Prickly Power Fund

INVESTMENT THESIS

Empower Community Groups through investing in cacti conversion to biogas and fodder production to harness the abundance of cacti biomass. The investment aims to eradicate hunger, create employment, and promote renewable energy production, contributing to environmental sustainability, energy security, and economic development within rural Communities.

PROBLEM

As a result of climate change, wild cacti have invaded grazing lands in Kenya, contributing to the death of livestock and wildlife. This has pushed about 25% of Kenya's population into chronic hunger.

Rains less than 60% of the 40-year average across most of Kenya. **Wild cacti** withstands drought and **have overgrown grazelands leading to 40% ill-health in livestock, widespread livestock death, and minimal livestock productivity.**

In Kenya**, pastoralism contributes about 13% of the GDP, it provides 2.2 million jobs and 95% of the household income** in the arid and semi-arid areas. About **28% of national meat consumption is from pastoralism, and 37% from smallholder farmers**, which both rely on the natural forage.

Livestock milk production, a key source of food and cash income for pastoralists, **is approx. 80% below average**. The overall decline in household access to food is driving up levels of acute malnutrition.

50-75% of the communal grazing lands in Laikipia County invaded leading to **48%** of **rural households losing US$ 500 – 1000 annually**.

OPPORTUNITY

Wild cacti can be processed into livestock feed and biogas**, reducing death of livestock and in turn improving availability of meat and milk.**

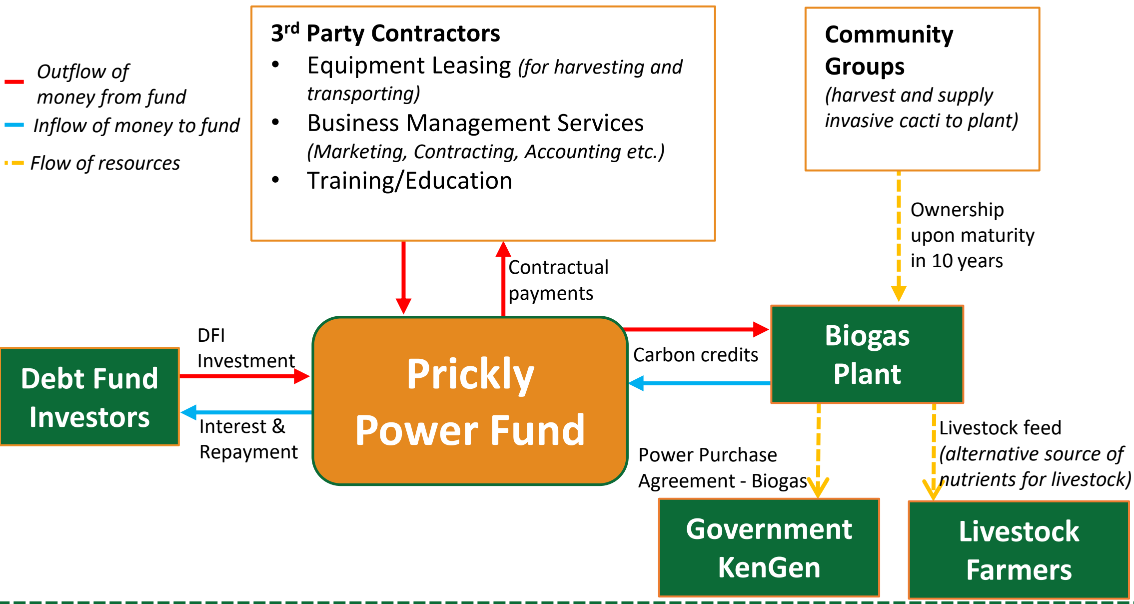
Kenyans depend on about 75% of livestock for meat and milk. The inclusion of cacti in fodder has shown to increase the nutritional value of meat and milk.

Wild cacti can generate 45k gallons of biogas per day, yielding 175 kilowatt hours of electricity

KenGen is seeking alternative and sustainable sources of energy for Kenyans and **will guarantee offtake of biogas.**

The Iloplei Twala Cultural Manyatta Women led by **Rosemary Nenini** have obtained ownership of grazelands invaded by wild cacti in Laikipia from the Government and are currently harvesting the invasive cacti on a small scale and converting to food and cosmetics products.

