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Exploring the Circular Economy Landscape in Ethiopia

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DAB Development Research and Training PLC

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Executive Summary

Introduction:

Ethiopia faces significant challenges related to poverty, youth unemployment, and environmental degradation, which are exacerbated by rapid urbanization, inefficient waste management, and a linear economic model. The Circular Economy (CE) emerges as a strategic framework that can transform these challenges into opportunities for sustainable, inclusive, and climate-resilient development by promoting resource reuse, recycling, and regeneration.

Potential for CE in Ethiopia:

Ethiopia possesses abundant organic waste, agricultural residues, and livestock manure, creating opportunities for composting, biogas production, and recycling. Its youthful workforce is well-suited for labor-intensive CE sectors such as waste management, recycling, repair, and sustainable agriculture, offering solutions to unemployment while fostering economic inclusion. CE's focus on innovation and green entrepreneurship aligns with the country's growing eco-enterprise ecosystem.

Somali Region Context:

The Somali Region holds unique CE potential due to its large livestock-based economy and high levels of organic and plastic waste, presenting opportunities in biogas, composting, and recycling. However, the region faces challenges such as poor infrastructure, weak coordination among actors and limited financial access that constrain CE implementation. Women and youth participation in CE initiatives is notable, but sustainable economic empowerment remains limited, highlighting the need for targeted interventions and capacity building.

Policy and Institutional Framework:

Ethiopia's CE ambition is backed by strong policies, including the National Circular Economy Roadmap, Climate Resilient Green Economy Strategy, and Plastic Waste Management Strategy. These are aligned with continental and global frameworks such as the Africa Circular Economy Alliance, Agenda 2063, the SDGs, and the Paris Agreement, enhancing institutional readiness and enabling international support for CE initiatives.

Benefits:

The adoption of CE offers multiple benefits, including reduced waste and pollution, conservation of resources, regeneration of degraded ecosystems, and improved public health. CE stimulates economic diversification by creating value from waste streams and provides employment opportunities, particularly for women and youth, through inclusive green jobs and entrepreneurship.

Challenges and Opportunities:

Key challenges include inadequate waste management infrastructure, limited public awareness, weak regulatory enforcement, technological and financial constraints, and poor stakeholder coordination. However, these challenges also present opportunities for targeted investments, technological innovation, and institutional strengthening to scale up CE practices across sectors and regions.

Cross-Actor Cooperation:

The successful implementation of CE in Ethiopia requires strong collaboration among government agencies, the private sector, civil society organizations, international donors, and local communities. Coordinated efforts are essential to overcome structural barriers, integrate informal sector actors, and build resilient and inclusive circular systems.

Consistency of Findings:

The study findings demonstrate strong consistency across the desk review, Key Informant Interviews (KIIs), and case studies. Desk reviews established theoretical frameworks, policies, and resource potential; KIIs validated practical challenges, opportunities, and stakeholder perspectives; while case studies showcased real-world impacts of CE activities on employment, women and youth empowerment, and environmental outcomes, including in the Somali Region.

Overall Conclusion:

Ethiopia is well-positioned to transition towards a Circular Economy, supported by its abundant resources, young workforce, and strong policy commitment. However, achieving the full benefits of CE requires overcoming infrastructural, financial, technological, and institutional barriers through integrated strategies, targeted interventions, and effective multi-stakeholder cooperation. This will ensure CE becomes a catalyst for green growth, poverty reduction, gender equity, and climate resilience across the country, with particular relevance for vulnerable regions such as Somali.

1 Introduction

1.1 Background and Justification

Ethiopia continues to face widespread poverty, particularly in rural areas where limited access to education, infrastructure, and income-generating opportunities persists (World Bank, 2024). These socioeconomic challenges are compounded by environmental degradation, such as deforestation, soil erosion, and climate variability which severely affect agricultural livelihoods and deepen cycles of poverty (UNEP, 2023; UNEP, 2024). In Ethiopia, where rural livelihoods are largely dependent on subsistence farming, environmental stressors such as soil erosion, deforestation, and climate variability exacerbate food insecurity and hinder income diversification. These deepen poverty cycles and complicate efforts to improve livelihoods.

The Somali Region, in particular, faces acute and multifaceted vulnerabilities stemming from its climatic conditions, frequent and prolonged droughts, inadequate infrastructure, and cultural traditions that shape economic practices and resource management. These challenges are compounded by limited access to basic services, weak institutional capacity, and geographical remoteness, which hinder development efforts and exacerbate poverty. The region's economy is predominantly reliant on pastoralism and natural resources, especially livestock. However, this dependence makes the population highly susceptible to environmental and economic shocks, such as drought-induced livestock losses, market fluctuations, and land degradation. Without targeted and resilient development interventions, these vulnerabilities are likely to deepen, further undermining livelihoods and food security (UNDP, 2015)

The Circular Economy (CE) has emerged as a transformative framework that addresses the intertwined challenges by shifting from the traditional linear “take-make-dispose” model to a system that promotes the reuse, recycling, and regeneration of resources (Ellen MacArthur Foundation, 2019, 2024; Geissdoerfer et al., 2017). The adoption of a Circular Economy (CE) in Ethiopia is both a necessity and a strategic opportunity to address growing challenges such as rapid urbanization, unemployment, environmental degradation, and resource scarcity. With over 70% of urban waste going uncollected or unmanaged, CE offers an essential pathway to transform waste into economic value (UN-Habitat, 2021). Ethiopia’s potential lies in its large informal waste sector, abundant agricultural residues, and a young population that can drive innovation in recycling, repair, and up cycling industries (World Bank, 2024). The country’s young population, with over 70% under the age of 30, also represents a demographic advantage for innovation and green entrepreneurship, especially in recycling, eco-design, and digital platforms for circular business models.

The benefits of CE in Ethiopia include job creation, improved public health, reduced pressure on landfills, and climate mitigation, particularly in urban areas. Ultimately, CE offers Ethiopia a practical model for achieving green growth, circular jobs, and sustainable development aligned with both Agenda 2063 and the Sustainable Development Goals (SDGs). In the Somali Region, the Circular Economy (CE) could offer a practical approach to addressing chronic vulnerabilities such as drought, land degradation, and overdependence on natural resources. By promoting practices like regenerative agriculture, water recycling, and value-added livestock processing, CE

can enhance resource efficiency, reduce waste, and create alternative livelihoods. These approaches support climate resilience, food security, and economic diversification in a region heavily reliant on pastoralism. Moreover, integrating CE with local knowledge and inclusive participation, especially of women and youth, can strengthen social cohesion and build a more adaptive and sustainable economy aligned with the region's cultural and ecological realities (FAO, 2022, 2024; African Development Bank & Africa Circular Economy Facility, 2024).

1.2 Objective

- ✓ Profile existing circular economy activities
- ✓ Profiling and documenting CE enterprises adaptable to Somali region that unlock opportunities for youth and women engagement
- ✓ Implementation status of the National Circular Economy Roadmap of Ethiopia and Strategies/Initiatives supporting the National Circular Economy Roadmap
- ✓ Identification key public and private sector actors/stakeholder including donors involved in circular economy activities
- ✓ Examine Ethiopia's policy and legal frameworks supporting CE
- ✓ Assess opportunities and challenges of implementing CE activities
- ✓ Highlighting success stories demonstrating CE's positive social and economic impacts

1.3 Methodology

- Data Collection Method: Relevant information was gathered through desk review of policy documents, legal frameworks, reports, international donor project documents, and quantitative studies. Furthermore, Case studies and Key Informant Interviews were conducted to supplement the data. In the study 6 case, 4 from Addis Ababa, 1 from Adama and 1 from Somali Region, are included. The KII engaged EEPA, Somali's EPB, Ministry of Industry, Textile and Garment Research Center, and Addis Ababa City Cleaning Administration.
- Analysis Approach: The qualitative data collected through desk review, focus group discussions (FGDs), and case studies were analyzed using thematic analysis. Triangulation was applied to enhance credibility and validity by comparing findings from the desk review (secondary data), FGDs, and case studies. Thematic Analysis was chosen as the core analytical method because it enables systematic identification, analysis, and interpretation of patterns and themes across different qualitative data sources.

