BUSINESS PLAN FOR PLASTIC CRUSHER AND RECYCLING PROJECT

Project Title: Plastic Crusher and Recycling Plant
Total Project Cost: ₦20,000,000 (Twenty Million Naira Only)
Prepared For: National Agency for Science and Engineering Infrastructure (NASENI)
Prepared By: The Federal Polytechnic Waste Recycling Hub
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1.0 EXECUTIVE SUMMARY

Plastic waste poses a major environmental and economic challenge in Nigeria. This business proposes the establishment of a **Plastic Crusher and Recycling Plant** that will collect, sort, wash, crush, and dry post-consumer plastics (PET, HDPE, LDPE, PP) into reusable flakes for sale to local manufacturers of packaging materials, plastic containers, and fibers.

The project aims to create a **sustainable and profitable recycling business** that contributes to Nigeria's **circular economy** and **industrialisation agenda**, in line with **NASENI's mission** of promoting local technology, capacity building, and infrastructure-driven manufacturing.

Project Summary:

- **Location:** Ilaro, Ogun State
- **Processing Capacity:** 1,000 kg/hour (approx. 20 tons/day)
- **Estimated Total Cost:** ₦20 million
- **Estimated Annual Revenue:** ₦144 million
- **Return on Investment (ROI):** ≈ 548%
- **Breakeven Period:** < 12 months
- **Jobs Created:** 15 direct, 100+ indirect

The business will partner with local waste collectors, community-based organizations, and NASENI institutes for fabrication, training, and technical supervision.

2.0 BUSINESS DESCRIPTION

2.1 Vision

We planned to become a leading local recycler of plastic waste in Ogun State, providing high-quality plastic flakes for the manufacturing sector while promoting environmental sustainability.

2.2 Mission

To reduce plastic pollution through efficient recycling systems and to contribute to local industrialisation by producing affordable recycled raw materials.

2.3 Objectives

1. Establish a 1-ton/hour capacity recycling plant within 6 months.
2. Recycle at least 200 tons of plastic waste monthly.
3. Achieve 90% equipment uptime through local maintenance capacity.
4. Create 100+ jobs through collection, sorting, and processing networks.
5. Achieve operational breakeven within the first year.

3.0 MARKET ANALYSIS

3.1 Industry Overview

Nigeria generates over **2.5 million tons of plastic waste annually**, yet less than **10%** is recycled. The demand for recycled PET flakes has surged due to:

- Growth in packaging, textiles, and bottle manufacturing industries.
- Increased government and corporate drive for sustainability.
- NASENI's and NESREA's push for green industrial innovation.

3.2 Market Demand

- **PET flakes:** ₦400–₦600/kg
- **HDPE flakes:** ₦500–₦700/kg
- **LDPE/PP flakes:** ₦300–₦500/kg
- Recyclers and manufacturers (e.g., Coca-Cola, Indorama, Chi Plastics, Grand Cereals, etc.) have growing demand for recycled plastic materials.

3.3 Target Customers

- Plastic product manufacturers
- Fiber and packaging industries
- Export buyers (for PET flakes)
- Local artisans producing plastic-based materials

3.4 Competitive Advantage

- Local fabrication and NASENI support reduce equipment import costs.
- Direct sourcing from waste aggregators ensures lower input costs.
- In-house washing and drying line produces high-purity flakes.
- Eco-brand reputation improves access to corporate clients.

4.0 TECHNICAL DESCRIPTION

4.1 Production Process

1. **Collection:** Waste plastics sourced from scavengers and waste aggregators.
2. **Sorting:** Manual sorting by polymer type (PET, HDPE, LDPE, PP).
3. **Crushing:** Plastics are shredded into flakes by the crusher machine.
4. **Washing:** Flakes are washed and contaminants removed.
5. **Drying:** Flakes are dried using a hot-air or spin dryer.
6. **Packaging:** Dried flakes are bagged for sale to manufacturers.