SOLUTION: PRICKLY POWER FUND



The **Prickly Power Fund (PPF) will utilize debt fund to overcome capital constraints and lack of knowledge to harvest and process wild cacti on a large scale into livestock feed and biogas**. The **livestock feed** from the plant **will be sold to livestock farmers at below market rates** as an alternative source of nutrients for livestock. The fund will also **partner with the Government in a Power Purchase Agreement (PPA) to offtake the biogas.** The **sale of the Biogas, carbon credits, and livestock feed** generated from the Plant **guarantee income to the fund during the 10-year period.** At the end of the 10-year period, the Biogas Plant will be transferred to the community group thereby ensuring business continuity and income for the community groups post the investment period.

PRICKLY POWER FUND OPERATING AND REVENUE STRUCTURE

- The initial investment will be used to finance equipment for the strategic partner over a ten-year period, on a lease to own model.
- The Prickly Power Fund will be responsible for administering the lease payments to the equipment suppliers and insurance premiums to AIG Insurance.
- The Fund brings together various stakeholders to build a sustainable business model for Community Groups including local suppliers who will be providers of the biodigesters and other farming equipment and the Iloplei Twala Cultural Women Group (owners of the land invaded by wild cacti).
- The biogas and fodder will be the main sources of revenue for the strategic partner, with limited income from carbon trading. Biogas price averages \$2.05/kg, Fodder average price is \$11.70/bale, and the carbon price is \$20/t of CO_2.
- KenGen is the customer for the biogas and is the only authorized organization to distribute energy in Kenya. Average consumption/person 2,000KWH with 20% of the population having access to clean fuel for cooking.
- The fund will receive a 75% profit share from the strategic partner as a source of income, and the funds will be used to make lease and insurance payments, the balance will be used for administration and to scale up operations.
- The fund will operate an office in Kenya, which will be responsible for collecting KPIs for impact assessment and ensure smooth training and operations for the strategic partner.
- The African Development Bank has pledged \$4Bn for development of infrastructure and human capital, mainly focusing on the youth and women, and the Fund will take advantage of the opportunity to apply for training grant for business management for the strategic partner to boost the farmer's business knowledge.

KEY STAKEHOLDERS

Potential Investors:
National Social Security Fund
Equity Bank of Kenya
African Development Fund
Bill & Melinda Gates Foundation
International Finance Corporation

Strategic Partner and Fund Beneficiaries:
Iloplei Twala Cultural Manyatta Women Group

Authorities:
Country Government of Laikipia
Ministry of Energy and Petroleum Kenya
National Environmental Agency

Target Market:
KenGen
Beef and Dairy Farmers

Supplier:
AIG insurance
Kenya Institute of Management
Biogas International
John Deere

Once successfully implemented in Laikipia, the solution will be scaled up to other counties in Kenya and countries within Africa.

Prickly Power Fund

UNIT ECONOMICS

10-Year Income Statement

Revenue:	$6,946,028
Biogas Sale	$5,422,804
Livestock Feed Sale	$1,471,596
Carbon Credit	$51,628
Operating Costs	$1,762,098
Operating Income	$5,183,929
Share of profit to fund @ 75%	$3,887,947
Balance attributable to farmers	$1,295,982
Fund Income	$3,918,947
Share of profit from farmers	$3,887,947
Management Fee @ 0.5%	$31,000
Operating Costs:	$2,306,822
Lease Payments	$776,415
Interest Payments	$1,254,207
Insurance Payments	$276,200
Admin Expenses	$152,152
Net Cashflows	$1,612,125

Assumptions:

- Production at 90% capacity
- CBG output 80.58m^3 / machine/ day
- Bale production 30/day
- Tax rate ~ 16%
- Inflation rate ~ 8%
- Discount rate ~ 15%, and the risk-free rate of 12.5%