2 Evidence from the Desk Review

2.1 Theoretical Frameworks

The implementation of Circular Economy (CE) in Ethiopia is reinforced by several theoretical frameworks that provide holistic guidance for sustainable development. These frameworks the Sustainable Livelihoods Framework (SLF), the Social-Ecological Systems (SES) Framework, and Gender and Youth Empowerment Frameworks (GYEF) offer valuable insights into how CE can contribute to inclusive, resilient, and environmentally sound transitions.

The Sustainable Livelihoods Framework (SLF) supports CE by emphasizing the enhancement of natural, human, and social capital. CE initiatives, such as recycling enterprises and eco-design, protect natural resources (natural capital), build skills and knowledge (human capital), and strengthen community collaboration and networks (social capital). This alignment promotes resilience through income diversification and reduces dependence on environmentally degrading resources (Scoones, 1998; Patrick et al., 2019; Awan & Sroufe, 2022).

The Social-Ecological Systems (SES) Framework further complements CE by highlighting the dynamic interactions and feedback loops between communities and ecosystems. CE activities like composting, remanufacturing, and water reuse create positive feedback cycles that sustain ecological health and human well-being. The SES perspective emphasizes adaptive management, which is key for CE's success in diverse local contexts (Folke et al., 2002; Ostrom, 2009; Arfaoui et al., 2022).

Additionally, Gender and Youth Empowerment Frameworks (GYEF) align closely with CE principles. CE provides platforms for women and youth empowerment through inclusive employment, entrepreneurship opportunities, and innovation in green technologies. This contributes to equitable development and strengthens local capacity for sustainability transitions (USAID, 2012; Ellen MacArthur Foundation, 2015; Schröder et al., 2019; Albaladejo et al., 2022; UNDP, 2024; GIZ, 2024). Together, these frameworks offer a comprehensive foundation for understanding and promoting CE in Ethiopia by integrating ecological integrity, livelihood security, and social inclusion.

2.2 Policy and Legal Framework

A strong legal and policy foundation supports Ethiopia's CE ambitions. These frameworks align Ethiopia with global sustainability goals and enable the mobilization of resources and institutional support for CE.

- The National Circular Economy Roadmap (EPA, 2024)
- The Climate Resilient Green Economy (CRGE, 2011).
- 10-Year Development Plan (Planning and Development Commission, 2021)
- Environmental Pollution Control Proclamation (Federal Democratic Republic of Ethiopia, 2002)
- Investment Proclamations (Federal Democratic Republic of Ethiopia, 2020)
- The National Solid Waste Management Proclamation (FDRE, 2007)
- National Plastic Waste Management Strategy (EPA, 2024)

Considering its meaningful contribution to sustainable development and economic growth, Ethiopia is developing a National Circular Economy Roadmap (NCER) in collaboration with the African Development Bank's Africa Circular Economy Facility (ACEF) and the African Circular Economy Alliance (ACEA). This roadmap offers a strategic framework to guide Ethiopia's transition towards a low-emission, resource-efficient economy, targeting critical sectors such as construction, agriculture, manufacturing, and waste management (African Development Bank, 2024).

The roadmap's core objectives are to reduce waste, enhance resource efficiency, promote innovation, and increase resilience to climate change. Strategic actions outlined in the roadmap include integrating circular economy principles into national legislation, incentivizing green businesses, investing in recycling infrastructure, and strengthening partnerships among stakeholders. Additionally, the roadmap emphasizes the vital role of women and youth in the transition process and addresses cross-cutting themes such as digital transformation, climate resilience, and social inclusion (GIZ, 2024; UNDP, 2025).

The CRGE Strategy (Federal Democratic Republic of Ethiopia, 2011) emphasizes low-carbon growth and resource efficiency, while the 10-Year Development Plan (FDRE PDC, 2021) integrates CE as a cross-cutting theme. Furthermore, the Environmental Pollution Control Proclamation (Federal Democratic Republic of Ethiopia, 2002) and Investment Proclamations (Federal Democratic Republic of Ethiopia, 2020) support environmentally sustainable practices and incentivize eco-friendly investments.

The National Solid Waste Management Proclamation (FDRE, 2007) and the Plastic Waste Management Strategy (Environmental Protection Authority, 2024) directly address circular practices through improved recycling systems. Ethiopia faces a rapidly growing plastic waste problem, with daily waste increasing from 9,700 tons in 2015 to 12,200 tons in 2020, and expected to double by 2030. Plastic comprises about 6% of household waste, but only 9% is recycled, 12% incinerated, and 79% is improperly dumped or polluting the environment. Rising per capita plastic use has made Ethiopia the second-largest plastic importer in East and Central Africa. The National Plastic Waste Management Strategy (2024–2034) supports the Circular Economy Roadmap by promoting plastic reduction, recycling, legal bans, and producer responsibility, helping improve resource efficiency, create green jobs, and drive sustainable development (EPA, 2024).

2.3 International Policy Alignment

Ethiopia's emerging circular economy (CE) initiatives are well aligned with key international sustainability and development frameworks, which enhance the country's legitimacy in mobilizing support and integrating global best practices:

- Africa Circular Economy Alliance (ACEA, 2022)
- African Union Agenda 2063 (African Union, 2015)
- United Nations Sustainable Development Goals (UN, 2015)
- Paris Agreement on Climate Change (UNFCCC, 2015)
- Global Alliance on Circular Economy and Resource Efficiency (GACERE, 2021)

Ethiopia is a member of the Africa Circular Economy Alliance (ACEA) (African Circular Economy Alliance, 2024), which facilitates policy alignment and investment

mobilization. The Alliance aims to promote the transition to circular economies across African countries through policy harmonization, investment mobilization, and knowledge sharing (ACEA, 2022). Ethiopia's membership in ACEA signals its commitment to regional leadership in CE and enables it to draw lessons from continental best practices while positioning itself as a hub for green innovation and youth employment. The Circular Economy (CE) closely aligns with the vision and goals of Agenda 2063, the African Union's long-term development blueprint for inclusive and sustainable growth (AUC, 2015).

Additionally, the Paris Agreement (UNFCCC, 2015) mandates climate action consistent with CE goals. The roadmap is also well-aligned with the United Nations Sustainable Development Goals (United Nations, 2015)-specifically SDGs 6, 9, 11, 12, 13, and 15 that emphasize sustainable production, innovation, resource use, and climate resilience. The Global Alliance on Circular Economy and Resource Efficiency is a multilateral initiative launched in 2021 by the European Commission, the United Nations Environment Programme (UNEP), and the United Nations Industrial Development Organization (UNIDO). Its goal is to accelerate the adoption of circular economy principles worldwide by fostering collaboration, sharing best practices, and mobilizing resources. While Ethiopia is not a direct formal member of GACER, it benefits from the alliance's programs and knowledge-sharing platforms indirectly through regional affiliations and partnerships, especially via the Africa Circular Economy Alliance (ACEA), which Ethiopia is part of. UNEP and UNIDO provide technical and programmatic support, with the latter promoting circularity in Ethiopia's textile industry.

2.4 Resource Related Potential

1. Abundant Renewable and Waste Resources
2. Youthful and Growing Workforce
3. Urbanization
4. Emerging Innovation and Small and Medium-sized Enterprise Ecosystem

Ethiopia is ripe for a circular economy thanks to its wealth of natural resources. The country produces vast amounts of organic waste, agricultural residues, and livestock manure, much of which is currently going to waste. Consider this: Ethiopia's annual crop residues alone fall between 42 to 72 million tons. This massive quantity could be transformed into valuable biomass for bioenergy or nutrient-rich compost (World Bank, 2022). Beyond crops, Ethiopia's substantial livestock population presents another huge opportunity. A recent study (Tolessa, 2023) estimates the country's livestock manure could yield an impressive 3.321 billion cubic meters of biomethane annually, highlighting a significant untapped resource for biogas production.

