Progress Report: SDG 12 (Responsible Consumption and Production) – Chukwuemeka Odumegwu Ojukwu University (COOU)

2024/2025 Session

Executive Overview

Chukwuemeka Odumegwu Ojukwu University (COOU) advances **Sustainable Development Goal 12 (SDG 12: Responsible Consumption and Production)** by embedding circular economy principles, sustainable material engineering, and resource-efficient operations across its campuses in Igbariam, Uli, and Awka. Anchored on the university's **"3Vs Agenda" (Values, Viability, Visibility)** under the leadership of Vice-Chancellor Prof. Kate Azuka Omenugha, COOU addresses unsustainable consumption patterns and waste accumulation in Anambra State. The university leverages digital recycling infrastructure, bio-composite materials research, agricultural waste utilization, and administrative paper-reduction initiatives to promote sustainable production ecosystems.

Key Areas of Progress & Implementation

1. Circular Economy & Smart Digital Waste Infrastructure

COOU has pioneered tech-driven waste recovery and circular supply chain frameworks:

- **Community Recycling Digital Infrastructure (COREDI):** Through British Council-funded research, COOU developed digital logistics frameworks and Internet of Things (IoT) monitoring systems for post-consumer plastic waste management. The project establishes digital reverse-logistics channels to track and divert polyethylene terephthalate (PET) plastic waste from local landfills and urban waterways into recycling streams.
- **Commercial & Local Value Chain Partnerships:** The university collaborates with regional hospitality providers, commercial hubs, and recycling firms (e.g., agreements with Seli Limited and local hotels) to establish structured plastic collection points and guarantee sustainable raw material supply for recycling processors.
- **Campus Waste Segregation Drives:** COOU promotes source segregation across student housing and academic blocks, training student environmental marshals to separate organic, paper, and plastic waste for recycling and composting.

2. Eco-Friendly Bio-Composites & Materials Upcycling Research

Academic departments in Engineering and Natural Sciences at COOU turn industrial and agricultural waste into high-value engineering materials:

- **Agro-Waste Bio-Composites:** Faculty researchers investigate the structural reinforcement of biopolymers and vinyl esters using natural agricultural waste fibers—including African oil bean seed pods (*Pentaclethra macrophylla*), palm fruit fiber, rice husk ash, and groundnut shells. These bio-composites serve as eco-friendly, biodegradable alternatives to synthetic materials in automotive and construction applications.

- **Industrial Solid Waste Recycling:** Research teams synthesize polymer matrix composites utilizing recycled waste soda-lime glass, silica sand, and post-consumer plastics (PET, HDPE). This reduces landfill waste generation while developing durable building tiles, structural panels, and lightweight materials.

3. Sustainable Agriculture & Post-Harvest Loss Mitigation
Through the Faculty of Agriculture at the Igbariam campus, COOU works to reduce food loss and promote sustainable agricultural production:

- **Post-Harvest Handling & Processing:** University extension officers train local smallholder farmers in food preservation, proper drying techniques, and post-harvest storage to reduce spoilage across the regional agricultural supply chain (Target 12.3).

- **Organic Waste & Bioenergy Utilization:** Researchers explore anaerobic digestion technologies to process livestock manure and crop residue into biogas and bio-fertilizers, reducing reliance on chemical inputs and replacing synthetic fertilizers with nutrient-rich organic soil conditioners.

4. Resource Efficiency, Digitalization, and Institutional Operations
COOU integrates sustainable consumption into its day-to-day administrative and academic operations:

- **Transition to Paperless Workflows:** COOU expanded its centralized E-Library portal (`elibrary.coou.edu.ng`) and digital administrative testing systems (such as staff ICT promotion examinations), significantly reducing paper, toner, and stationery consumption across administrative departments.
- **Energy-Efficient Facility Upgrades:** The physical planning unit enforces the deployment of energy-saving LED lighting and automated solar-inverter systems across newly renovated buildings, lowering per-capita grid energy and fossil-fuel dependency.

Performance Summary against SDG 12 Targets

SDG 12 Target Area	COOU Operational & Academic Contribution	Impact Level
12.2 Sustainable Management & Efficient Use of Natural Resources	Applied research into bio-composites from agricultural waste (oil bean, palm fiber) replacing virgin raw materials.	**High** (Materials & Engineering R&D)
12.3 Halve Global Per Capita Food Waste & Food Loss	Agro-extension training on post-harvest preservation and crop residue conversion into biogas/fertilizers.	**High** (Regional Agriculture)
12.4 Environmentally Sound Management of Chemicals & Waste	Safe recovery and upcycling of waste soda-lime glass, recycled plastics, and industrial solid waste.	**High** (Environmental Protection)
12.5 Substantially Reduce Waste Generation via Recycling & Reuse	British Council COREDI smart plastic recycling project, hotel collection networks, and campus waste segregation.	**High** (Circular Economy Infrastructure)

Strategic Recommendations for Acceleration

1. **Adopt a Formal Sustainable Public Procurement Policy:** Establish mandatory green procurement guidelines requiring all university vendors and contractors to prioritize eco-labeled, energy-efficient, and recyclable materials.
2. **Establish a On-Campus Bio-Plastic & Upcycling Incubator:** Upgrade existing engineering laboratories into a dedicated recycling testbed to pilot small-scale commercial production of plastic-composite floor tiles and eco-bricks from campus waste.
3. **Publish an Annual University Resource & Waste Audit:** Track and publish yearly metrics detailing campus material consumption, paper usage reduction, total plastic tonnage diverted to recyclers, and hazardous waste disposal compliance.

Signature:  Date: 24/09/2026

Prof. Kate Azuka Omenugha, Fnipr

Vice Chancellor