

SOLAR-BIOMASS CASSAVA VALUE-ADDITION UNIT

CASSAVAPRO

Turning Nigeria's largest crop — and its own peel waste — into **safe, high-quality cassava flour at the farm gate**, powered by clean energy and owned by women's cooperatives.

THE SOLUTION · IN ONE LINE

A containerised, **off-grid processing unit** that peels, dries and mills fresh cassava on-site — using **solar PV** for power and a **gasifier fired by cassava peels** for heat — cutting spoilage from ~40% to under 10%.

University of Lagos · UNILAG, Nigeria

Engineering

Computer Science

Medicine

FACULTY MENTOR · [Mentor name]

GENDER-BALANCED TEAM · ✓

01 THE PROBLEM

Nigeria is the world's **#1 cassava producer**, yet most of the crop is sold raw and perishes within 48 hours of harvest. Smallholders lose income twice over — to spoilage, and to selling unprocessed roots at a fraction of flour value. Poorly dried cassava also carries **cyanogenic compounds and aflatoxin-producing molds**, a hidden public-health burden.



04 BUSINESS MODEL

- Cooperative-owned asset.** A women-led processing cooperative owns and operates each unit as a shared village hub.
- Processing-as-a-Service.** Farmers pay a per-kg fee to convert roots into flour — no upfront cost, immediate income.
- HQCF off-take.** High-Quality Cassava Flour sold to bakeries and food processors under a "safe-flour" quality mark.
- Micro-lease financing.** Pay-as-you-process model lets cooperatives adopt without large capital, de-risking scale-up.

02 TECHNICAL DESIGN

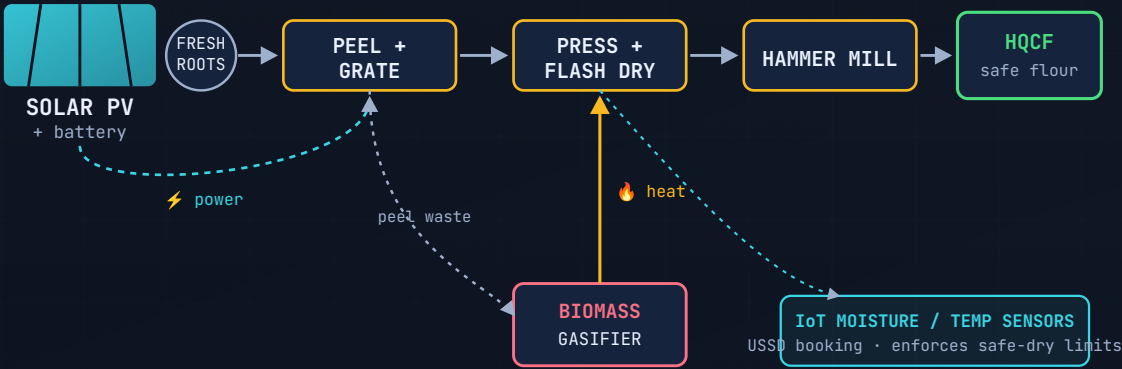
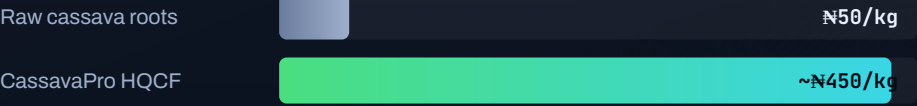
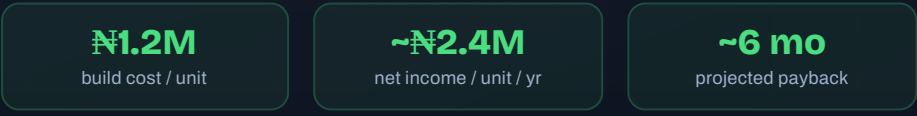


FIG 1 – Solar powers the processing line · cassava peels fuel the dryer · IoT sensors lock in safe drying

- Hybrid energy core.** Solar PV + battery drives all motors; a peel-fired gasifier supplies drying heat — **zero fuel cost, off-grid**.
- Circular by design.** The crop's own waste (peels) becomes the energy input, eliminating diesel and disposal.
- Smart safety [CS].** IoT moisture & temperature sensors enforce drying thresholds that kill aflatoxin mold; a **USSD line** lets low-literacy farmers book slots without a smartphone.
- Health-validated [Med].** Output tested for residual cyanide & aflatoxin — a quality mark no competitor offers.

03 ECONOMIC FEASIBILITY



~9× value uplift per kg · figures are projected unit economics, to be validated in field trial

05 TARGET USERS & MARKET

Primary users: smallholder cassava farmers and **women-led processing cooperatives** in rural Nigeria. **Off-takers:** bakeries, flour millers & food processors needing HQCF.

~60M tonnes

Nigeria's annual cassava output — the world's largest, with rising HQCF demand from flour-inclusion policy and import substitution.

06 PROTOTYPE & TRIAL TIMELINE