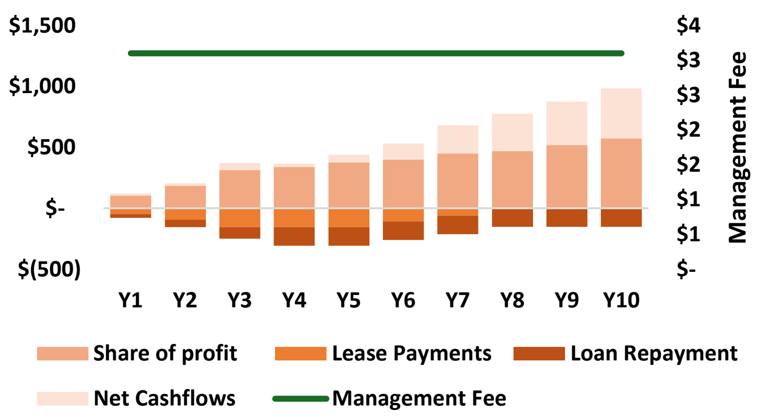
FUND DETAILS

Fund Type	Closed End Debt Fund
Fund Size	$630,000 To be raised in 3 rounds from year 0 to year 3
Tenor	Principal repayment over 7y after year 3 and interest for all 10y
Min. Investment	$50,000; 3 equal rounds (Year 1-3)
Geography	Global
Target Net IRR	13.25% (Investors)
Target Investors	Impact Fund Investors, Development Banks, Pension Funds and Commercial Banks in Kenya
Management Fee	0.5% annual on the initial investment
Eligible Borrower	Farmer Cooperatives, Entrepreneurs
Income streams (Investor)	Fixed loan interest @ 15% p.a.
Income streams (Fund)	Sale of biogas and livestock feed. Carbon credits
Financial Covenants	Maintain >75% productive capacity

Sensitivity Analysis

	Price of Biogas			
Biogas output (m^3)	$2.00	$3.00	$4.00	$5.00
100,000	10.01%	10.61%	11.18%	11.71%
200,000	11.18%	12.22%	13.16%	14.02%
300,000	12.22%	13.60%	14.82%	15.92%

FUND CASHFLOWS (000 USD)



RISKS AND MITIGANTS

High risk

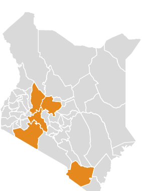
Biogas Production Efficiency	Strict quality control measures for feedstock and Investment in efficient biogas technology. Compliance with UNIDO and the Global Environmental Facility (GEF) standards introduced in Kenya in April 2022
Technical Challenges	Partnership with the Kenya Agricultural & Livestock Research Organization (KALRO) for feedstock research, implementing CIGR VIII engineering standards for robust design, and collaboration with local universities for technical innovation
Regulatory and Permitting Issues	Ongoing liaison with the ERC (Energy Regulatory Commission), adherence to the Energy Act 2019, and engagement with the Kenyan Ministry of Energy for early insights into policy adjustments
Demand, Default risk & Pricing	Guaranteed purchase of biogas by KenGen, use of the CBK risk management tools to mitigate default risks, and engagement with the Kenya Power and Lighting Company (KPLC) for demand forecasts
Impact Risk	Compliance with NEMA standards, ongoing Environmental Impact Assessments (EIA), and community benefit-sharing agreements in line with the Community Land Act.

Low risk

IMPACT ACROSS THE VALUE CHAIN

WHO	WHAT	HOW MUCH
Massai women	Increase in Annual Income for Maasai Women	20% increase (25% profit from model)
Farmers	Reduce death of Livestock	Aid in cutting the 2.43M annual livestock losses 30 cows/day fed
Kenya population	GHG Emission Reduction Reduce hunger Energy Security	2.2m Kg of CO_2 per year Boost meat and milk to ease the 25% hunger Power ~18k households daily

SCALABILITY



This model can be replicated across counties in Kenya such as Baringo, Nakuru, Narok, and Taita Taveta.

There are over 120,000 hectares of land in these counties invaded by wild cacti.

Outside of Kenya, the model can expand into similar markets withing Africa including Angola, Ethiopia, Madagascar, Morrocco, South Africa, Tanzania, and Tunisia,

with growing demand for clean energy and estimated cacti invasion of 2million hectares of land.

IMPACT ASSESSMENT

SDGs	Impact and KPIs
1 NO POVERTY	•**Impact:** Empower women landowners financially to alleviate poverty. •**KPI:** Income levels of women.
2 ZERO HUNGER	•**Impact**: Mitigate hunger by stabilizing the supply of meat and milk from livestock. •**KPI**: Livestock mortality rates and meat and milk production.
5 GENDER EQUALITY	•**Impact**: Enhance the decision-making power and leadership roles of women in agricultural communities. •**KPI**: Number of female leaders in community groups.
8 DECENT WORK AND ECONOMIC GROWTH	•**Impact**: Boost the local economy by enhancing agricultural productivity and creating job opportunities. •**KPI**: Production and employment rates in local agricultural.
13 CLIMATE ACTION	•**Impact**: Reduce air pollution by encouraging sustainable alternatives and energy sources. •**KPI**: Decrease in respiratory health issues and CO_2 emission.
17 PARTNERSHIPS FOR THE GOALS	•**Impact**: Foster regional collaboration to build technological knowledge and economic resilience. •**KPI**: Number of successful partnerships formed.