4.2 Equipment List

- Plastic crusher machine (1 ton/hour)
- Washing line (friction washer and tanks)
- Hot-air dryer
- Conveyor belt
- Generator (60 KVA)
- Weighing scales and sealing machine

4.3 Installed Capacity

- 1,000 kg/hour = 8,000 kg/day = 200 tons/month (at 25 working days)
- 90% uptime expected with preventive maintenance.

5.0 MANAGEMENT & ORGANISATIONAL STRUCTURE

Position	Responsibility
Managing Director	Strategic planning, partnerships, finance
Plant Manager	Operations oversight, maintenance, production
Technical Supervisor (NASENI-trained)	Equipment setup, local fabrication support
Accountant/Admin	Record keeping, procurement, reporting
Operators (4)	Crushing, washing, drying operations
Sorters (5)	Sorting and feeding materials
Drivers/Logistics (2)	Transport of waste and finished flakes

Total Staff: 15 direct employees initially.

6.0 FINANCIAL PLAN

6.1 Capital Requirement

Component	Cost (₦)
Machinery & Equipment	14,800,000
Site Development	1,200,000
Working Capital	2,000,000
Training & Technology Transfer	800,000
Project Management/Admin	700,000
Contingency	500,000
Total	**₦20,000,000**

6.2 Revenue Projection (Year 1–3)

Year	Production (tons)	Sales (₦/ton)	Revenue (₦)	Operating Cost (₦)	Net Profit (₦)
Year 1	2,000	72,000	144,000,000	34,360,000	109,640,000
Year 2	2,400	72,000	172,800,000	40,000,000	132,800,000
Year 3	2,700	75,000	202,500,000	45,000,000	157,500,000

6.3 Return on Investment (ROI)

ROI Year 1 = (₦109,640,000 ÷ ₦20,000,000) × 100 ≈ **548%**

The high ROI underscores the commercial viability and attractiveness for investment and partnership with NASENI.

Payback Period: < 12 months

6.4 Cash Flow Summary (Year 1)

Month	Inflows (₦)	Outflows (₦)	Net Cash Flow (₦)
Jan–Mar	10,000,000	8,000,000	2,000,000
Apr–Jun	36,000,000	9,000,000	27,000,000
Jul–Sep	48,000,000	9,500,000	38,500,000
Oct–Dec	50,000,000	7,860,000	42,140,000
Total	**₦144,000,000**	**₦34,360,000**	**₦109,640,000**

7.0 RISK ANALYSIS & MITIGATION

Risk Factor	Impact	Mitigation Strategy
Equipment downtime	Medium	Preventive maintenance & NASENI technical support
Supply inconsistency	High	Contracts with waste aggregators & community partners
Power fluctuations	Medium	60 KVA generator + power stabilizer
Market price volatility	Low	Diversify customers, export surplus
Environmental regulation	Low	Compliance with NESREA & state EPA

8.0 SOCIAL AND ENVIRONMENTAL IMPACT

- Reduces landfill plastic waste and urban pollution.
- Provides jobs to informal waste collectors and youth.
- Promotes clean, sustainable communities.
- Supports national goals under **SDG 9 (Industry, Innovation & Infrastructure)** and **SDG 12 (Responsible Consumption & Production)**.

9.0 ALIGNMENT WITH NASENI OBJECTIVES

This project aligns directly with NASENI's mandate to:

1. Promote **local fabrication and technology adaptation** in manufacturing.
2. Enhance **industrial capacity** in engineering and recycling.
3. Support **SME-scale technology diffusion** for environmental sustainability.
4. Develop a **model recycling system** replicable in other states.
5. Facilitate **technology transfer** and training of local technicians.

10.0 CONCLUSION

The ₦20 million Plastic Crusher and Recycling Plant is a technically viable, financially profitable, and environmentally sustainable project aligned with NASENI's national industrialisation goals.

With NASENI's support through funding, technical partnership, and capacity building, the project will achieve full operation within six months, breakeven in less than one year, and expand nationwide within three years.