Municipal solid waste (MSW) generation in urban areas has increased from 9,700 tons/day in 2015 to 12,200 tons/day in 2020 (GIZ, 2023), with organic waste constituting over 70%, offering significant opportunities for composting and biogas production (Alidoro, 2024, 2024; IGC, 2024). However, Only 4% of total waste and 30-40% of plastic waste are recycled (Traide, 2023), with the majority ending up in open dumps, posing significant environmental and health risks (Hatom, 2022). There

are also evidence indicating that only about 9% of the plastic waste are recycled (EPA, 2024).

In addition to natural resources, Ethiopia's youthful and growing workforce provides a vital human resource advantage. Over 70% of the population is under 30 years old, and approximately 2 million youth enter the labor market annually, creating both a challenge and opportunity for employment (Central Statistical Agency, 2023; ENA, 2023). Circular economy sectors such as recycling, repair, sustainable agriculture, and waste management are labor-intensive and can absorb large numbers of young workers, thereby addressing high urban youth unemployment rates exceeding 25% (NDP Ethiopia, 2023). The "Forecasting Green Jobs in Africa" report (FSD Africa, 2024) estimates Ethiopia could create 30,000 to 130,000 new green jobs by 2030 (FSD Africa, 2024). Rapid urbanization also drives Ethiopia's waste management challenges and circular economy potential. Urban population growth intensifies municipal solid waste generation and necessitates sustainable waste management solutions. The increase in waste generation, combined with limited recycling infrastructure, underscores the urgency to adopt circular economy principles to improve resource efficiency, reduce pollution, and promote sustainable urban livelihoods (GIZ, 2023).

Ethiopia's emerging innovation and small and medium-sized enterprise (SME) ecosystem focused on circular economy activities complement these factors. A growing number of eco-entrepreneurs and green SMEs are active in sectors such as recycling, eco-fashion, composting, and repair. Supported by incubation programs, innovation hubs, and international partners like Reach for Change Ethiopia and UNIDO's program, these enterprises drive the adoption of circular business models and technologies (IKEA Foundation, 2023; Reach for Change Ethiopia, 2024). This expanding ecosystem fosters new market linkages, promotes green entrepreneurship, and enhances Ethiopia's capacity to realize the full benefits of a circular economy.

2.5 Media, Public Engagement and Center

Several media platforms in Ethiopia are actively promoting the principles of the Circular Economy (CE), emphasizing sustainability, waste reduction, and resource efficiency. Notable initiatives include:

1. **Circular Ethiopia – Yunus Environment Hub:** This is part of the Global Social Business Network dedicated to creating solutions for the environmental crisis. It offers open-access webinars and a mentoring program targeting entrepreneurs and change-makers interested in social business and CE. Participants receive guidance to develop investor-ready business plans and have the opportunity to present their ideas during a virtual Demo Day. (Access link: <https://yunusenvironmenthub.com/circular-ethiopia>)
2. **Promoting Economic Transition to Circular Options (PETCO Ethiopia):** Established as a non-profit, industry-led producer responsibility organization in 2019, PETCO Ethiopia promotes a circular economy by ensuring that products and materials remain in circulation through circular design, maintenance, reuse, refurbishment, remanufacture, recycling, and composting. PETCO also operates an interactive digital platform serving as a marketplace for actors in

the plastic and plastic waste recycling value chain. This platform enhances communication, creates market linkages, and provides up-to-date data on plastics across the value chain. (Access link: <https://petcoethiopia.org>)

3. **Ye Zembil Melse:** This collaborative campaign advocates for a plastic-free Ethiopia. Using “zembils” — traditional woven baskets — as a metaphor for abundant alternatives to plastics, the campaign employs creative approaches such as digital advocacy, policy engagement, community outreach, and alternative business models to collectively push for the elimination of plastic use in Ethiopia. (Access link: <https://lemketema.org/circular-systems>).
4. **Circular Economy Excellence Center in Addis Ababa:** Envisioned as a central hub for research, demonstration, and knowledge transfer on CE practices, technologies, and business models. It aims to actively engage the private sector in transforming waste management through showcasing cutting-edge technologies and promoting circular business models. (Retrieved June 19, 2025, from <https://nature-stewardship.org/countries/circular-innovation-establishing-a-circular-economy-excellence-center-in-addis-ababa/>)

2.6 Empirical Evidence on Impact and Practice

The adoption of Circular Economy (CE) principles in Ethiopia presents a significant opportunity to tackle pressing challenges such as environmental degradation, unemployment, and inefficient resource use, while fostering inclusive and sustainable development. Globally, CE has been shown to reduce environmental impacts and support sustained economic growth (Ghisellini et al., 2016). However, implementation in developing countries, including Ethiopia, remains uneven due to policy fragmentation, technological constraints, and institutional weaknesses.

Empirical research within Ethiopia highlights both the potential and challenges of CE adoption. For example, Simane et al. (2024) report that while industrial park managers demonstrate awareness and positive attitudes towards CE, actual implementation is limited, revealing a critical gap that necessitates focused policy interventions and capacity building. In agriculture, research led by Wageningen University in partnership with Bahir Dar and Jimma Universities shows that integrating CE practices such as nutrient recycling and waste conversion can enhance soil fertility, reduce reliance on synthetic inputs, and increase farmer incomes (Wageningen University, n.d). Similarly, the International Water Management Institute (IWMI, 2024) advocates investment in bioenergy, sustainable agriculture, and organic fertilizer production as key circular economic activities.

Urban CE initiatives provide promising evidence of impact. TechnoServe’s LIWAY program in Addis Ababa demonstrates how organized waste collection and recycling have generated over 20,000 jobs, especially empowering youth and women through micro and small enterprises (TechnoServe, 2023). Additionally, Bopinc and Village (2023) identifies untapped opportunities in circular agribusiness where agricultural by-products are repurposed into feed, fuel, and fertilizer, contributing to rural sustainability.

Despite these successes, challenges remain. Limited access to financing, technological gaps, and weak coordination hinder broader CE adoption. Addressing these requires integrated national strategies, innovation incentives, and collaboration among stakeholders.

Ongoing research by the Ethiopian Policy Studies Institute, titled “The Role of Circular Economy for Green Jobs Creation in Ethiopia: Evidence from Waste Management Sector,” reinforces these findings. Their proposal highlights the potential of integrating CE strategies into waste management systems to create green jobs, enhance environmental sustainability, and strengthen market and policy ecosystems. However, overcoming infrastructure deficits, workforce skills gaps, and the need for supportive policy frameworks is essential for success (PSI-ECCPRC, 2025).

2.7 Success Story: Building Waste and Circular Enterprises in Ethiopia (BWCEE)

- Duration: 3 years
- Period: 2023 to 2026
- Total Grant Agreement: €2.38 million
- Funding: IKEA Foundation
- Implementer: Reach for Change Ethiopia

The BWCEE initiative (2023–2026), funded by the IKEA Foundation and implemented by Reach for Change Ethiopia, exemplifies practical CE applications fostering sustainable economic growth by supporting youth and women entrepreneurs in waste management and recycling. Key components include:

- Green Innovation Lab: Provides training and mentorship to entrepreneurs developing innovative recycling technologies and community-based solutions.
- Green Business Incubator: Supports SMEs in developing sustainable business models and strengthening circular value chains through business training and market linkage facilitation.

Success stories such as those of **Shashetu Diriba** and **Muluken Yohannes** demonstrate tangible impacts on livelihoods and social change (IKEA Foundation, 2023; TechnoServe, 2023).

