



Green Jobs for Youth in Africa's Plastic Waste Recycling Sector

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Green Jobs for Youth in Africa's Plastic Waste Recycling Sector

Executive Summary

Waste pollution in Africa is rapidly increasing and poses significant challenges to both the environment and the population. Over the last two decades, the volume of plastic waste has doubled, and projections indicate that within the next decade, approximately 165 million tonnes of plastic reach the end of its usefulness in African countries. The majority— 90% —of waste management in Africa is handled by informal workers, often working under indecent and insecure conditions. This compounds the existing challenges within Africa's waste management sector, characterized by weak organizational structures, inadequate budgets, a lack of necessary skills, weak legislation, conflicts, and political instability.

The emergence of technological and digital innovations in waste recycling is widely celebrated as a promising solution, poised to act as a catalyst for green jobs for Africa's youth. This not only promises to address the continent's pressing waste management challenges but also seeks to generate economic value from plastic waste at the local level. It aligns with the wider aspiration for a green and circular economy that provides decent employment opportunities for Africa's unemployed youth. However, a significant gap exists in empirical evidence demonstrating how these innovative solutions contribute to green jobs and what is required to overcome existing barriers and harness the potential drivers in the waste recycling sector. Therefore, the collaborative research partnership between the INCLUDE Knowledge Platform and the Challenge Fund for Youth Employment (CFYE) seeks to answer the question: **What are the promising pathways for green jobs for youth in Africa's Waste Recycling Sector?**

Starting this endeavor with a literature review, this report describes the multifaceted barriers and drivers to green job creation. Africa's waste recycling sector deals with weak support structures for scaling innovative recycling initiatives and the enduring social stigma and discrimination against waste pickers, significantly hindering their job decency and economic prospects. Encouragingly, waste pickers are increasingly acknowledged for their invaluable role in mitigating waste pollution while also securing economic livelihoods. The rising awareness of waste recycling's potential is furthermore fostering a more supportive environment, marked by promising policies and collaborative partnerships.

The primary research focus comprised two case studies examining pioneering social recycling enterprises within the CFYE portfolio in Kenya— **Mr. Green Africa and TakaTaka Solutions**. These case studies facilitated the identification of effective strategies employed by innovative recyclers to surmount barriers and create green jobs for youth in plastic waste recycling. To bolster and confirm these findings, the research team conducted a validation session with CFYE's Country Leads and Implementing Partners across Africa, broadening the insights beyond the Kenyan context.

The case studies presented an opportunity to bridge another knowledge gap. While existing research rightfully acknowledges the pivotal role of waste pickers and thoroughly examines the economic prospects and working conditions within the informal waste sector, it does not fully highlight the array of potential job opportunities for youth across the plastic waste recycling value chain. This report shines a light on opportunities in waste recycling beyond the informal sector, ranging from roles in waste collection to skilled positions within manufacturing industries. It underscores the untapped potential for green jobs, calling for deeper exploration in research and programming efforts to harness these promising avenues.

In conclusion, this research unveils four promising and interconnected pathways essential for fostering green jobs for youth within Africa's Plastic Waste Recycling Sector. Green Finance, Green Innovation, Green Awareness, and Green Sector Alignment stand as pivotal avenues identified in this study. The report provides in-depth insights into these pathways and offers corresponding recommendations tailored for policymakers and practitioners. This is captured in 5 key messages for the promotion of green jobs for youth in Africa's waste recycling sector.

Key Message 1:

Improving finance and funding channels for innovative solutions and scalability is crucial in establishing viable business models that ensure fair wages for waste workers.

Overcoming challenges such as price volatility of plastic and high competition for quality products in waste management necessitates a blend of short-term investments and long-term financing mechanisms for recycling initiatives. This approach supports initiatives in scaling and improving their infrastructure and efficiency necessary to maximize profits and increase the potential for creating green jobs beyond just income sources.

Key Message 2:

Driving innovative solutions and technical skills augmentation is vital for effective waste recycling.

Technological innovation in plastic waste recycling can contribute to improved and more effective infrastructure for recycling different types of waste, contributing to more employment opportunities. Innovative approaches in companies' engagement with their direct and indirect employees, like piloting social support structures for informal workers, can enhance work quality for waste workers. Challenges like weak legislation and inadequate technical skills hinder innovation's potential. Therefore, collaboration with mentors and experts for informed technology decisions and technical training for employees is key, enabling the adoption of new technological and social innovations.

Key Message 3:

Widespread awareness about the positive environmental, social and economic impact of waste recycling is crucial for unlocking green job potential.

A lack of understanding and social stigma surrounding recycling-related jobs still pose significant barriers to decent job creation. Insufficient awareness among the government and private sector leads to limited financial prospects and low involvement in the sector. Strategic media campaigns can destigmatize waste collection, while partnerships with organizations and advocacy efforts are important to create awareness among communities and government officials.

Key Message 4:

Creating an efficient, aligned, and fair recycling ecosystem necessitates a sector-wide acknowledgment and inclusion of the rights, duties, and competencies of all involved stakeholders across various levels, with specific emphasis on youth and informal waste workers.

It is crucial that all relevant stakeholders acknowledge the rights, responsibilities, and capabilities of every actor involved in waste recycling, particularly recognizing the invaluable contributions of waste workers. Engaging young individuals, informal waste collectors, and other affected communities in finding solutions is essential. NGOs and waste picker associations hold a significant role in advocating for the needs of informal and marginalized waste workers.

Key Message 5:

Collaboration among stakeholders and policy alignment is crucial to move beyond isolated efforts and collectively foster green jobs for youth in waste recycling.

Aligned efforts, policies and strategies among various ecosystem actors are essential in overcoming existing barriers for effective recycling and promoting decent employment. This alignment reinforces the interdependence of finance, innovation, and awareness, showcasing how they mutually complement each other. It emphasizes the interconnected and collaborative nature necessary for advancing green jobs in plastic waste recycling.

1. Introduction

The magnitude of Africa's waste pollution challenge is substantial. 90% of waste generated on the continent itself ends up in landfills or uncontrolled dumpsites, significantly impacting the environment and people. It thereby presents a pressing issue on the inclusive and sustainable development agenda.¹ Looking at plastic waste, which has doubled over the last two decades, it's projected that within the next decade around 165 million tonnes of plastic will reach the end of its usefulness in African countries.^{2,3} Compounding this issue is the fact that 90% of waste recycling in Africa is carried out by informal workers, often under indecent and insecure working conditions.⁴ This exacerbates the existing challenges within Africa's waste management sector, characterized by weak organizational structures, inadequate budgets, lack of appropriate skills, weak legislation, conflict and political instability.⁵

The transition to a circular waste management system is seen as a promising approach in addressing these complex social and environmental challenges in Africa. This shift is applauded for its potential to create significant opportunities for green jobs, particularly benefitting Africa's un(der)employed youth.⁶ The premise is that filling existing gaps in waste collection and disposal systems with circular solutions, like recycling, can provide economic, social, and environmental opportunities for the continent. Inherent in this transition is the potential to enhance the working conditions of informal waste workers and thereby reach marginalized groups who often work in the informal sector.⁷

Within the transition to a circular economy, recycling plastic waste is high on the international agenda as it takes waste out of the environment and adds economic value to plastic waste locally. While recycling can be less profitable and resource-efficient compared to reusing or remanufacturing products, the ever-increasing amount of waste still disposed of at African landfills, shows that it remains a crucial strategy to increase the life expectancy of materials.^{8,9}

The economic potential of plastic waste is prominent. According to estimation, about 172 Metric Tonnes of polymers and plastics valued at \$285 billion were imported between 1990 and 2017 in the whole of Africa.¹⁰ Given that 95% of the value of plastic packaging, estimated at USD 80–120 billion annually, ends up in landfills, there's a substantial opportunity to reclaim a portion of this value for the economy through recycling.¹¹

The economic, social, and environmental potential, coupled with the numerous challenges in effective waste management across Africa, has catalysed the emergence of social and technological innovations. These innovations aim to bridge the gap between waste collection and disposal¹², focusing on enhancing recycling capacity and profitability within the waste management sector. As a result, they hold promise for creating decent employment opportunities for youth.

