and functionality of cooperatives, empowering local populations to make decisions about their own economic development. By increasing self-reliance and ensuring communities are active participants in shaping their future, this initiative contributes to SDG 16 (Peace, Justice, and Strong Institutions) and SDG 10 (Reduced Inequalities).

Access to Clean Energy: 7

Through Rovuma Power, FPDP and Rovuma Inc. plan to produce renewable electricity from bamboo fibre and solar power, providing grid-distributed energy to villages for the first time. This initiative supports SDG 7 (Affordable and Clean Energy) by ensuring access to modern energy sources that are renewable and sustainable.

Environmental Resilience: 13 15

Bamboo's deep root systems prevent soil erosion, restore ecosystems, and act as carbon sinks, supporting climate resilience in the region. This directly contributes to SDG 13 (Climate Action) and SDG 15 (Life on Land) by improving environmental resilience and restoring degraded lands.

Market Potential: 9 12

FPDP's bamboo products, such as pulping sheets for paper, carton, and clothing, will cater to regional and global demand for sustainable goods, generating new revenue streams and solidifying Cabo Delgado's place in the green economy. This aligns with SDG 9 (Industry, Innovation, and Infrastructure) and SDG 12 (Responsible Consumption and Production) by promoting sustainable industrialization and responsible production practices.



A BAMBOO ECONOMY

WHY BAMBOO?

FAST GROWING

Bamboo is the fastest-growing plant on Earth, capable of growing up to 100 cm in just one day.

RESILIENT

Bamboo thrives even in harsh environments, requiring minimal water and naturally resisting pests and fire, making it a reliable resource in diverse conditions.

VERSATILE

With over 1,500 documented uses, bamboo is a sustainable alternative for numerous industries from construction to paper to energy

SUSTAINABLE

Bamboo absorbs 5x more carbon than pine, releases more oxygen, and is 100% biodegradable, making it a champion for the environment.