- Shashetu Diriba transformed from economic uncertainty to running a successful micro-enterprise collecting waste paper and plastic for recycling in Addis Ababa. Her work provides stable income and empowers her to lead community education on recycling and sustainable waste management, mentoring young women entrepreneurs and fostering local environmental stewardship.
- Muluken Yohannes, originating from a small town with limited opportunities, found stable work through Shashetu’s enterprise. Delivering daily waste paper collections enables him to support himself and save for education. His involvement in CE has inspired hope and strengthened his resolve to pursue higher education and contribute to youth empowerment through sustainable livelihoods.

These narratives illustrate the socio-economic and environmental benefits of CE adoption in Ethiopia, highlighting the importance of sustained support for innovation, skills development, and inclusive entrepreneurship.

2.8 Opportunities: Why Ethiopia is Well-Situated for Circular Economy

i. Strong Policy Commitment

- Ethiopia has embedded green growth in national strategies like the Climate Resilient Green Economy (CRGE) and National Circular Economy Roadmap (NCER).
- The government promotes sustainable development through policies in waste management, industrial parks, agriculture, and green jobs.

ii. Abundant Renewable and Waste Resources

- Huge quantities of organic waste, agricultural residue, and livestock manure are currently underutilized.
- Significant biomass energy and material recovery potential from plastics, textiles, and construction waste.

iii. Youthful and Growing Workforce

- Over 70% of the population is under 30.
- CE sectors (recycling, repair, sustainable farming) are labor-intensive, ideal for absorbing youth and reducing unemployment.
- The country adds approximately 2 million youth to the labor market each year, yet **youth** unemployment remains above 25% in urban areas.

iv. Urbanization Driving Waste Challenges

- Municipal Solid Waste (MSW) generation increased from 9,700 tons/day in 2015 to 12,200 tons/day in 2020, with projections indicating it could double by 2030.
- Over 60% of municipal solid waste in urban areas is organic, suitable for composting and biogas production.
- Only 30-40 of plastic waste is recycled, the remaining ending up openly dumped, posing serious health and environmental risks.

v. Access to Climate and Development Finance

- Ethiopia is eligible for major climate funds, including the GCF, GEF, and bilateral donor programs that support CE-aligned projects.
- More than \$300 million mobilized for climate and sustainability projects in the past decade (FSD Ethiopia, 2024).
- Programs like **“Building Waste and Circular Enterprises in Ethiopia” (2024–2027)** by Reach for Change provide funding and support to CE entrepreneurs.

vi. Emerging Innovation and SME Ecosystem

- A growing number of eco-entrepreneurs and green SMEs are active in sectors like recycling, eco-fashion, composting, and repair.
- Supported by incubation programs, innovation hubs, and international partners.
- Programs like Reach for Chang and, UNIDO are supporting CE enterprises.

vii. Environmental Urgency

- Severe land degradation, water stress, and pollution make resource efficiency and regeneration not just desirable but essential for long-term survival.
- Nearly 23% of land is degraded (Gebreselassi et al., 2016), and only 4% of all the waste and 30-40 plastic waste are recycled (Traide, 2023; African Association of Entrepreneurs, 2022)

2.9 Challenges

Despite growing policy interest and promising potential, significant challenges hinder the implementation of the Circular Economy (CE) in Ethiopia. Addressing these barriers is essential to unlock the full benefits of CE for sustainable and inclusive development

- ✓ **Inefficient Waste Management Infrastructure:** Ethiopia, particularly its rapidly growing urban centers like Addis Ababa, struggles with inadequate and inefficient waste collection, sorting, and disposal systems. A significant portion of waste ends up in open dumps or is openly burned, leading to severe environmental and health problems (UNEP, 2022; Worku and Adugna, 2025).
- ✓ **Limited Public Awareness and Engagement:** There is often a lack of public awareness regarding the benefits of waste segregation at the source, recycling, and overall circular economy principles. This contributes to illegal dumping and hinders the effectiveness of waste management initiatives (Kitila and Woldemikael, 2020).
- ✓ **Lack of Financial and Technical Resources:** Implementing CE requires substantial investment in infrastructure (recycling centers, waste-to-energy facilities, appropriate equipment), technology, and skilled human resources. Many municipalities lack the financial capacity and technical expertise for effective waste management and CE transitions (AfDB, 2024; Worku and Adugna, 2025).
- ✓ **Regulatory Enforcement Weakness:** While Ethiopia has developed some policies and strategies related to waste management and the circular economy (e.g., National Plastic Waste Management Strategy and Roadmap, National Circular Economy Roadmap), there are challenges in their enforcement and implementation. There's a need for stronger legal and institutional frameworks to support CE (Hirpe and Yeom, 2021; Mulatu and Yigzaw, 2023).
- ✓ **Informal Sector Integration:** A large informal waste collection and recycling sector exists in Ethiopia, which plays a crucial role but they are poorly integrated, often operates with poor working conditions and limited access to formal support (Alemu, 2017).

- ✓ Technological Limitations: The adoption of advanced recycling technologies and circular business models requires technological know-how and investment, which can be limited in Ethiopia **(Tesfaye and Desta, 2015)**.
- ✓ Lack of Stakeholder Coordination: Effective CE implementation requires strong collaboration among government agencies, the private sector, civil society organizations, and local communities. Weak collaboration among public institutions, private actors, and civil society impedes CE implementation (Worku and Adugna (2025)).
- ✓ Mindset Shift: Moving from a linear to a circular economy requires a fundamental shift in mindset across all levels of society, from consumers to industries and policymakers. This cultural change takes time and sustained effort (TechnoServe, 2025).

2.10 Summary of the Desk Review

Ethiopia faces significant environmental and socioeconomic challenges, including resource depletion, land degradation, poverty, and economic vulnerability, especially in rural and pastoral regions like the Somali Region. The traditional linear economic model exacerbates waste and inefficiency, limiting sustainable development. In this context, the Circular Economy (CE) offers a promising pathway to address these issues by promoting resource reuse, recycling, and regeneration, which can reduce environmental harm, enhance climate resilience, and diversify income sources.

The evidence indicates that Ethiopia holds strong potential to transition toward a circular economy, which can generate multi-dimensional benefits. Environmentally, CE offers a pathway to reduce waste, rehabilitate degraded land, and mitigate climate change impacts by promoting sustainable production and consumption practices. Economically, it can stimulate inclusive growth by creating green jobs, particularly for youth and women, while reducing reliance on raw material imports through local recycling and reuse. Socially, CE enhances community resilience and health by improving waste management systems and encouraging community-based solutions. The alignment of Ethiopia's policy frameworks, such as the CRGE Strategy with CE principles also strengthens institutional readiness and creates opportunities for integrating CE into national and regional development plans. Furthermore, strong international partnerships and growing local innovation ecosystems provide financial and technical leverage to scale CE initiatives. Therefore, the advancement of CE in Ethiopia is not only feasible but also essential for achieving sustainable development, improving livelihoods, and building climate resilience in the face of environmental and socio-economic challenges.

However, realizing this potential requires overcoming challenges such as limited financing, technological gaps, and institutional fragmentation. With strategic investments in capacity building, infrastructure, and innovation, alongside strengthened multi-stakeholder partnerships, Ethiopia can feasibly transition toward a circular and sustainable economy that fosters equitable growth, environmental sustainability, and resilience against climate shocks.

3 Key Finding from the Key Informant Interview

3.1 Implementing Status of the Roadmap

Based on evidence from the head of Circular Economy Department of the EPA, Ethiopia launched the preparation of its Circular Economy Roadmap in 2024. A committee has been established to develop the roadmap, and it is expected to be finalized within a few months, after which it will be officially announced. In relation to this, the National Plastic Waste Management Roadmap, which is one component of the broader Circular Economy Roadmap, has already been developed. Findings from the focus group discussion with the head of the department indicate that the government is giving significant attention to these initiatives. He added that after the completion of the Circular Economy Roadmap, implementation of circular economy activities will follow on a wider scale.