However, existing research and programs addressing employment in waste management predominantly centre on the plight of informal waste pickers. This narrow focus often restricts exploration into job prospects across various segments of the recycling value chain. Consequently, the pertinent question arises: how can these innovative initiatives contribute to

improving conditions and promoting green job opportunities for youth throughout the plastic waste recycling value chain in Africa?

Research Aim

To strengthen the evidence-base for policy makers and practitioners this research aims to explore what is needed to stimulate social and technological innovations in the waste recycling sector in order to promote green and decent jobs. **By identifying concrete pathways for promoting green jobs for youth in the waste recycling value chain in Africa**, the findings of this research provide recommendations for key actors in Africa's waste recycling value chain.

This is guided by the following questions:

- What are the drivers and barriers for green jobs for youth in Africa's waste recycling sector?
- How can Africa's youth benefit from different job opportunities offered along the waste recycling value chain?
- What are best practices to ensure that marginalized youth are not excluded from a transforming African waste recycling sector?
- How can the enabling environment be improved to enhance the green jobs potential for youth in Africa's waste recycling sector?

Research Trajectory

This paper is the result of the second phase of the research partnership between *The Challenge Fund for Youth Employment* and the *INCLUDE Knowledge Platform* on green jobs and the future of work. The first phase explored the various green job definitions in literature and developed an analytical framework that can be used to stimulate green job growth in Africa.¹²

The research trajectory followed an action-oriented and iterative approach and was conducted between May 2023 and December 2023 and. The main knowledge questions were co-developed by INCLUDE and CFYE. The waste recycling sector is selected for this study because the former research phase identified the sector as holding a high potential for green jobs.¹³

Starting with a quick scan of academic and grey literature and interviews with experts, the research team scoped the drivers and barriers to green jobs in Africa's plastic waste Recycling sector. This provided the base for two case studies of Kenyan social enterprises in waste recycling from the CFYE portfolio. A combination of in-depth interviews with key company staff and reviewing internal CFYE and company documents allowed the research team to complement the findings from literature with practical examples of how the social enterprises approached the barriers and drivers for green jobs for youth. A final session with Country Leads and Implementing Partners of CFYE across Africa enabled the research team to validate and triangulate the findings with insights beyond the Kenyan context in order to identify pathways for green jobs for youth in Africa's waste recycling ecosystem.

CFYE is conducting a Youth-Centred Study Simultaneously

While the primary focus of this research revolves around how specific pathways can support recycling enterprises in creating green jobs for youth, the research team acknowledges the pivotal importance of integrating the youth perspective within these pathways. Understanding how young individuals perceive job decency and the opportunities and challenges they encounter in waste recycling employment is crucial for a comprehensive outlook. Meaningful youth participation in developing solutions holds equal significance. Therefore, research partner CFYE has embarked on a separate study specifically centred on the youth perspective in plastic waste recycling in Kenya.¹

Structure of the Report

Following the introduction, **the second section** of this paper delineates *the concept of green jobs* and the meaning of job decency for youth in waste recycling. **The third section** explores *the drivers and barriers for green jobs for youth in Africa's waste recycling sector* and persistent knowledge gaps. Drawing insights from existing literature, this research delves into the challenges hindering the creation of green jobs for youth in waste recycling. It examines the impact of social stigmatization faced by waste workers, the absence of adequate support structures, and the hurdles towards establishing a viable business model in this sector. Conversely, it also sheds light on potential drivers that could overcome these challenges. These include the growing acknowledgment of the invaluable role played by waste workers, the potential benefits offered by innovative solutions, and a gradual improvement in the supportive environment for waste recycling initiatives.

In **the fourth section**, the paper imparts insights gleaned from the two case studies. It showcases the strategies employed by two Kenyan social recycling enterprises in contributing to green jobs for youth. Bringing this exploration full circle, **the fifth section** discusses four interconnected pathways for fostering green jobs in waste recycling for policymakers and practitioners working on green jobs for youth. In **the sixth section**, this report concludes with 5 key messages and persistent knowledge gaps for further research, along with presenting key recommendations for relevant stakeholders in **section seven**.

¹The youth-centred research was facilitated by CFYE at the time of writing this report. Thus, the key insights stemming from youth working in the context of the same Kenyan social enterprises do not feature in this report but will be disseminated in 2024.

2. Green Jobs in Africa's Plastic Waste Recycling Sector

Before exploring the potential for green jobs in Africa's plastic waste recycling sector, it is crucial to understand what the characteristics of a green job need to entail for Africa's youth. This chapter therefore first provides a definition of green jobs and discusses how Africa's youth views job decency before turning to the quality of work in the waste recycling sector on the continent.

Green Jobs are Decent

Synthesizing existing literature on green jobs, the first paper of the research partnership between INCLUDE and CFYE defined green jobs as *jobs in green businesses that contribute appreciably to maintaining or restoring environmental quality and avoiding future damage to the Earth's ecosystems, while also generating and supporting the wellbeing of people.*¹⁴ The definition emphasizes that green jobs must prioritize contributing to people's wellbeing, explicitly asserting the necessity for these jobs to meet standards of decency.

Highly relevant as a recent ILO (2023) study highlights that existing research still places disproportionate emphasis on the circular economy's potential for generating employment, overlooking its ability to enhance job quality and foster decent working conditions.¹⁵ Therefore, an exploration of the green job potential of any high-potential sector needs to take into account both the capacity to create new green jobs and to improve the job decency of current youth employment opportunities.

This raises the question what decent working conditions mean for African youth working in waste recycling?

The Youth Perspective on Job Decency

Often, the voices of youth in Africa are insufficiently heard and they are rarely involved in implementing and shaping the policies and development interventions that affect them. Especially looking at job decency, it is crucial to capture what young men and women are seeking in a job that dignifies them, because the conception of a decent job needs to be reflective of local and diverse realities.

A webinar series with African youth leaders, representing the youth voices of 9 African countries, organised by *Restless Development Uganda* in collaboration with the *INCLUDE knowledge platform* dissected the official ILO definition of decent work and reflected on the perspective of youth across Africa on the concept of job decency.¹⁶

Synthesizing the lessons from the webinar series, youth generally experience improvement in the quantity and quality of jobs across the African continent, but many employment opportunities remain fragmented and ad-hoc. This is reflected in the high levels of underemployment and poor working conditions experienced by youth. The study emphasized that the meaning of a decent job can vary significantly from one individual to another and from one context to another. Specifically, as youth is a heterogeneous group, implying cultural, ethnic, and religious differences, a one-size-fits-all approach to job decency is ineffective.

