International Labour Organization

From Organic Waste to Agrifood Value

The importance of technology choice on employment in Africa

Africa faces a dual challenge: persistent unemployment, underemployment, and informality—especially among **youth and women**—alongside worsening **environmental degradation**, largely due to inefficient **organic waste management**. This research explores how the **choice of appropriate technologies** for managing organic waste can address both challenges by promoting **decent employment** and **environmental sustainability**, especially within agrifood systems in rural and urban areas.

Using a combination of **desk research and key informant interviews**, this study identifies a **continuum of organic waste-to-agrifood technologies**, from low-tech solutions that improve soil health and reduce farm input costs, to commercial ventures generating income and employment opportunities.

Technologies such as **composting, biochar production**, and **black soldier fly farming** convert organic waste into valuable products like fertilizers, animal feed, and bioenergy. These innovations offer direct benefits to smallholder farmers and communities while creating **upstream and downstream employment** in value chains—from waste collection and processing to logistics and biotechnology.

To scale these solutions and ensure they support a just transition in Africa's agrifood systems, key enablers include:

- Investment in **infrastructure** and **technology**
- **Skills development** and capacity building
- **Access to finance**
- **Social dialogue** and inclusive policymaking

Employment, agrifood systems and organic waste inefficiencies in Africa

Africa's demographic trends pose an urgent challenge:

- In 2023, **145 million** people in Sub-Saharan Africa lived in **extreme working poverty** (ILO, 2024b).
- By **2030**, the youth population will reach **200 million**, and by **2050**, Africa's total population will increase by **950 million** (UNECA, 2024). This growth intensifies pressure on food systems and job markets, especially in rural areas where informal work is the norm.

Employment disparities are stark:

- **Youth NEET (Not in Employment, Education, or Training)**: Nearly 1 in 4 in Sub-Saharan Africa (ILO, 2024a)
- **Gender gap**: In North Africa, women's formal employment lags behind men's by 49 percentage points (ILO, 2024b)
- **Conflict-affected youth**: 8.9 million lived near conflict zones in 2022

The agrifood sector, employing over a billion globally, is central to African economies, yet productivity remains low due to:

- Outdated farming practices
- Limited access to finance and modern technologies
- Inadequate storage and transport infrastructure

Post-harvest losses reach **40% for perishables**, and undernourishment affects over **257 million people** (FAO & ECA, 2018).

Africa's **waste generation is projected to triple by 2050** (World Bank, 2018), driven by rapid urbanization. Yet waste collection rates remain low—just **44% on average** in Sub-Saharan Africa, with rural areas most underserved.

Organic waste accounts for:

- **50–80%** of municipal waste in low- and middle-income countries
- **35%** of urban emissions (ESCAP, 2017; C40 Cities & Accra Metropolitan Assembly, 2024)

Current waste management practices—primarily **landfilling and incineration**—are inefficient, environmentally damaging, and create **few jobs**:

- Incineration: only **1.8 jobs per 10,000 tons/year** (Ribeiro-Broomhead et al., 2021)
- High energy costs, poor suitability for moist organic waste
- Requires specialized skills, often unavailable locally
- Not aligned with green job creation or clean energy goals

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Key technologies

A growing number of **organic waste management technologies** demonstrate real potential to contribute to **green jobs**, sustainable agriculture, and a circular economy in Africa.

- **Composting:** Converts waste to nutrient-rich fertilizers; supports soil health and small-scale farming.
- **Biochar:** Improves soil quality, sequesters carbon, and reduces fertilizer use.
- **Black Soldier Fly (BSF) farming:** Transforms organic waste into high-protein animal feed and compost by product.

These technologies offer employment at **multiple scales:**

- **Smallholder level:** Reduces input costs, improves yields
- **Commercial scale:** Generates jobs across value chains—from **waste collection and segregation to processing, logistics, and biotech applications**

Value chain employment impact:

- **Upstream:** Waste collection, sorting, and transport
- **Midstream:** Processing facilities (e.g., composting plants, BSF farms)
- **Downstream:** Sales, distribution, and use of bio-products

Compared to incineration or landfilling, reuse strategies offer **higher employment multipliers** and align with **just transition goals.**

Enablers for scaling impact

To unlock the full employment and sustainability potential of organic waste management technologies, the following actions are essential:

- **Skills and competency development**
  - Address the **skills mismatch**: Over 60% of youth in agrifood systems are misaligned with job requirements (OECD, 2021)
  - Reform **informal apprenticeships** and training systems to ensure recognition and quality
- **Investment in infrastructure and technology**
  - Build local capacity for small- and medium-scale organic waste processing facilities
  - Promote **appropriate technology** solutions tailored to African contexts
- **Financial inclusion**
  - Improve access to finance for youth, women, and informal entrepreneurs
  - Support start-ups in the green and circular economy sectors
- **Social dialogue and policy support**
  - Engage stakeholders—including local communities, private sector, and governments—in policy development
  - Promote integrated approaches linking employment, waste, agriculture, and climate goals

Conclusion

Africa's intersecting challenges of youth unemployment, underemployment, and environmental degradation demand innovative, inclusive solutions. Appropriate organic waste technologies present a **transformative opportunity**—creating green jobs, improving agrifood systems, and contributing to a just transition.

With coordinated investment in skills, infrastructure, finance, and inclusive policymaking, organic waste can become a valuable resource for both **employment creation** and **environmental resilience** in Africa's sustainable development journey.

Contact us for the full report and more information: EMPINVEST@ilo.org

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