

PROJECT REPORT: FROM WASTE TO ENERGY

Renewable Biomass from Coconut Shells for Circular Economy & Coastal Protection in Ghana

\$15,000

TOTAL BUDGET /
WORKSTATION COST

800/400

SHREDDER EQUIPMENT
(37KW×2)

100%

CIRCULAR ECONOMY

Tema Port

LOGISTICS & IMPORT
GHANA

1 PROJECT OVERVIEW & KEY DATA

Project Title	From Waste to Energy – Renewable Biomass from Coconut Shells in Ghana
Project Location	Accra & Coastal Regions (Tema Port Import / Processing Station), Ghana
Project Partner (South)	Plastic Punch (PP) (NGO for Marine Conservation & Waste Management)
Applicant / Coordination	contribYOUte gGmbH (Seed Funding & Technical Procurement)
Focus Areas & Target Group	Circular Economy, Marine Conservation, Renewable Energy & Local Employment
Project Duration / Start	From October 2025 (Commissioning of Shredder Station in 2026)

2 BACKGROUND & CHALLENGES

"By linking organic waste recycling, sea turtle conservation, and the provision of clean biomass energy, economic opportunities are created for vulnerable groups while simultaneously solving critical environmental problems."

Environmental Situation & Energy Challenges in Ghana:

- **Massive Waste Accumulation on the Coast:** In Ghana's urban centers and coastal regions, immense quantities of coconut shells are discarded daily. Left unmanaged, they choke streets, informal dumpsites, and drainage canals.
- **Lack of Clean Energy Sources:** Local communities and small enterprises rely heavily on wood charcoal and fossil fuels. Affordable, clean, and carbon-neutral energy alternatives are scarce.
- **Threats to Coastal Ecosystems:** Coastal zones suffer heavily from plastic and commercial waste pollution, directly destroying the nesting habitats of endangered sea turtles and harming marine biodiversity.



3 TECHNICAL SPECIFICATIONS OF THE SHREDDER EQUIPMENT

To process tough, fibrous coconut shells into high-density biomass, a heavy-duty Type 800/400 shredder system (manufactured by Henan Jinshichang Machinery Equipment Co., Ltd) was procured and configured:

COMPONENT / PARAMETER	SPECIFICATION & TECHNICAL DETAILS	MATERIAL / DIMENSIONS
Equipment Model	Type 800/400 Shredder (Independent Transmission)	Dimensions: 3.0 × 1.3 × 2.0 m Weight: 5.0 Tons
Motor Power	37 kW × 2 Dual-Motor System (74 kW Total Output)	High-torque performance for tough organic fibers
Cutting Blades	20 High-Performance Blades	Diameter: 400 mm Thickness: 40 mm Material: 55 Silicone
Spacers	20 Heavy-Duty Spacers	Diameter: 215 mm Thickness: 40 mm Material: Forge 45#
Main Spindles	2 Dual Counter-Rotating Shafts	Diameter: 180 mm Material: Forge 45# Forged Steel
Speed Reducer	Model 650 Dual-Speed Reduction Gearbox	Speed Ratio: 48.57 / 40.17 for maximum crushing force

4 STRATEGIC IMPLEMENTATION & VALUE CREATION

The project combines **Plastic Punch's** expertise in environmental education, citizen science, and waste prevention with industrial biomass processing technology:

- **Building the Biomass Value Chain:** Systematic collection and transport of coconut waste. Processing in the 800/400 shredder forms the foundation for clean-burning briquettes and biofuel.
- **Targeted Coastal & Marine Conservation:** Clearing organic and plastic waste along beaches directly improves the nesting conditions for endangered sea turtles.
- **Edutainment & Community Engagement:** Interactive campaigns, beach cleanups, and edutainment formats actively engage local community members in sustainable waste management practices.

5 TARGET ACHIEVEMENT & SUSTAINABILITY IMPACT

- **Resource Efficiency & Circularity:** Establishing a proven circular economy model that turns an abundant waste product into a valuable energy resource.
- **Socio-Ecological Job Creation:** Generating employment opportunities in collection, logistics, and machinery operation for vulnerable youth and women.
- **CO₂ Reduction & Deforestation Relief:** Replacing charcoal with renewable biomass pellets, directly mitigating deforestation pressures.

6 FINANCIAL REPORT & BUDGET BREAKDOWN

The financial breakdown covers equipment manufacturing, international ocean freight, import duties, inland transport, and setup at the processing station in Ghana (Basis USD / EUR):

EXPENSE ITEM / CATEGORY	DETAILS & CALCULATION BASIS	AMOUNT (USD)	AMOUNT (EUR)*	SHARE
Shredder Equipment	Type 800/400 Coconut Shell Shredder (Henan Jinshichang)	\$11,100.00	€10,277.78	74.00 %
Shipping Fee (Ocean Freight)	Sea freight arriving at Tema Port (Ghana), container consolidation	\$700.00	€648.15	4.67 %
Marine Insurance	Transit insurance coverage for international freight	\$12.00	€11.11	0.08 %
Customs Duty & Import Clearance	Import duties and port clearance fees at Tema Port	\$2,000.00	€1,851.85	13.33 %
Transport & Workstation Setup	Inland logistics from Tema port to workstation, installation & testing	\$1,188.00	€1,100.00	7.92 %
TOTAL COST TO WORKSTATION		\$15,000.00	€13,888.89	100.00 %

* Indicative exchange rate: 1 EUR = 1.08 USD (Seed funding contribYOUte: €6,500.00 / Remaining amount covered via co-funding & partner equity).

7 FINANCING STRUCTURE

FINANCING SOURCE / CONTRIBUTOR	AMOUNT (USD)	SHARE (%)
contribYOUte gGmbH (Seed Grant)	\$7,020.00	46.80 %
Plastic Punch & Local Partners (Equity / Co-Financing)	\$7,980.00	53.20 %
TOTAL WORKSTATION FINANCING	\$15,000.00	100.00 %

8 CONCLUSION & OUTLOOK

Deploying industrial shredding technology transforms organic waste in Ghana into a valuable economic and environmental asset. The project seamlessly connects clean energy generation with active marine conservation, empowering local communities for the long term.

Location, Date: Blaubeuren / Accra, 2026

Project Leads: Hannah Werner (contribYOUte gGmbH) & The Plastic Punch Team