Grant Pitch Document

Project Title

Sustainable Waste-to-Energy: Production of Biomass–LDPE Waste Nuggets as Alternative Fuel in Nigeria

Executive Summary

This project proposes the establishment of a pilot-scale torrefaction facility that converts agricultural residues (rice husk and straw) and low-density polyethylene (LDPE) waste into clean-burning, high-energy solid fuel nuggets. Funding Request: ₦23 million. Expected Annual Revenue: ₦16 million. Net Profit: ₦10 million. Payback Period: 3–4 years.

Problem Statement

Nigeria generates millions of tonnes of agricultural residues and plastic waste annually; offering a dual solution for waste reduction and sustainable energy access.

Project Objectives

1. Establish a 1-ton/day pilot torrefaction facility in Nigeria.
2. Convert rice husk, straw, and LDPE waste into high-energy fuel nuggets.
3. Create green jobs for youth and women.
4. Support SDG goals 7, 12, and 13.

Market Opportunity

Nigeria's solid-fuel demand is rising. Target consumers include blacksmiths, bakeries, foundries, and rural households. Competitive advantages include low-cost materials, clean combustion, and ease of production.

Technical Feasibility

Feedstock: Rice husk and straw blended with 0–8% LDPE waste.
Process: Torrefaction at 250–300°C for 30–60 minutes.
Product: Dense nuggets with >7,000 kcal/kg calorific value.

Operations Plan

Plant near rice-producing regions. Capacity: 1 ton/day. Staff: 1 engineer, 2 technicians, 1 quality analyst, 1 logistics officer, 1 sales officer.

Financial Overview

Total Funding Required: ₦23 million. Annual Revenue: ₦16 million. Operating Cost: ₦6 million. Net Profit: ₦10 million/year. ROI ≈ 43% after Year 2.

Environmental & Social Impact
Reduces plastic and agricultural waste, creates local employment, promote climate action and renewable energy.

Implementation Timeline
8 months total duration with phases for feasibility, equipment, setup, pilot, and launch.

Risk Analysis & Mitigation
Mitigation strategies include long-term contracts, preventive maintenance, and regulatory liaison.

Conclusion
This project aligns with Nigeria's renewable energy and waste management objectives. We seek ₦23 million in grant support to promote sustainable, clean, and affordable energy.