Oftentimes, specifically marginalized youth suffer from exclusion and choose to be entrepreneurs or work in the informal sector as a coping strategy “*in order to guarantee job security and earn a fair pay while doing something that signifies them.*”¹⁷ While the informal sector remains the main engine of youth employment creation across most African countries and offers youth the opportunity to become independent self-entrepreneurs, a job in the sector comes with high vulnerability due its unregulated nature.

Next to concerns for a safe and exploitation free work environment and stable income, youth also highlight the potential for personal and professional development as an important determinant of job decency.¹⁸

Job Decency in the Waste Recycling Value Chain

Examining job decency in the waste recycling sector, it becomes apparent that the working conditions in the informal sector are challenging. Informal waste workers commonly work under indecent and insecure conditions, facing job insecurity, safety hazards, and health risks.¹⁹ This is despite the fact that they are responsible for 90% of recycling in Africa, play a pivotal role in waste management as their work reduces the quantities of waste sent for disposal, drives entrepreneurship and contributes to mitigating problems related to climate change.²⁰ The COVID-19 pandemic even worsened the working environment of many informal workers by disrupting waste collection and jeopardizing the economic stability of informal waste workers.²¹

Inherent in greening the waste sector is therefore the necessity to enhance working conditions of informal waste workers. Literature focusing on youth employment in waste recycling emphasizes the need for attention to the quality of work and labour conditions that accompany circular processes.²² It also provides opportunities to reach marginalized groups, including rural, queer, and disabled youth, who are often left to make a living in the informal sector.²³

Besides opportunities for waste pickers in the informal sector, there are many different job opportunities along the plastic waste recycling value chain. Waste pickers might be able to “move up” the waste recycling hierarchy to become waste collectors, middle agents, recycling plants and in the manufacturing industries.²⁴ Hence, a comprehensive approach is essential to examine the promotion of green jobs within the plastic waste recycling value chain. This approach should address both the enhancement of conditions for informal waste workers and the creation of other job opportunities. However, a significant gap persists due to the absence of comprehensive research and practical evidence exploring how plastic waste recycling initiatives generate green jobs for youth beyond the informal value chain.

3. Barriers and Drivers for Green Jobs in Africa's Plastic Waste Recycling Sector

This chapter delves into the primary barriers and potential drivers for green jobs within and beyond the informal waste recycling value chain in Africa. It initially delineates three distinct barriers before expounding on four potential drivers and persistent challenges to these drivers, all derived from existing literature.

A. Barriers to Green Job Creation

The first barrier described in this section is the enduring social stigma and discrimination against waste pickers, significantly hindering their job decency and economic prospects while undermining societal perceptions of their role. Another barrier lies in the lack of support structures for initiating and expanding recycling enterprises, limiting their potential to generate employment. Furthermore, barriers in crafting viable business models within waste recycling pose hurdles in creating profitable ventures capable of sustaining job opportunities for youth.

The Prevailing Social Stigma associated with Waste Picking

The prevalent social stigma and low societal status typically ascribed to informal waste pickers contributes to ongoing economic exploitation and discrimination.²⁵ This remains a barrier to improving the quality of their work as it significantly hampers waste pickers' capacity to expand their businesses and enhance their livelihoods or advocate for better working conditions.

Despite their role in fostering cleaner environments, Morais et al. (2022) describe how waste picking continues to be perceived by the public as a job for social outcasts. This perception stems from the unsanitary nature of their work environment, leading to the labelling of waste pickers as 'dirty' due to handling waste. Additionally, local authorities continue to associate them with criminal activity or drug abuse. Moreover, enduring public harassment further erodes the self-esteem of waste pickers, which influences the quality of their work.²⁶

Lacking Support Structures for Recycling Initiatives

Another barrier for green jobs in Africa is the fact that innovative and young recycling companies often lack necessary support structures to grow sustainably and fulfil their economic and environmental potential. Issues related to the same challenges that spurred these innovative solutions (weak legislation and finance, corruption, and political instability) hinder scaling up and further developing innovative waste treatment methods and recycling technologies across Africa.²⁷

The recycling enterprises described by *Footprint Africa* highlight the overall lack of government support, ranging from supportive policies to tax incentives, and limited access to funding for scaling up these innovative solutions.²⁸ UNDP further underscores that “a general lack of technological and digital capacities remains a barrier to boosting youth initiatives within the circular economy space.”²⁹

The absence of lacking support structures like essential infrastructure and a supportive policy environment in combination with a lack of technical and digital skills impedes the potential growth of recycling companies, constraining their ability to contribute significantly to environmental improvements and job creation in Africa.

Profitability Challenges in Waste Recycling across Africa

One barrier related to the weak supportive structures is the challenge of establishing a viable plastic waste recycling business model on the African continent. For jobs to be decent and sustainable with fair compensation, the business model must be profitable, ensuring its continuity and the creation of further employment opportunities. This can prove to be difficult for multiple reasons. One of them being that in many African countries waste management is not subsidized like in multiple European countries. This only increases the numerous costs for companies involved in collecting, sorting, and remanufacturing recyclable materials.³⁰ The fact that global oil price fluctuations do impact plastic prices does also not contribute to a viable business model.³¹

Moreover, although collection and sorting of certain plastics occur in Africa, value addition often takes place elsewhere. In some cases, this can be linked to the principles of economies of scale, where investing in advanced technologies may not yield sufficient returns for some smaller companies.³² Linked to this is the fact that funding provided by multilateral development institutions and the private sector for municipal solid waste management remains relatively inadequate to improve and adjust the sector to the tools and machinery necessary for waste recycling.³³

B. Drivers for Green Job Creation

The potential drivers for green job creation outlined here are aligned with the barriers previously discussed. Firstly, the increasing awareness of waste pickers' significant role and their own active pursuit for recognition stands as a key driver for decent job creation. Secondly, the surge in innovative solutions aimed at tackling Africa's waste management issues serves as another driver. Lastly, the growing international and national recognition of the economic and environmental benefits of plastic waste recycling has led to a more supportive and enabling environment for waste recycling initiatives. The last section will delve into policies, partnerships, and financial mechanisms. The drivers do face obstacles that could hinder their ability to contribute to creating green jobs for African youth in waste recycling. These persistent challenges are described beneath each driver.

Advancing Recognition for Waste Pickers

A potential driver that can improve the job decency of waste pickers by addressing the social stigmatization and discrimination they face, lies in the growing acknowledgment of their valuable role. This recognition is evident through an increasing body of research and programs dedicated to enhancing the working conditions of informal waste pickers.³⁴ As emphasized by Nzeadibe (2014), recognizing waste picking as a legitimate economic activity in Africa is crucial for enhancing its social acceptance among the public and important stakeholders.³⁵ Additionally, waste pickers are starting to claim public recognition by collectively advocating for more secure working conditions.