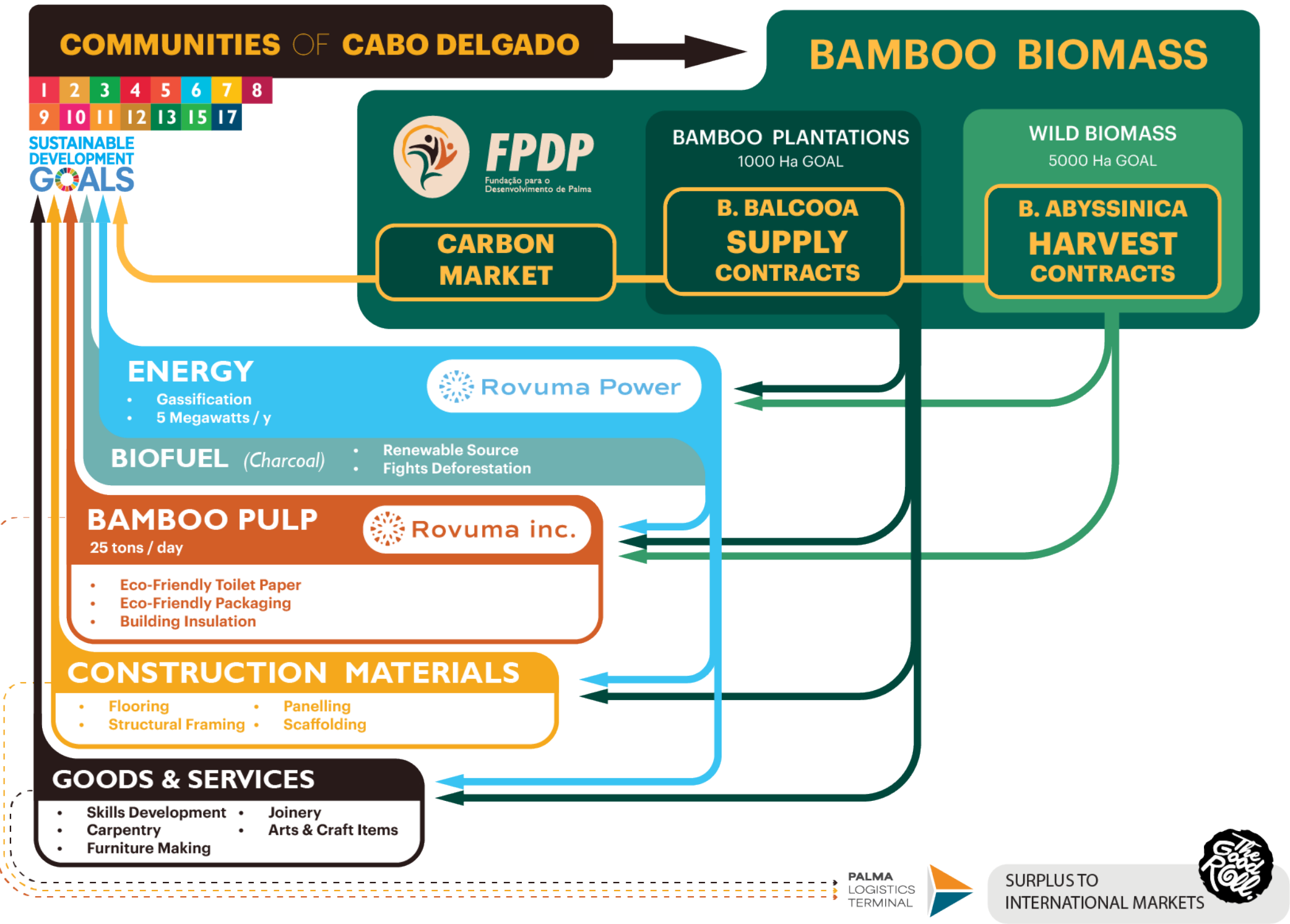
BAMBOO'S ECONOMIC POTENTIAL

Bamboo's remarkable versatility positions it as a key driver of socio-economic development across multiple industries. Its wide-ranging applications not only create diverse economic opportunities but also contribute to environmental sustainability and community resilience.

CARBON SEQUESTRATION

A Natural Climate Solution

Bamboo's superior carbon absorption capabilities make it a powerful tool in climate change mitigation, contributing significantly to global climate goals while also providing economic opportunities through carbon credit systems. It sequesters up to 40% more carbon than traditional trees, with FPDP's Afforestation & Reforestation (AR) projects projected to sequester over 700,000 tons of CO² annually, making Cabo Delgado a significant contributor to Mozambique's carbon reduction targets while restoring ecological balance.



BIOENERGY

Powering Sustainable Development

Bamboo serves as a renewable feedstock for biochar and biofuel production, reducing reliance on traditional wood fuels and contributing to energy security. FPDP will provide training on Bamboo charcoal production as well as support the emergence of small enterprises to commercialize this product. This introduction of bamboo as a sustainable source of energy promotes energy independence and local economic growth..

PULP AND PAPER

Revolutionizing the Industry

Bamboo's high cellulose content makes it ideal for eco-friendly paper products, with FPDP's partnership with Rovuma Inc expected to create over 800 jobs, stimulating local economies.

CONSTRUCTION & FURNITURE

Building a Sustainable Future

Bamboo's strength and sustainability make it a valuable material for furniture and construction. FPDP will provide training for artisans to capitalize on this growing market, enhancing local skills and promoting entrepreneurship.

FOOD SECURITY

Through Agricultural Infrastructure

FPDP's innovative bamboo cultivation model promotes inter-cropping of food crops within bamboo plantations, enabling communities to significantly upscale and secure their annual subsistence yields. By improving soil health, retaining moisture, and boosting food crop yields, this approach ensures year-round cultivation, sustainable food security, and economic resilience. Smallholder farmers benefit from diversified income opportunities while maintaining a robust food supply.

PARTNERSHIPS FOR SUSTAINABLE IMPACT

To ensure a permanent and reliable market for the bamboo biomass produced by this initiative, FPDP is collaborating with several key partners dedicated to fostering sustainable development in Cabo Delgado.



Rovuma Inc. plans to establish a 25-ton-per-day pulp sheet factory in Palma, utilizing the proximity of the Porto Logística de Palma (PLT), currently under construction, for efficient export. The factory will produce pulp sheets and parent toilet rolls for the growing regional and international markets, with profits reinvested into community development projects. This will create a sustainable revenue stream while fostering local economic resilience.



Rovuma Power will harness bamboo gasification technology and Solar PV to generate 4–6 MW of clean energy. This energy will primarily power Rovuma Inc.'s operations, with any surplus electricity sold to Electricidade de Moçambique (EDM). The renewable energy supplied will directly benefit nearby communities and contribute to the revitalization of Palma and the Afungi Peninsula.



Biovision Lda, a Mozambican company specializing in environmental sustainability, is spearheading the Verra Certification process for the project. This certification will enable the initiative to access international carbon markets and generate additional revenue by selling carbon credits. These funds will further support the project's sustainability and community-focused objectives, amplifying its environmental and economic impact.



