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“Exploring opportunities ...  
for managing natural resources and a better life for all”

## Circular bioeconomy for sustainable resource management and livelihood improvement in Ethiopia

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### Abstract

Ethiopia faces a growing challenge of balancing natural resource utilisation with long-term sustainability. Its linear economic model leads to unsustainable waste generation from agriculture, urban populations, and the industry sectors. This paper explores the potential of a circular bioeconomy (CBE) as a solution. By promoting closed-loop systems that minimise waste and maximise resource use, CBE offers a pathway for Ethiopia to achieve sustainable resource management, economic growth, and better livelihood opportunities. CBE business models create valuable products such as organic fertiliser, biochar, bioenergy, and alternative proteins. CBE practices provide new income opportunities for farmers and urban dwellers and reduce the country's reliance on virgin resources, chemical fertiliser, and non-renewable energy while addressing environmental pollution and soil depletion.

Major organic waste streams in Ethiopia that could be recovered and reused include agricultural crop residues, animal manure, human excrement, and industrial sludge. Addressing the vast untapped potential of resource recovery from waste, this study analyses opportunities and challenges associated with promoting CBE in Ethiopia, focusing on analysing the regulatory framework, business licensing and registration procedure, government support, access to finance, and business support services. The paper employs a comprehensive desk review of peer-reviewed literature complemented by grey literature to capture recent trends or non-traditional research aspects. Semi-structured interviews with sector experts were conducted to fill information gaps.

Key findings of this study are that a robust regulatory framework, streamlined business registration, and access to finance are critical for creating an enabling investment climate for CBE. Government support, business networks, and support services can empower CBE ventures and contribute to sustainable resource management. By focusing on policy interventions that combine sustainable waste management and livelihood creation, CBE can significantly contribute to achieving a more sustainable development path for all Ethiopians.

**Keywords:** Bio waste, bioenergy, organic waste, policy recommendations