An extensively researched option to improve the working conditions of waste pickers, is integrating them into the municipal solid waste management sector. This holds potential to offer them legal acknowledgment, safer working environments, and equitable negotiation mechanisms.³⁶ The existence of global conferences on waste workers and the international alliance of waste pickers furthermore exemplifies the growing recognition of their valuable work.³⁷ Apart from international alliances, informal waste workers employ various local organizational tactics to push for recognition. One such tactic involves organizing themselves in cooperatives that engage both state and non-state actors. This approach supports waste pickers in negotiating and striving for social recognition and enhanced working conditions.³⁸

A notable advocate exemplifying this shift is *John Chweya*, recognized by *the Guardian* as a leader of the Kenyan Waste Pickers' Association, representing 36,000 collectors. Present at the *Intergovernmental Negotiating Committee* in Paris in May 2023, alongside global leaders, he advocated for the global recognition of the 20 million waste pickers within the *UN treaty on plastic pollution*. His aim was to secure justice, healthcare, fair income, and improved working conditions for collectors, urging their inclusion in the treaty discussions.³⁹

Challenge to Driver: Continued Exclusion from Decision-making and Support Structures

Despite the growing global recognition, challenges persist, such as the lack of government support for waste picker associations and the exclusion of key actors from policy formulation.⁴⁰ More research is therefore needed to explore how the growing recognition of waste pickers and continuing awareness raising can contribute to more equal inclusion of waste pickers in decision-making processes and governmental support structures leading to more dignified work.

Innovative Solutions for Africa's Waste Management Problem

The positive role that digital, social, and technological innovations can potentially play in transitioning towards a circular economy is increasingly recognized by policymakers and practitioners.⁴¹ The African Development Bank for example emphasizes the need for innovative and young green businesses, portraying it as a driver for future employment opportunities.⁴²

In response to the challenges inherent in Africa's Waste Management sector like weak organizational structures, inadequate budgets, lack of appropriate skills, weak legislation, conflict and political instability, a wave of social, digital, and technological innovations have emerged to bridge the gap between waste collection and disposal.⁴³

The high potential of innovative social enterprises for addressing waste pollution and creating green jobs is indeed clear. These initiatives aim to capitalize on discarded waste, enhancing its value through recycling, reuse, and recovery. This economic value in combination with the attributed environmental impact ascribe the potential to create green jobs for youth. *Footprint Africa* describes interesting and innovative cases focussing on plastic waste recycling.⁴⁴ To give one example, *Pyramid Recycling* in Ghana recycles plastic waste into plastic material that can be used instead of wood in constructing products. The enterprise thereby takes waste out of the environment, reduces the need for wood and creates economic value and jobs.⁴⁵

Challenge to Driver: Lack of Empirical Evidence

Research is yet to continue analysing if and how the technological innovations that have emerged can contribute to green job creation for youth.⁴⁶ It remains crucial to better understand how the lacking support structures, weak technological and digital skills and financial challenges described in the barrier section can effectively be addressed in practice to support innovative social enterprises in reaching their potential for green jobs. This is specifically relevant when looking at plastic waste recycling because the many different types of plastic waste require diverse recycling processes, demanding varied investments, skills and innovative solutions.⁴⁷

Enabling Environment: Policies and Partnerships

There is an increasing number of commitments, partnerships and policies on both the international level and national level advocating for circular economic solutions for plastic pollution and green jobs for youth. This shows the growing awareness of the economic and environmental potential of waste recycling globally.

- The Global Plastic Action Partnership (GPAP) was launched in 2018 as the World Economic Forum's platform for convening action against plastic pollution, advocating for circularity.⁴⁸
- The New Plastic Economic Commitment initiated by The UN Environment Programme (UNEP) and the Ellen MacArthur Foundation aligns civil society, research institutions, public and private sector and governments to reach specific targets.⁴⁹
- Individually, many countries have also worked on policies to improve the waste management sector. For example, countries like South Africa and Kenya have launched plastic pacts and there are examples of programs aiming to increase the financial viability of the sector.⁵⁰
- At COP27, the ILO, UNEP, and UNICEF introduced the *Green Jobs for Youth Pact*,⁵¹ one of the targets being creating 1 million green jobs by 2030.

The *Ellen MacArthur Foundation* that conducted research into the circular economy in Africa with a focus on plastics advocates for a collaborative approach involving multiple stakeholders, where both formal and informal sectors have a voice in policy creation. By fostering participatory multi-stakeholder policymaking, governments can bridge gaps and create more effective solutions that consider diverse perspectives, from policymakers to grassroots practitioners.⁵²

Challenge to Driver: Fragmented Policies and Siloed Efforts

The need for a collaborative approach stems from the fact that recent policies addressing waste management often suffer from fragmentation, leading to conflicting strategies and inefficiencies in implementation.⁵³ For example, trade policies allowing extensive international exports of second-hand waste exacerbate Africa's waste problem, contradicting pollution-solving initiatives. In this light, the recent agreement by European lawmakers to ban plastic waste exports to non-OECD countries by mid-2026 marks a positive step, yet its potential impact on the livelihoods of waste pickers remains unclear.⁵⁴ Further research is crucial to understand how policy makers, researchers and practitioners can effectively collaborate to promote green job opportunities for youth involved in waste management across the African continent.

Enabling Environment: Financial Mechanisms

Given the report's emphasis on plastic waste, recent endeavors targeting corporate responsibility for plastic packaging stand out as potential drivers for green job creation within recycling. These initiatives aim to cover a portion of the costs associated with collecting and processing recyclable materials, thereby augmenting the financial attractiveness of waste recycling and attracting investment.⁵⁵ This might reinforce the business viability of recycling initiatives, potentially fostering positive influences on job creation.

One example is an *Extended Producer Responsibility (EPR)* program. Such programs ensure that producers fund the collection and recycling of their products, boosting the financial appeal of recycling. In Senegal, Gambia, and Zimbabwe, EPR programs led to higher recycling rates, job creation, reduced greenhouse gas emissions, and encouraged companies to adopt recyclable packaging.⁵⁶

Similarly, *Plastic credits* have a similar objective. Companies pay for credits covering a specific amount of plastic, supporting initiatives that recycle an equivalent amount. This is valuable for low-value plastics with slim profit margins.⁵⁷ For a comprehensive analysis of risks and opportunities associated with plastic credits and EPR programs, refer to the referenced paper.⁵⁸

Challenge to Driver: Limited Availability and Implementation

Due to the fact that these initiatives are very recently implemented and are not present in every country or available for every recycling initiative yet, it is unclear if and how such initiatives directly contribute to green jobs. Further research into how innovative recycling initiatives can

utilize such financial mechanisms for creating decent employment is needed to better understand how they can be improved and utilized.

Conclusion

This chapter underscores the theoretical understanding of barriers and drivers for green job creation. However, the practical implications remain uncertain: how will these factors actually influence green job creation, especially in waste recycling initiatives? While there's increasing recognition of the valuable role of waste pickers, how does this translate into dignified work? Innovative solutions show promise, yet their actual impact on green job creation and the means to overcome obstacles are not completely clear. Although the enabling environment for waste recycling is gradually improving, how exactly do supportive policies, partnerships and financial mechanisms stimulate green job opportunities?

4. Green Job Strategies: Kenyan Recycling Innovators

This chapter explores how innovative recycling initiatives create green jobs for youth. How do they leverage potential drivers and overcome encountered challenges in practice? It examines the strategies for green job creation from two pioneering social waste recycling enterprises in Kenya: TakaTaka Solutions and Mr. Green. Initially, it describes why the Kenyan landscape is relevant for this exploration. Subsequently, it delves into case descriptions, highlighting distinct focal points.