3.2 Opportunities and Challenges

One objective of this exploratory study was to identify the opportunities and challenges of investing in the Circular Economy. To this end, the study conducted Key Informant Interviews (KIIs) to collect primary data in addition to the desk review. Based on the evidence gathered from the KII participants from the Ministry of Industry, Textile and Garment Research Center, and Addis Ababa City Cleaning Administration, the study identified the following challenges and opportunities.

Challenges	Opportunities
Weak research-practice linkages	Innovation and technology development to address technological limitations
Poor policy and regulatory framework	High waste generation provides abundant raw materials for recycling industries
Lack of incentives for recyclers (e.g. import duty reductions for machinery)	Large, young, and trainable workforce ready to engage in recycling and circular economy activities
Low public and institutional awareness	Existing regulatory commitments such as the Circular Economy Roadmap and National Plastic Waste Action Plan
Limited financial access for MSMEs	Emerging market potential for recycled and circular products
Technological limitations (inefficient, costly, or unsuitable recycling technologies)	Financial inclusion initiatives (though limited) can be scaled up to support MSMEs
Low demand for recycled products (due to quality issues and low price of virgin materials)	Potential for developing digital marketing and linkage platforms connecting waste collectors, processors, and industries
Poor recycling infrastructure (collection, sorting, grading, transporting systems)	Organized MSMEs ready to expand operations if supported
Management and organizational capacity gaps within MSMEs	
Weak stakeholder engagement platforms	

The study investigated opportunities of particular relevance to the Somali Region based on KII evidence. The interview with the Addis Ababa City Cleansing Administration office revealed that out of the city's daily waste generation, only 11.5–

12.5% is recycled. Recently, due to corridor development projects which involve urban road expansions and beautification initiatives requiring compost for landscaping and greening the administration has organized additional over 300 MSMEs for compost production. There is a success in circular economy activity, with notable example in plastics and paper recycling driven by industrial demand and incentive schemes for plastic collection, which have significantly boosted collection rates and sector participation.

This evidence provides important lessons related to the opportunities in the Somali Region. First, if only less than 15% of waste is recycled in Addis Ababa, where there are relatively more enterprises and infrastructure, there is likely an even larger share of untapped waste resource in the Somali Region, with significant potential for recycling and reuse. Second, the evidence highlights the role of circular economy activities in creating employment opportunities for youth and women, which has important implications for the Somali Region's inclusive economic development. Third, as corridor development is expanding beyond Addis Ababa into regional states including Somali Region, the demand for compost is expected to increase, creating markets for CE products related to compost production. Given that livestock is the main source of livelihood in the Somali Region, this rising compost demand presents a significant opportunity for enterprises to engage in compost production using livestock waste, thereby strengthening circular economy practices while creating additional income for local communities. Furthermore, another important point raised by the head of the CE department under EPA is that bottled water is highly consumed in hot areas of the country, with the Somali Region being a notable example. This results in a high supply of plastic waste, suggesting that enterprises engaging in plastic recycling in the Somali Region will have strong prospects for success.

3.3 Key Stakeholder in the Circular Economy

Key Informant Interviews (KIIs) were conducted with stakeholders actively involved in circular economy (CE) initiatives to identify key donors, public and private sector actors, and their roles in supporting CE in Ethiopia. Participants included experts from the Textile and Garment Research Center, Ministry of Industry (Manufacturing industry Development Institute) (MIDI) Research and development desk, Addis Ababa City Cleansing Administration, and the Environmental Protection Authority (EPA). Their insights helped map important donors, key public sector actors, initiatives, institutional roles, and support mechanisms fostering CE implementation.

3.4 Key Donors and Development Partners

Based on the KII result, the followings are among the important donors supporting the CE:

- ✓ UNIDO-Implements garment waste recycling projects; advocates for CE policy incentives.
- ✓ GIZ-Provides technical support, training, and capacity building.
- ✓ SNV-Supports startups and builds capacity in waste management and segregation.
- ✓ AFDB (African Development Bank)-Funded Ethiopia's national CE roadmap.

- ✓ GEF (Global Environment Facility)-Funds recycling projects, including garment waste recycling pilots.
- ✓ African Circular Economy Alliance-Facilitates best practice and experience sharing regionally.
- ✓ TechnoServe-Supports industries in waste segregation, grading, and capacity building.
- ✓ UNEP-Provides training and technical support.
- ✓ Petico Ethiopia-Offers capacity building and training in waste management.
- ✓ Norwegian Church Aid- Supports technology transfer and capacity building.

3.5 Key Public Sector Actors

The public sector actors identified by the KII includes:

- Environmental Protection Authority (EPA)-Leads and steers the national CE roadmap.
- Ministry of Industry (Manufacturing Industry Development Institute-MIDI)- Designs CE initiatives, develops products from waste, and provides consultancy services.
- Ministry of Finance- Facilitates financial frameworks supporting CE projects.
- Ministry of Planning and Development-Provides strategic development planning for CE.
- Ministry of Science and Innovation-Develops new products from waste, including agro-waste.
- Ministry of Urban Development and Infrastructure- Organizes MSMEs and manages waste collection and recycling.
- Ministry of Agriculture-Focuses on agricultural waste utilization.
- Ministry of Water and Energy-Oversees waste-to-energy projects.
- Ministry of Labor and Skills-Promotes employment creation through CE activities.
- Ethiopian Policy Studies Institute-Conducts CE-related economic, social, and policy research.

3.6 Role of Circular Economy in Youth and Women Employment

Key Informant Interviews (KIIs) were conducted to explore the role of the circular economy (CE) in promoting economic opportunities for women and youth an important component of this study. The interviews aimed to understand how CE initiatives contribute to employment, income generation, and empowerment of these groups, who are often economically disadvantaged but play vital roles in waste management, recycling, and innovative CE enterprises.

Findings from the KIIs reveal that the circular economy creates significant employment opportunities for both youth and women, especially those with limited access to formal jobs. By promoting activities such as waste collection, recycling, composting, and product innovation, CE enables these groups to engage in income-generating work that often requires lower barriers to entry. Women, particularly those organized in waste collection and transportation MSMEs, gain livelihoods through their participation in the CE value chain, while youth are actively involved in more technical

and entrepreneurial roles, including running recycling enterprises and developing new products from waste materials. CE-driven industries also provide jobs to many young people within factories and processing units, supporting skill development and economic inclusion.

The interview with the Addis Ababa City Cleansing Administration office revealed that currently, more than 125 enterprises with over 7500 members, predominantly youth and women, are engaged in recycling, reuse, and regeneration activities, generating an estimated 1 billion birr in revenue. This evidence strengthens the meaningful contribution of the circular economy serves as a catalyst for inclusive employment creation, helping to empower women and youth, reduce unemployment, and contribute to sustainable economic growth.

3.7 Overview of Circular Economy Enterprises: Sector Focus, Business Models, and Success Status

This study identified various types of enterprises engaging in the Circular Economy operating across different sectors to draw lessons from their business models, core activities, and success status to inform future CE interventions and promote scalable and inclusive practices for sustainable development.

It is found that most enterprises engaged in the circular economy focus on recycling activities, particularly in plastics, paper, and composting of organic waste. The recycling processes include collection, sorting, grading, and processing of wastes into raw materials or finished products, such as PET plastic, paper products, fertilizers, and textiles. Business models are predominantly profit-driven, with many enterprises starting small and scaling through partnerships, market linkages, and technological adoption. Additionally, there are enterprises involved in re-use and regeneration, especially in textile waste recycling, where mechanical shredding and fiber separation create new materials and garments.