FPDP has also partnered with Catalyst Energy, a leading energy advisory and project development company with deep expertise in greenfield renewable energy projects. Catalyst Energy is providing strategic consulting and guidance to ensure the project's long-term success. Their mission to accelerate the deployment of sustainable energy solutions in Southern Africa aligns seamlessly with the objectives of this initiative, offering invaluable expertise in planning and execution.



This integrated model highlights the transformative potential of bamboo as a sustainable resource, driving economic empowerment, environmental restoration, and renewable energy production. By leveraging the expertise and resources of its partners, the initiative sets a precedent for scalable, impactful solutions to combat poverty and foster sustainable development in the region

CALL FOR FUNDING

TO BUILD A SELF-SUSTAINING CIRCULAR ECONOMY

FPDP is transitioning from localized projects to a fully self-sustaining circular economy. To achieve this, FPDP is seeking financing to expand its operations, including the following initiatives:

- EXPAND THE NURSERY**
for propagation of both Balcooa (for the Plantation) and Abyssinica (for reforestation). FPDP currently operates a nursery with a capacity of 80,000 seedlings (2,700 sqm) and aims to expand this to 500,000 seedlings (25,000 sqm). This expansion aligns with a broader goal of scaling Bambusa Balcooa plantations to 1,000 hectares and reforesting 5,000 hectares using Oxytenanthera Abyssinica. These efforts will provide the foundation for long-term ecological restoration and economic sustainability.
- EXPAND PLANTATIONS TO TIPPING POINTS**
Expansion of the pilot bamboo plantation from 150 to 1,000 hectares. With an estimated annual yield of 15 - 20 tons per hectare, this expansion would produce over 20,000 tons of bamboo per year (or approximately 50 tons per day of bamboo), enough biomass raw material for Rovuma Pulp and Rovuma Power to produce at a profitable economic scale.
- SUBSTANTIALLY ENHANCING TREE COVER**
Targeted reforestation efforts along the Rovuma Belt corridor, with a focused initiative beginning from Palma and extending to Mocimboa da Praia. This strategic approach aims to restore degraded landscapes, improve biodiversity, and create green buffer zones that enhance climate resilience while supporting local livelihoods and long-term environmental sustainability.
- EXPANDING SKILLS TRAINING PROGRAMS**
That focus on agricultural and vocational expertise. These programs emphasize sustainable bamboo harvesting, cooperative development, and transitioning traditional charcoal producers into the bamboo value chain, unlocking new economic opportunities. With a goal of training over 2,000 individuals annually, the initiative covers diverse areas such as bamboo cultivation, agroforestry, irrigation, and intercropping. Additionally, participants gain hands-on skills in carpentry, joinery, electrical work, and machine operation, alongside essential education in nutrition, literacy, numeracy, and financial management. By equipping communities with these critical skills, FPDP fosters resilience, self-reliance, and the capacity to thrive within a sustainable bamboo-driven economy.
- STRENGTHENING COOPERATIVES**
To empower local communities, ensuring active participation in decision-making and management, enabling communities to take ownership of their sustainable and prosperous future. These cooperatives serve as vital platforms for collective action, fostering self-reliance, equitable resource sharing, and long-term economic resilience.

This expansion transforms the successful pilot phase into a scaled-up, commercially robust model, leveraging the profitable utilization of bamboo to produce high-value products. To sustain FPDP's economy-building efforts and process the significant volumes of bamboo being cultivated, strategic partnerships are essential. Key among these are Rovuma Inc and Rovuma Power, two co-located, for-profit entities currently under incorporation, which will play a pivotal role in driving the initiative's economic and operational success.

FPDP's nature-based approach presents a transformative blueprint for achieving sustainable and inclusive growth in conflict-affected regions. By tackling the root causes of conflict—poverty, unemployment, and resource scarcity—while aligning with global climate goals, FPDP offers a compelling investment opportunity.

This initiative provides donors and investors with the chance to support a scalable, impactful project that serves as a pioneering model for sustainable development in other conflict-affected areas.

FPDP TEAM

The Palma Development Foundation (FPDP) is driven by a skilled and multidisciplinary team whose collective expertise supports the successful implementation of the foundation's diverse initiatives across Cabo Delgado.



Each team member brings specialized knowledge that significantly enhances FPDP's capacity to deliver large-scale, community-driven solutions. In short, the FPDP team is well-positioned to execute complex projects that align with the long-term development goals of the Rovuma Belt region, ensuring lasting socio-economic impact and empowering local communities.



Asante sana!

For further information
PLEASE CONTACT:

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