The Kenyan Case: A Vibrant Waste Recycling Landscape

Just like many African countries, Kenya is grappling with pressing waste management issues and a substantial youth unemployment rate. Approximately 11.8 Kenyan youths are unemployed (2021).⁵⁹ Kenya produces an approximate 22,000 tons of waste daily and there is a prevailing culture of disposal throughout the country.⁶⁰ At the same time, Kenya stands out as one of the stronger African economies, boasting a notable domestic plastics demand and a thriving informal recycling sector.⁶¹ Kenya exhibits a proactive stance with visionary policies recognizing the central place of youth in plastic waste management like expressed in *the Policy Brief: Sustainable Waste Management for Youth*.⁶² Recent frameworks like the *National Sustainable Waste Management Policy* and the ban on plastic bags signify a fundamental shift in perceiving waste as a valuable resource and supporting the transition to a circular economy.⁶³

Notably, Kenya showcases a vibrant landscape, with active participation from entities like the *Kenya Private Sector Alliance (KEPSA)*, the *Kenya Association of Waste Recyclers (KAWR)*,⁶⁴ and innovative initiatives addressing plastic waste challenges through recycling.⁶⁵ However, challenges persist, as highlighted by Haregu et al. (2017), pointing to weak institutional structures, inadequate regulatory enforcement, and control by illicit entities in the waste management sector.⁶⁶ This diverse terrain of challenges and promising initiatives provides an intricate canvas for researching pathways for green jobs for youth in plastic waste recycling.

Case Studies

The case descriptions start with a general introduction of their work and thereafter continues with their strategies for green job creation for youth. This provides insights in how they overcome barriers and utilize drivers in plastic waste recycling. The first case of TakaTaka Solutions emphasizes the significance of scaling and innovation as prerequisites for creating green jobs. Meanwhile, the second case of Mr. Green Africa emphasizes their collaboration not

only with partner organizations but also directly with waste workers to enhance job decency within the informal waste sector.²

TakaTaka Solutions



[TakaTaka Solutions](#) is a Kenyan social enterprise engaged in recycling multiple types of waste together with third party recyclers. This case study specifically examines how their internal recycling process for plastic waste contributes to green job creation for youth.

Founded	2011
Location	Nairobi: Three sorting sites, two plastic recycling plants, one incinerator, three buy-back centres.
Active in	Collecting, sorting and recycling household and industrial waste
Jobs Created/Improved	Direct Jobs: ~740 Directly employed Youth: ~70% Indirect Jobs Created/Improved: 2387

²The case descriptions and numerical data presented stem from online interviews conducted with key company personnel, supplemented by a review of internal documents.

The aim of TakaTaka Solutions is to establish a circular and integrated waste management system in Kenya. Their primary objective is to acquire as much plastic waste as possible directly from both companies and households at their recovery facilities. This aims to ensure that the waste they receive remains uncontaminated by the environment, making it more easily recyclable compared to waste collected from the environment itself. However, recognizing the growing challenge of expanding landfills and environmental plastic waste, TakaTaka Solutions also purchases waste at their buyback centres from informal waste workers.

Green Job Strategies

With their circular approach focused on intercepting waste before it reaches the environment, TakaTaka Solutions aims to positively impact the climate, enhance recycling efficiency, and produce higher quality products. The premise is that higher quality products foster increased profitability and contribute to more job creation for youth at their sorting sites and recycling facilities. Additionally, their collaboration with informal waste workers to remove plastic waste from the environment also allows for the improvement of working conditions within this sector.

Below, the strategies employed by TakaTaka Solutions for green job creation are detailed. These strategies not only address the inherent challenges in establishing a viable waste recycling business model in Africa but also highlight the encountered barriers when aiming to utilize innovative recycling methods. The final two strategies outline the enterprise's commitment to working with marginalized youth and collaborating with informal waste workers.

1. Creating a Viable Business Model

A key prerequisite for TakaTaka Solutions in creating decent and sustainable jobs for youth is profitability and continual business expansion. This approach allows for fair pay and the creation of new employment opportunities. However, establishing a viable business model presents multiple challenges.

For instance, plastic waste management in Kenya lacks government subsidies. Instead, TakaTaka Solutions incurs expenses for waste transportation licenses. Moreover, their sorting site fees must align with municipal dumpsite rates. Additionally, competition among recyclers striving for the highest quality product remains challenging in plastic waste recycling due to the costly infrastructure and necessary technological expertise. Moreover, interviewees highlighted an emerging trend of growing acknowledgment of the economic potential within policy frameworks, such as the *sustainable waste management law* mandating business involvement in recycling initiatives. However, they emphasized that despite these frameworks, active implementation remains lacking.

To address financial challenges and increase profits, TakaTaka Solutions aims to boost production efficiency by optimizing infrastructure and expanding operations through new recycling centres and sorting sites. This is not easy as scaling requires substantial financial resources for facility investments and land acquisition. Through networking and applying for funding, TakaTaka Solutions succeeded to secure a mix of funding, grants, and concessional debt from entities like USAID, the German Investment Corporation, and Siemens Stiftung.

While international donor funding is essential in overcoming financial hurdles it does not immediately solve everything as it mostly emphasizes 'soft' business aspects, like skills and staff. Yet, TakaTaka Solutions requires investments in infrastructure development and machinery. Acquiring capital for these purposes remains challenging due to global plastic price volatility and Kenya's overall business climate.

Financing for infrastructure development and scaling up operations enhances the waste management capabilities of TakaTaka Solutions and can lead to more job opportunities for Kenya's youth. Presently, TakaTaka Solutions operates three sorting sites, providing employment to around 150 individuals. These are particularly jobs available for uneducated or low educated people, as sorting mostly requires semi-skilled workers.

2. Utilizing Innovation to Recycle Previously Non-Recyclable Material

Unlike other Kenyan recyclers, TakaTaka Solutions specialises in recycling hard-to-recycle plastics using innovative technology such as hot-washing and pelletizing equipment. This practice extends to materials that were previously unprocessed in Kenya. This approach serves as a key strategy in creating green jobs for youth. The incorporation of new recyclable plastic types not only contributes to removing more waste from the environment but also generates additional job opportunities for youth across various stages of the plastic waste value chain.

Beyond the requirement for financial resources, a significant barrier hindering TakaTaka Solutions from effectively utilizing innovative plastic recycling solutions was the lack of knowledge. While gaining young employees with the necessary technical skills proved challenging, the primary hurdle lay in understanding how and where to obtain the right technology and essential materials, along with the necessary knowledge for its efficient implementation. This knowledge was pivotal in effectively leveraging innovative technologies.

In the case of TakaTaka Solutions, the majority of innovative recycling technology and machinery, as well as the necessary knowledge, had to be sourced from abroad, particularly from Europe and China. To fill the knowledge gap, TakaTaka Solutions sought guidance from mentors and external advisors who could provide essential information regarding the selection of machinery and the use of innovative technology for different types of waste.

It is a constant challenge to find Kenyan employees with the technical skills and knowledge required for working with innovative plastic recycling technologies and infrastructure. However, most positions at TakaTaka Solutions, such as waste sorting or truck driving, do not necessitate engineering skills. Additionally, TakaTaka Solutions provides training for its employees as needed, including specialized training such as forklift operation.