The majority of these enterprises report medium to high success levels, largely due to strong industrial demand, organized value chains, and effective operational management. Recycling of plastics and paper has proven particularly profitable because of the growing market demand and supportive policies. Composting operations are expanding with increased demand for organic fertilizers, supported by MSME organization targeting youth and women. Textile recycling enterprises, although fewer, are growing rapidly producing recycled fiber and regenerated textiles.

Overall, the sector demonstrates strong potential for scalability, adaptability and profitability when combined with technical support and strategic partnerships. The evidence indicates that a significant number of enterprises were established post-2010 E.C., indicating that circular economy activities in Ethiopia, particularly recycling and composting, have gained considerable momentum in the past decade. A list of CE enterprises is annexed for reference.

3.8 Overview of Circular Economy Landscape in Somali Region

As the Somali Region is the special focus of this study, important stakeholders, donors, and relevant initiatives supporting the circular economy in the region were identified through Key Informant Interviews (KIIs). It is found that key international donors and

development partners including **UNDP, UNFCCC, EFCCC, and EDUCANS** are actively supporting circular economy initiatives include. Unlike many NGOs that often visit to collect data without returning for implementation, these organizations have supported tangible circular economy interventions aligned with regional needs. Their funded projects cover a diverse range of activities, such as greenhouse gas reduction initiatives aimed at mitigating climate change impacts, skill development programs that empower college graduates with practical competencies in circular economy fields, solar energy projects to enhance clean energy access, and the establishment of recycling plants in Jigjiga and Kebri Dahar cities to manage waste sustainably while creating employment opportunities. Additional projects include biogas initiatives promoting renewable energy and waste-to-value practices.

The circular economy landscape also involves various public and private sector actors. The most important sector which regulates the circular economy related issues is the Environmental Protection Bureau, while other key institutions such as SRS Microfinance provide financial services to support green enterprises, the Cooperative Bureau facilitates cooperative engagement in recycling and resource management, TVET centers offer technical and vocational training linked to CE skills, and hospitals and universities contribute by managing waste sustainably and conducting research to drive innovation. Each stakeholder supports the system according to their mandate by providing targeted training, financial access, and facilitating essential licensing and registration processes, collectively strengthening the circular economy ecosystem and building community resilience and economic opportunities in the Somali region.

Key initiatives supporting the circular economy directly or indirectly in the Somali Region include the Green Legacy program, which enhances resource regeneration; community empowerment and climate adaptability programs, fostering local capacity for sustainable practices; the Climate Change Adaptation Development Initiative at the Bureau level, integrating resilience into development activities; and the Environmental Pollution Control Mechanism at the regional level, which regulates waste and pollution, creating an enabling environment for circular economy interventions.

The participation of women and youth in circular economy initiatives in the Somali Region is notably high, reflecting strong community interest and engagement. For example, the Environmental Protection Agency (EPA) of the Somali Regional State (SRS) supports around 60 women's groups involved in various income-generating activities in Jigjiga city, while over 400 women's groups are active throughout the region. Despite this widespread participation, the level of economic empowerment achieved by these groups remains limited, indicating significant room for growth and support. Similarly, many youth groups approach the EPA with promising CE project ideas, but most lose momentum and disappear after initial engagement, highlighting challenges in sustaining youth-led CE initiatives.

The Somali Region faces multiple challenges in advancing circular economy initiatives. These include poor infrastructure, high community expectations that strain limited financial resources, weak donor linkages, and insufficient skilled man power. The region's vast size makes equitable service delivery costly, while social issues like clan-based conflicts and recurrent droughts and floods further deplete resources. Regulatory barriers, such as complicated registration processes and limited access to

finance, also hinder growth. Additionally, group-based enterprises often struggle with internal trust as they expand. Despite these obstacles, the region benefits from abundant human resources, untapped waste resource, and the presence of educational institutions including universities and TVET centers. Existing circular economy projects provide a valuable foundation to build upon, offering promising opportunities to promote sustainable development and resilience in the Somali Region.

The KII result with the region's EPA highlights that Somali Region shows strong participation of women and youth in circular economy initiatives, but achieving sustainable economic empowerment remains a challenge. Effective CE implementation depends on coordinated support from diverse stakeholders including international donors, government bodies, financial institutions, and educational centers that provide training, finance, and regulatory assistance. Key programs like the Green Legacy and regional climate adaptation efforts create an enabling environment; however, infrastructural limitations, financial constraints, regulatory hurdles and challenges in sustaining group-based and youth-led enterprises hinder progress. Despite these obstacles, the region's abundant human resources, natural waste materials, and educational institutions provide a promising foundation to scale circular economy solutions that can drive sustainable development, resilience, and inclusive economic growth.

3.9 Important Lesson from the KII

The lesson from the findings is that while Ethiopia's Circular Economy activities are gaining momentum with strong government attention, donor support, and increasing enterprise participation, their full potential remains untapped due to persistent challenges such as weak research-practice linkages, poor policy frameworks, limited incentives, low public awareness, financial barriers, and inadequate recycling infrastructure. However, there are clear opportunities to create employment for youth and women, utilize abundant waste resources, and develop profitable recycling and composting enterprises, especially in regions like Somali where high waste generation and growing compost demand present significant prospects for scalable and inclusive Circular Economy interventions.

4 Key Findings and Lessons of the Case Studies

4.1 Key Findings of the Case Study

In addition to the desk review, the study conducted in depth case studies to take lesson from the practical experience of firms engaging in circular economy activities. The following sections cover the key findings of each case study:

Case-1: Shikur, Tebarek, and Friends Solid Waste Partnership

Shikur, Tebarek, and Friends MSME was established in 2015 by returnees from Saudi Arabia. The enterprise buys plastic, paper waste, and cardboard collected by waste collector MSMEs, categorizes them manually according to industrial demand, and resells them to industries such as Tatek and Rahel semi-finished plastic producers and Kuriftu Pulp Manufacturing. Its business model focuses on buying and reselling wastes, especially paperboards. Transportation is its highest cost, accounting for 30-50% of product expenses. Previously, the enterprise had a storage facility that helped manage demand fluctuations, but the current site lacks this, creating operational challenges.

The enterprise uses resources such as manual labor for categorizing and loading waste, relying on waste collectors who deliver materials to its site. The partners are organized with defined responsibilities, and the manager and finance focal persons actively monitor operations and devise solutions to emerging challenges. Since its establishment, the business has grown from an initial capital of ETB 80,000 to over ETB 500,000, becoming an effective supplier of inputs for pulp manufacturing and plastic recycling industries. Socially, it has improved the livelihoods of vulnerable groups, including former street dwellers and returnees, by providing stable income. Its employment impact includes supporting 11 MSMEs, each with 15-20 members (mainly elderly women), while over 70% of the enterprise's partners are youth and women.

However, the enterprise faces challenges such as eviction from its previous site, which forced it to dump cardboards due to lack of storage. The current site, although secured through persistent engagement with authorities, still lacks storage facilities. High transportation costs remain a major burden as operations rely on rented vehicles. Additionally, due to religious considerations, the enterprise cannot access existing loan products, limiting its ability to raise capital for growth. Despite these challenges, the business is scalable and replicable, particularly in paper waste recycling, if effectively linked with industries and supported by financial products tailored to its operational and cultural context.

Case-2: Tatek, Rahel and friends enterprise

It was established in 2014 E.C. in Gulele Sub-City, Addis Ababa, as a micro and small-scale enterprise recycling plastic waste. The business was initiated by its manager who gained experience working with a Chinese plastic recycling company. Initially supported by the Woreda micro and small enterprise office through organizing and facilitating loans, the enterprise procured machinery to meet quality demands and gradually expanded its operations. Its core activities include buying separated plastic waste from suppliers, categorizing and grading them manually, washing, crushing, and melting them into semi-processed products. These are then supplied to

manufacturers producing polyester and nylon fibers, brooms, and ropes. The enterprise uses machinery, human resources, and transportation for its operations, employing manual laborers, quality controllers, graders, machine operators, and mechanics.