3. Improving the Quality of Direct Jobs

As discussed in chapter two, a precondition of a green job is that these jobs have to be decent. This section describes the quality of jobs at TakaTaka Solutions and thereafter elaborates on their strategies to attract marginalised groups, TakaTaka Solutions offers competitive salaries, often 30-60% higher than competitors. In addition, the company supports employees in gaining

government-sponsored health insurance, adheres to legal working hour mandates, and equips employees with protective gear. Each employee is offered formal contracts and comprehensive training, including supervisory support. Opportunities for growth are encouraged, with training in various areas such as HR-related issues, financial management, and specific technical skills required for various positions, including welding and forklifting.

TakaTaka Solutions employs specific strategies to attract marginalized groups. They have human resource staff who can communicate effectively in local dialects. Collaboration with specific associations, such as those representing people with disabilities, provides expert guidance on how to attract and work with individuals from these groups. They also provide sexual harassment training creating a respectful work environment. To address gender disparities in semi-skilled and skilled roles, TakaTaka Solutions offers specialized technical training to women, for example training in forklifting, supporting them in their growth trajectories.

4. Improving the Quality of Indirect Jobs

The last strategy for green jobs discussed here focuses on how TakaTaka creates indirect jobs and improves the quality of existing indirect jobs by sourcing waste from informal waste suppliers and providing them with social benefits. This remains challenging due to the social stigma around waste picking and the unhealthy work environment at dumpsites.

Takataka Solutions supports waste suppliers in multiple ways. They provide protective equipment and sanitary pads for women. They ensure a market for many different types of waste, offering a set price which increases the economic livelihoods of waste pickers. Furthermore, they provide different types of training so that waste suppliers can grow their businesses ranging from financial management to creating awareness around the different sorts of plastic and their value.

TakaTaka Solutions also jointly manages a public buy-back centre where waste suppliers can sell their collected waste. The government provides the centre, while TakaTaka Solutions offers a market for the waste and provides social benefits such as medical check-ups, kindergarten services, and protective clothing. Through this public-private partnership, they have been able to improve 200 to 300 indirect jobs for waste suppliers.

By viewing waste pickers as independent entrepreneurs who can also sell to their competitors and providing a decent working environment, TakaTaka Solutions tries to challenge the perception of jobs in waste recycling as it shows that informal waste pickers can make a livelihood. Next to this strategy, TakaTaka solutions also actively engages in conversation with local authorities and communities to advocate for the recognition of the valuable role of waste workers, trying to contribute to a more dignified image.

Mr. Green Africa



[Mr. Green Africa \(MGA\)](#) is a certified B-Corp company that strives to create a social, environmental, and economic impact by collecting, converting, and selling post-consumer plastic waste.

MGA's aims to build an inclusive plastic recycling ecosystem in Kenya that creates decent youth employment opportunities by taking control over the plastic recycling value chain. This enables them to implement fair-trade principles throughout the recycling process, transforming waste into valuable plastic pellets that are sold to clients for the production of various products. Their business model is innovative in that it integrates the sourcing of plastic waste, local manufacturing, and high-quality product creation with an inclusive approach of including informal waste suppliers in the formal plastic recycling value chain. The enterprise thereby creates decent jobs for young women and men in their production chain.

Founded	2014
Location	Nairobi: 20 trading & sorting hubs across all regions in Kenya
Active in	Collecting, sorting and recycling plastic waste
Jobs created/Improved	<p>Direct Jobs: ~ 300 (137 full-time company staff in their main processing plant; 200-300 casual employees in trading & sorting hubs)</p> <p>Indirectly employed youth: 65.3%</p> <p>Indirect Jobs: 4337</p>

Strategies for promoting Green Jobs

Central to MGA's push for decent youth employment is the collaboration and engagement with informal waste suppliers. They have understood that prioritizing decent work fosters trust and loyalty among workers, boosting retention and stable plastic sourcing of plastic waste. Their approach aims to promote decent employment in Kenya's recycling system through four key strategies and various concrete activities and innovations.

1. Financial stability for informal waste suppliers

MGA embraces a multifaceted approach to support informal waste workers by prioritizing fair compensation, financial stability, and overall well-being. By directly purchasing waste from suppliers at their own plastic trading hubs across Kenya, MGA eliminates middlemen and ensures fairer prices about 20-30% above market-price and a more stable income. This direct engagement fosters trust, loyalty, and financial stability, encouraging regular collaboration with MGA, which contributes to elevating the workers' livelihoods. In addition, MGA is committed to shift from minimum to living wages in the coming years, which exemplifies their dedication to improving workers' income levels.

Furthermore, the company's initiatives extend beyond financial aspects, addressing challenges related to workers' safety, such as assisting workers in obtaining identification documentation and facilitating frequent trainings, including but not limited to child labour policies, plastic selection, sexual harassment, gender-based violence, and work safety. MGA's reportedly most successful initiative was a loyalty programme which aims to build the trust between waste suppliers and the company. This scheme guarantees that frequent waste providers, who are digitally registered in MGA's system, are exempt from unfavourable market fluctuations and receive better prices for their products or can redeem points for personal protective gear.

2. Employee transformation journey

Next to directly improving the livelihoods of informal waste workers, MGA's strategy to ensure decent employment focuses on capacity-building, creating sustainable employment opportunities, and fostering entrepreneurship within the waste collection and recycling, which ultimately contributes to the company's growth.

The company pursues a comprehensive strategy aimed at supporting waste pickers in their growth trajectory to become collector agents and fostering their long-term employment within the company. For example, they provide opportunities to waste suppliers to become skilled employees within MGA's expanding operations, specifically targeting roles like inventory assistants and logistics officers, which are essential for scaling operations. Additionally, MGA employs a number of casual workers in their processing facility and their collection centres throughout the country that are eligible to become seasonal workers by Kenyan law after 3 months. Given required capacity and employee's performance, the company aims to engage seasonal workers full time, thereby promoting career advancement within MGA.

Furthermore, MGA's strategy involves the development of a robust collection network, partnering with collector agents and entities such as retail shops, schools, and churches, enabling consumers to bring plastic waste to designated recycling points instead of landfills. Additionally, MGA is piloting different partner-based models to manage their collection network and ensure that their principles of decent work are adhered to. This includes supporting former waste collectors to become independent collector agents supported by MGA.

3. Develop and implement additional support structures

By hosting group gatherings and enabling various engagement opportunities for waste suppliers, MGA established platforms where their opinions were heard, fostering a mutually trusting relationship. Insights gathered from these interactions led MGA to recognize the necessity of integrating additional support structures for waste suppliers.

MGA develops, pilots, and institutionalized, so-called, impact boosters, aimed at providing comprehensive support to waste pickers beyond skill enhancement and informational campaigns. These initiatives are designed to strengthen waste pickers by enhancing their self-esteem and altering their perception of recycling jobs, and augmenting their capabilities to secure decent employment, not limited to the recycling sector.

MGA's activities include an ongoing training and education program for collectors in their loyalty programme focused on diverse topics unrelated to recycling and plastic waste. Additionally, the company is developing a micro-insurance and savings scheme to aid collectors in case of income loss due to illness or disability. Moreover, MGA pilots a program to facilitate access to formal social and welfare services and basic health insurance for waste collectors.

In developing these 'impact boosters', as they call the social support structures, MGA realized that collaboration with other organisations who are active in the same ecosystem emerged as a great opportunity for effective implementation. In particular, NGOs turned out to be suitable partners due to shared objectives and their flexible approach towards achieving decent employment. Specific challenges within the 'impact booster' program that were addressed with the support of partners included limited smartphone access (at 40%) required for obtaining credits or micro-insurance, providing national identification for unregistered migrants, as well as difficulties in providing after-care health services when waste suppliers drop out.