Currently employing over 130 individuals with salaries higher than government rates, the enterprise also indirectly supports over 100 MSMEs by purchasing their collected plastic waste, creating significant additional income for waste collectors, most of whom are women. Its environmental impact is substantial, as the high demand for plastic waste has incentivized collectors to clean polluted areas such as riverbanks. The enterprise's business has grown from an initial capital of less than ETB 100,000 to over ETB 40 million.

Its success is attributed to strong management, effective operational planning, rising market demand, prudent financial management, employee motivation schemes and crucial market linkages with fiber processing facilities in Debre Berhan and Dukem, which ensure consistent demand for its products. The business is considered highly replicable if supported by financial assistance for machinery, continuous training in operations and management. Women benefit mainly as waste collectors earning 35-50 birr per kilo, while most plant employees are youth, contributing to employment creation and import substitution by reducing reliance on imported polymers and polyethylene.



Case-3: Gashawu, Tsehay and Friends Composting Enterprise

Gashawu Tsehay and Friends Composting Enterprise was established in 2013 E.C. and has been operating for the past five years in organic fertilizer production. It was founded with an initial capital of 30,000 ETB, which has now grown to a capital valuation of 1.5 million ETB. The enterprise was formulated by the Woreda MSME office, which facilitated a startup loan, provided working space, and has been monitoring its progress since its establishment. It is a profit oriented enterprise. Their main activities include collecting biodegradable waste from various sources such as hotels, juice shops, animal ranches, and chicken farms. The collected waste is transported to the working station where non-biodegradable elements are separated before composting. The composting process involves preparing the composting place (drying), layering wastes, maintaining adequate temperature, and continuous stirring

for two months before the final product is packed into sacks and transported to market destinations.

The enterprise works in collaboration with different stakeholders. The Woreda MSME office facilitated the formation of the enterprise, provided working space, facilitated loans, monitors progress, and works on market linkage. The Ethiopian Center for Development (DANIDA) urban refugee project has supported them through technical training, tools supply, and technical assistance. The enterprise has created jobs for 10 individuals, converted previously dumped waste into revenue-generating organic fertilizer, and continuously engages in innovative ways to produce fertilizers tailored to specific agricultural produces.

Their success is attributed to strong leadership from a committed manager, support from the City Cleansing Administration through subsidies and waste provision, prudent financial management whereby only 30% of revenue is distributed while the remainder is reinvested, and market linkage with corridor development projects in Addis Ababa. However, challenges persist, including limited market access due to bureaucracy and favoritism, inadequate financing as financial institutions require collateral while the enterprise lacks formal land rights, and rising transportation costs that increase input expenses and reduce profitability. Despite these challenges, composting operations remain highly scalable given the abundance of biodegradable waste. Nevertheless, ensuring market linkage, access to funding, and deployment of appropriate technologies is essential for successful expansion.



Case-4: Biruk Selamawit and Friends JITU Organic Fertilizer and Composting

Biruk Selamawit and Friends (JITU Organic Fertilizer and Composting) is an MSME established in 2013 E.C. by six members with an initial capital of 30,000 ETB, facilitated by the sub-city administration through provision of loans and working space. The enterprise currently employs four full-time and five contractual workers, with its capital growing to 2 million ETB. Its core operation involves collecting biodegradable waste, sorting it into carbon- and nitrogen-based materials, and undertaking controlled microbial composting to produce high-quality organic fertilizer. Key stakeholders such as the Woreda MSME office, Addis Ababa City Cleansing Administration, GIZ, Reach for Change, Petco Ethiopia, and other advocacy organizations have provided financial, technical, and policy support, enabling the enterprise to establish reliable input supply chains from schools, hotels, restaurants, ranches, and farmers.

The enterprise attributes its success to strong prior planning through mini research that mapped input sources and market strategies, effective team structure with clear roles, members' educational backgrounds, and strategic market linkages including the corridor development initiatives. Proximity to raw material sources and initial municipal subsidies further strengthened its viability. Over the past four years, it produced over 1 million kg of compost, contributing to reduced GHG emissions, job creation, enhanced urban food security by supplying compost to urban farmers, and raising community awareness on the value of composting.

Despite these achievements, the enterprise faces challenges such as high transportation costs consuming up to half of its product price, dependence on temporary subsidies and working space, lack of collateral for bank financing limiting expansion, and systemic issues like absence of source-separated waste collection. Overall, composting operations remain highly scalable, especially with enhanced market linkage, research investment for standardization and patenting, and supportive policies addressing structural barriers, offering strong potential for youth and women employment replication across similar urban settings.



Case-5: Kubick Inc

Kubick_Inc is a pioneering private company established in 2018 and operating since 2023 within the Adama Industrial Park in Ethiopia. The company focuses on recycling plastic waste to produce affordable and durable building materials, positioning itself as an innovative solution addressing two major challenges in Ethiopia: plastic pollution and the housing deficit. Its products, made entirely from recycled plastics mixed with sand, are used in constructing housing units, schools, and clinics. By eliminating the

need for cement, concrete, and other traditional materials, Kubick_Inc not only reduces environmental pollution but also cuts down construction costs significantly. Its innovative approach has gained global recognition, including being named the “Global Startup of the Year” by the VivaTech Conference in 2023.

Kubick_Inc’s operations involve a comprehensive value chain that integrates local waste collectors, government agencies, and international investors. The company purchases low-demand plastic waste (excluding PET bottles due to their market value) from waste collectors, who are mostly women, and processes it through sorting, cleaning, shredding, melting, mixing, and molding into final construction materials such as beams, bricks, and columns. Stakeholders include the Addis Ababa City Administration, which integrates waste collection systems to supply plastics; the Ethiopian Investment Commission and Ministry of Industry, which facilitated land allocation and machinery importation; and investors such as Bestseller Foundation, Plug & Play, and Savannah Fund, who provided \$3.34 million in seed funding. Through its operations, Kubick_Inc has created over 30 permanent jobs, engaged more than 100 MSMEs as plastic suppliers, and ensured that its products are about 40% cheaper and significantly more sustainable than cement bricks, thereby contributing to low-carbon construction in Ethiopia.

Despite its achievements, Kubick_Inc faces several challenges in scaling its impact across Ethiopia. There is limited awareness within the construction sector regarding the strength and durability of plastic-based bricks, leading to slower adoption rates. Additionally, the absence of policy incentives and supportive frameworks for innovative environmental startups poses barriers to expansion, making capital mobilization costly. However, the company’s success is rooted in its innovative technology, the unwavering commitment of its founders, and strong international support. With 55% of its workforce being women and its potential to provide sustainable solutions to Ethiopia’s housing crisis, Kubick_Inc stands out as a scalable and inclusive circular economy model that can drive environmental protection, youth employment, and affordable housing simultaneously.



Case 6: Haji Plastic Recycling Enterprise

Haji Plastic Recycling Enterprise, located near Karamara Mountain about 7 km from Jigjiga city center, was established in 2023. The plant recycles plastic waste such as bags, bottles, and barrels to produce PP (polypropylene), which is then transported to Addis Ababa where demand is high. The manager, Mr. Abdurehman, explained that there are no local factories in Jigjiga to utilize PP, and the plant currently operates at only 25% of its full capacity due to financial constraints despite having the potential to process 20-30 quintals of plastic daily.

The recycling process involves collecting plastic waste through daily laborers who are paid on the spot, cutting the plastic into small pieces, melting it, and converting it into PP through three machines. Mr. Abdurehman highlighted that the region has abundant plastic waste resources with minimal competition, unlike central Ethiopia, indicating a high potential for plastic recycling initiatives in Jigjiga. He also emphasized the social and environmental benefits of their work by cleaning up non-biodegradable waste and creating income opportunities for waste collectors.