4. Raising awareness in Kenya's plastic waste recycling ecosystem

MGA is dedicated to strengthening Kenya's plastic waste collection and recycling ecosystem, aiming not just to instil a sense of value for waste among informal waste pickers but also to raise public awareness about recycling practices. Recognizing the pivotal role of partnerships, MGA has actively engaged various stakeholders, including government bodies, waste picker associations, and NGOs, to undertake a range of activities geared towards strengthening the recycling ecosystem in Kenya.

MGA is raising awareness by collaborating with NGOs, advocating for a safer work environment, and addressing issues like middlemen, protection risks, and child labour. Piloting initiatives with local Churches and schools serves to disseminate messages to households. In addition, the enterprise is planning to initiate media campaigns that focus on destigmatizing waste workers and instigating behavioural changes in consumers regarding recycling practices.

MGA aims to align strategies with other recycling entities and collaborate with the government on legislation concerning uncontrolled dumpsites, support for informal waste pickers, and the promotion of recycling awareness. This strategic alignment aims to create a more conducive environment for recycling initiatives.

Conclusion

The aforementioned case studies highlight various strategies employed by innovative recycling companies to foster green job opportunities for youth. It showcases endeavours in confronting existing barriers and navigating challenges during the implementation of their approaches and underscores strategies to include informal waste workers and other marginalized groups.

For these recycling enterprises, scaling up operations and innovating infrastructure becomes imperative to enhance efficiency and thereby ensure the profitability necessary to create job opportunities. Achieving this necessitates suitable financial mechanisms and the requisite knowledge to effectively utilize innovations.

Moreover, a pivotal aspect of enhancing green jobs in the waste recycling sector involves collaborative efforts among stakeholders and awareness raising about the environment, social and economic potential of waste recycling. This collaboration extends to waste workers themselves and other stakeholders, aiming to improve the working environment and job prospects of waste workers. To address the social stigma around waste workers, it is integral to raise awareness among local governments and communities as a fundamental part of these efforts.

Furthermore, collaborating directly with waste pickers and marginalized groups themselves is essential for enhancing their work quality and fostering job opportunities tailored to their needs. Mr Green's initiatives, such as facilitating engagement through hosting group gatherings, digital registration, loyalty programs and career development pathways, aim to enhance trust among waste suppliers and staff while uplifting their livelihoods and job dignity. Similarly, TakaTaka Solutions attracts diverse marginalised groups through effective local dialect communication, collaboration with relevant associations (e.g., representing people with disabilities), and both initiatives offer specialized courses addressing the gender divide, including addressing sexual harassment and offering women-specific training for a safer and progressive work environment.

5. Pathways for Green Jobs in Plastic Waste Recycling

This section synthesizes insights gleaned from the analysed waste recycling initiatives with the barriers and drivers identified in the literature. This process facilitated the identification of four interconnected pathways aimed at fostering green jobs for African youth within the plastic waste recycling sector. The analyses leading to these pathways and the key recommendations are detailed in this section. For more specific recommendations tailored to stakeholders within the waste recycling ecosystem, please refer to chapter 7.



Figure 2: Green Job Pathways in Plastic Waste Recycling

As previously mentioned, this research centres on recycling enterprises as the focal point, illustrating how various pathways can support these initiatives in the creation of green jobs.

However, it's crucial to recognize that meaningful youth participation and insights from diverse youth engaged in waste recycling are pivotal in shaping strategies for green job creation. This importance arises from the fact that job decency experienced by youth in waste recycling is context-specific across different roles and demographics. Therefore, our research partner CFYE is currently conducting a youth-centred study to delve into the diverse perspectives of young individuals involved in waste recycling, particularly regarding their employment opportunities.

Green Finance

The case studies demonstrate that companies require financial resources to scale their operations, innovate, and enhance infrastructure. This, in turn, allows them to improve product quality and drive increased profits. Establishing a viable business model is crucial for creating and sustaining decent employment as it enables fair wages for waste workers. Similarly, offering long-term contracts and social benefits hinges upon the companies' ability to efficiently recycle plastic waste at a scale that supports cost-effective operations.

The volatility of plastic prices, along with difficulties in producing high-quality recycled plastic products, poses significant challenges. Coupled with a generally weak business environment in many African countries, these factors threaten the viability of recycling initiatives. Additionally, a lack of long-term investment opportunities and subsidies poses substantial hurdles for waste recycling initiatives to scale their businesses and improve their infrastructure.

Currently, the primary income sources of the enterprises serving as the cases for this research include selling recycled waste regionally and to the European market, waste collection fees and a mixture of funding, grants, and concessional debt. However, the companies are finding it challenging to gain sufficient funding, specifically for infrastructure development and new machinery, needed to increase their green job potential.

Green Finance: Increase finance and funding opportunities for new innovative solutions and scaling. Additionally, provide fees and subsidies for recycling and decent work initiatives.

- Sufficient finance and funding opportunities are necessary for new ideas and scaling.
- Waste recycling initiatives require a mixture of short-term investments and long-term financing mechanisms to maximize green job potential.
- Tax credits, fees and subsidies can support recycling and decent work initiatives.

Literature furthermore points towards the potential of mechanisms like Extended Producer Responsibility Programs and Plastic Credits as some form of subsidies for waste recycling on the African continent. Only TakaTaka Solutions mentioned actively exploring this option. However, this report cannot yet state how it contributes to job creation in practice.

Green Innovation

Technological, digital, and social innovations in waste recycling are generally viewed by researchers, policy makers and practitioners as offering a high potential for green jobs. The premise is that innovation can support the African waste management sector transitioning into a circular waste recycling system. However, similar challenges in waste management like weak legislation, a lack of technical skills, a fragile political environment and weak infrastructure are also holding back the utilization of innovations, and therefore pose a barrier for green jobs.

The case studies exemplify diverse pathways through which innovation can drive the creation of green jobs. Firstly, technological advancements enable recycling infrastructure to process previously unrecycled types of plastic, opening avenues to recycle waste that was previously deemed non-recyclable. This advancement contributes to increased work opportunities for waste workers as it increases the amount of waste to be recycled. Moreover, innovations lead to more efficient recycling processes, resulting in enhanced profitability and the potential for expanded employment prospects.

Secondly, recycling enterprises showcase how experimenting with new social and innovative solutions can enhance the engagement and efficiency of both direct and indirect employees within their operations. For instance, digitally registering informal waste suppliers enables social enterprises to provide them with tailored information and essential social support structures.

Green Innovation: Promote and facilitate the adoption of innovative solutions, knowledge exchange, and technical skills to enhance the effectiveness of plastic waste recycling and utilize social and digital innovations to improve the working environment within the sector.

- Technological innovations in plastic waste processing can enable the more effective recycling of (previously non-recyclable) waste materials.
- Possessing or acquiring the right technical skills and knowledge is key in utilizing technical innovations for waste recycling.
- Social innovations in the engagement with waste workers can enhance work quality and job decency.

Both cases highlight the importance of specific technological knowledge and skills to leverage innovative solutions. Next to finance for innovation, recycling enterprises need specialized knowledge necessary to identify the right technology and materials, as well as the technical expertise and well-trained staff to utilize them effectively. The cases address these challenges by collaborating with mentors and industry experts who provide guidance in making informed decisions around innovative technologies, providing technical training to employees, and constantly piloting new innovations.