However, the enterprise faces significant challenges mainly due to financial shortages, as payments for labor and services are required immediately while revenue generation is not daily. This has forced the manager to sell some machinery and share ownership to sustain operations. Additional challenges include high electricity needs, operating in a rented compound, and occasional complaints from neighbors about the smell of melting plastic, prompting the plant to seal openings to mitigate odor issues.



4.2 Important lesson from the case studies

The result of the first five case studies (one from Adama and four from Addis Ababa) demonstrate that circular economy enterprises can generate substantial and inclusive employment opportunities, particularly benefiting youth, women, and vulnerable groups, while contributing to environmental sustainability through waste recycling and composting. Successful enterprises rely heavily on strong stakeholder collaboration-government facilitation of loans, provision of land and working spaces, international donor support, technical training, and robust market linkages to industries ensuring consistent demand. Despite proven growth and profitability, challenges such as high

transportation costs, inadequate storage facilities, and limited access to customized financial products constrain their full potential. The abundant availability of waste inputs and rising market demand indicate that scaling these models is feasible, but requires enhanced policy incentives, improved financial inclusion, infrastructure development, and supportive regulatory frameworks. Ultimately, circular economy initiatives thrive when multi-stakeholder partnerships, enabling policies, and targeted financing mechanisms are in place, confirming their viability, social impact, and environmental benefits.

The case study of Haji Plastic Recycling Enterprise in Somali region also demonstrates consistent lesson. Although there is high potential for plastic recycling in regions like Jigjiga due to abundant waste resources and minimal competition, the absence of local industries to utilize recycled products, coupled with immediate cash flow needs and limited financial support, severely constrains operational capacity and growth. This highlights the importance of developing integrated local value chains, providing accessible financing mechanisms for working capital, and ensuring infrastructure and environmental compliance support to enable recycling enterprises to operate sustainably and maximize their social and environmental impact.

5 Conclusion and Implication

5.1 Conclusion

Ethiopia stands at a strategic juncture to leverage the Circular Economy (CE) as a pathway for sustainable growth, environmental protection, and inclusive job creation. The country has significant potential to harness the Circular Economy (CE) as a transformative strategy for sustainable growth and poverty reduction. The country's abundant organic waste, agricultural residues, and livestock manure present vast opportunities for resource recovery, composting, biogas, and recycling. Its youthful workforce provides an ideal human resource base for labor-intensive CE sectors such as waste management, recycling, repair, and sustainable agriculture, creating pathways for employment, especially for women and youth. The strong policy commitment, demonstrated through the National Circular Economy Roadmap, Climate Resilient Green Economy strategy, and alignment with international frameworks like the SDGs and Paris Agreement, further reinforces CE's viability. However, the effective realization of CE benefits requires overcoming persistent challenges such as inadequate waste management infrastructure, limited public awareness, weak regulatory enforcement, technological constraints, and poor stakeholder coordination. Evidence from the desk review, Key Informant Interviews (KIIs), and case studies consistently confirms these findings: while desk reviews identified policy and resource potential, KIIs validated practical challenges and opportunities, and case studies demonstrated tangible impacts on job creation, women and youth empowerment, and environmental outcomes, highlighting CE as a practical, impactful pathway for Ethiopia's sustainable and inclusive development.

5.2 Implication

The results imply that Ethiopia must prioritize integrated strategies and cross-sectoral cooperation to unlock CE's full benefits nationally and in regions like Somali. Strengthening partnerships among government agencies, private actors, civil society, and local communities is essential for effective implementation. Investments should focus on enhancing waste management infrastructure, improving regulatory enforcement, promoting advanced recycling technologies, and raising public awareness to encourage waste segregation and circular practices. Targeted interventions are needed to empower women and youth entrepreneurs in CE sectors. In the Somali Region, specific CE interventions such as livestock-based biogas, composting and plastic initiatives can generate income, improve rural energy access, and strengthen regional resilience to climate and environmental shocks. Integrating informal sector actors into formal systems will improve working conditions and sector efficiency. Addressing these challenges presents an opportunity to achieve environmental sustainability, economic diversification, social inclusion, and regional resilience, ensuring CE becomes a catalyst for Ethiopia's equitable and climate-resilient development.

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Appendices

Appendix-1: List of sample enterprises working in the CE

Collected from Textile and Garment Research Center

S.N	Name of industries	Sector involved	CE principle	Year of Establishment	Location	Business model	Success status
1.	Yirgalem addis Textile factory PLC	Textile and garment	recycle	Privatized 2010	Addis ababa	Profit	High
2.	ETUR	ADAMA	regeneration	2012 E.C.	Adama	Profit	High

Collected from Addis Ababa City Cleansing Administration

S.N	Name of Enterprise	Sector involved	CE principle	Year of Establishment	Location	Business model	Success status
1.	Tetek, Rahel and Friends	Plastic Recycling	recycle	2004	AA (addisu gebeya)	Profit	High
2.	Shikur and friends	Plastic and paper recycling	Recycling	2013	Addis Ababa (shiro Meda)	Profit	Medium
3.	Biruk, Selamawit and friends	Composting	Composting	2013 E.C	Addis Ababa (Ararat)	Profit	Medium
4.	Gashawu and friends	Composting	Composting	2013 E.C.	Addis Ababa (Ararat)	Profit	Medium

Collected from EPA

No	Companies Name	Year of establishment	Type of waste to recycle	Products produce using recycled waste	source the waste	Success status
1	Xuedi sun recycling plc	2007EC	Plastic	Pet	MSE and door to door	High
2	Clean addis plc	2009EC	Plastic	Pet	MSE and door to door	Medium
3	Coba impact private limited company	2011E.C	Plastic	Pet	MSE and door to door	High

4	Tewodros fikru plastic manufacturing	1977EC	Plastic	Pet	MSE and door to door	Medium
5	Tatek rahel and friends	2001EC	Plastic	Pet	MSE and door to door	High
6	Genet hawaz plastic	2008EC	Plastic	Pet	MSE and door to door	Medium
7	Orex international	2006EC	Plastic	Pet	MSE and door to door	High
8	Asay chemical fiber	2005 E.C	Plastic	Pet	MSE and door to door	High
9	Ekt business group	2005E.C	Plastic	Pet	MSE and door to door	Medium
10	Huyang recycling private limited company	2004E.C	Plastic	Pet	MSE and door to door	High
11	Xua ping private limited company	2011E.C	Plastic	Pet	MSE and door to door	Medium
12	Epherem tamiru	2017EC	Plastic	Pet	MSE and door to door	Medium
13	Aro modern plastic factory	2012E.C	Plastic	Pet	MSE and door to door	Medium
A	Addis ababa glass factory	1972E.C	Glass			High
15	Hansen international glasss factory	1999EC	Glass			High
16	Ethio pulp and paper s.c	1955E.C	paper	Test liner,Fluting medium	MSE and door to door and imported	High
17	Da packaging plc	1994E.C	Paper	Test liner,Fluting medium	MSE and door to door	High
18	Three sisters' pulp, paper and packaging plc.	2007EC	Paper	Test liner,Fluting medium	MSE and door to door	High
19	Anmol products ethiopia plc.	2001EC	Paper	Paper products	MSE and door to door	Medium
20	Pure wood pulp, paper and packaging plc.	2009EC	Paper	Jambo Tissue Roll	MSE and door to door and imported	Medium
21	Suzo paper recycling company	2000EC	Paper	Jambo Tissue Roll	MSE and door to door	Medium
22	Yaya papers		Paper		MSE and door to door	Medium
23	Kuriftu paper mil plc	2011EC	Paper	Paper products	MSE and door to door and imported	Highhighh
24	Barguba paper products	2009EC	Paper	Test liner,Fluting medium	MSE and door to door	