Green Awareness

A pivotal requirement for green jobs lies in widespread national and international awareness of waste recycling's potential positive impact on the economy, society, and the environment. Only if this is recognised by all actors involved the plastic waste recycling sector can utilize its green job potential and provide dignified employment opportunities for youth.

The lack of widespread understanding and recognition regarding the benefits of recycling for the environment and the economy results in various obstacles to the creation of green jobs by both the government and the private sector. This includes challenges such as the social stigma associated with recycling-related jobs, social and economic discrimination of waste pickers, and a prevalent inclination towards disposing of waste rather than opting for recycling. These barriers are likely rooted in a general lack of awareness and acknowledgment of the positive impacts and potential of recycling.

Moreover, insufficient awareness among the government and private sector leads to limited financial prospects for waste recycling companies, a weak business climate, and low levels of government involvement in the sector. Additionally, evolving policies and international conferences are exemplifying that the added value of waste workers to the environment and the economy is slowly gaining more recognition, but the case studies underlined that more awareness raising is needed in practice. A positive note is that literature underlined that waste pickers are organizing themselves and advocating for decent work environments themselves.

The social enterprises explored in this study are engaging in awareness raising on multiple levels simultaneously. They run strategic media campaigns aimed at destigmatizing waste collection. By highlighting the stories of waste pickers, showcasing their contributions, and emphasizing the environmental benefits of recycling, these campaigns reshape public perceptions. Additionally, the companies engage in partnerships with other actors like civil society organizations and governmental entities to spread knowledge on waste recycling among communities and government officials.

Furthermore, these enterprises engage in advocacy and lobbying. For example, they advocate for safer work environments for waste workers by actively participating in policy discussions and training government officials on the benefits of waste recycling and the current barriers in the political environment. In this way they seek to institutionalize and normalize recycling practices and showcase the economic potential to relevant actors.

The increasing recognition of the potential of waste recycling helps counter the social stigma traditionally associated with waste recycling work, resulting in more dignified and respected job opportunities. It also contributes to a growing interest in the waste recycling sector from a wide variety of actors like financial institutions, private sector and international governmental agencies all leading to promoting green jobs in the sector.

Green Awareness: Raise awareness of all actors and the general public around the positive impact of waste recycling on the economy, well-being and the environment.

- The self-organization and assertion of recognition by informal waste workers are pivotal steps toward achieving improved working conditions.
- Awareness among government and private sectors leads to better financial prospects and political engagement in the sector.
- Strategic campaigns among the general public are crucial to destigmatize waste collection and promote recycling at household-level.

Green Sector Alignment

Effectively promoting green job opportunities in African waste recycling demands unified collaboration among all relevant stakeholders. Multi-stakeholder cooperation and public-private partnerships are crucial for overcoming barriers such as fragmented policies and lacking awareness of the potential of plastic waste recycling. Green sector alignment, therefore, is crucial for fostering a fair and conducive recycling ecosystem, benefiting social enterprises and informal workers among others.

Literature emphasizes the increasing recognition of waste recycling in policy frameworks. Yet, a prevalent issue exists with fragmentation among international, national, and local policies, lacking alignment. Accordingly, the case study interviewees from TakaTaka Solutions highlight the need for policy alignment as they witness a gap between promising policies on paper and their ineffective implementation in practice. Bridging this gap necessitates collaboration between policymakers and implementing agencies to ensure that policies match local realities and are useful for practitioners.

Ensuring genuine green sector alignment for green jobs for youth in waste recycling involves actively engaging youth in decision-making regarding employment opportunities and challenges within waste recycling. Similarly, it calls for equally incorporating and listening to the informal waste workers because their perspective on decent work is crucial in developing strategies for improving the quality of work in waste recycling.

A good practice in improving the quality of jobs in waste recycling is collaborating with the government in public private partnerships. Governmental actors and Private Sector companies can together provide health care insurance, agree on a minimum liveable wage and other social benefits. Educational institutes and NGOs also have a role to play in raising awareness among students and the wider public backed by evidence and policy from knowledge institutes.

Green Sector alignment: Create an efficient and fair plastics recycling ecosystem that acknowledges the rights, duties, and competencies of all actors.

- An efficient and fair recycling ecosystem necessitates collaborative efforts, aligned policies and strategies among stakeholders.
- Aligned efforts and strategies between different ecosystem actors reinforces how finance, innovation, and awareness mutually complement each other.
- Youth participation in decision-making at the sector level, particularly regarding the creation of decent job opportunities and the enhancement of working conditions for informal waste workers, is essential for creating job opportunities for youth.

The Pathways are Interlinked

The Green Sector Alignment Pathway underlines that collaboration among stakeholders and initiatives, rather than isolated efforts, proves more effective when promoting green jobs for youth and creating dignified employment opportunities. The many challenges inherent in plastic waste recycling and creating green jobs call for shared learning and collaboration among all relevant stakeholders, including youth and informal workers.

Therefore, the green sector alignment pathway serves as a linking pin and overarching pathway underlining that green finance, green innovation and green awareness are mutually reinforcing each other. The stakeholders within each pathway should collaborate and improve the enabling environment for green jobs together. If we want to utilize the drivers for green jobs, it needs to be a collaborative effort from policy makers, researchers, and practitioners from all sectors and on all levels. Moreover, when specifically looking at green jobs for youth, young people need to be meaningfully included as they are a key stakeholder within the recycling ecosystem.

6. Key Messages and Knowledge Gaps

The report delineated four interconnected pathways for promoting green jobs among Africa's youth within the plastic waste recycling sector. In addition, the conclusion underscores five key messages and highlights knowledge gaps, encouraging further research and deliberation aimed at advancing green job opportunities for youth in Africa's Plastic Waste Recycling sector.

Key Messages for Green Jobs for Youth in Africa's Plastic Waste Recycling Sector

Key Message 1:

Improving finance and funding channels for innovative solutions and scalability is crucial in establishing viable business models that ensure fair wages for waste workers.

Overcoming challenges such as price volatility of plastic and high competition for quality products in waste management necessitates a blend of short-term investments and long-term financing mechanisms for recycling initiatives. This approach supports initiatives in scaling and improving their infrastructure and efficiency necessary to maximize profits and increase the potential for creating green jobs beyond just income sources.

Key Message 2:

Driving innovative solutions and technical skills augmentation is vital for effective waste recycling.

Innovative approaches in companies' engagement with their direct and indirect employees, like piloting social support structures for informal workers, can enhance work quality for waste workers. Challenges like weak legislation and inadequate technical skills hinder innovation's potential. Therefore, collaboration with mentors and experts for informed technology decisions and technical training for employees is key, enabling the adoption of new technological and social innovations.

Key Message 3:

Widespread awareness about the positive environmental, social and economic impact of waste recycling is crucial for unlocking green job potential.

A lack of understanding and social stigma surrounding recycling-related jobs still pose significant barriers to decent job creation. Insufficient awareness among the government and private sector leads to limited financial prospects and low involvement in the sector. Strategic media campaigns can destigmatize waste collection, while partnerships with organizations and

advocacy efforts are important to create awareness among communities and government officials.

Key Message 4:

Creating an efficient, aligned, and fair recycling ecosystem necessitates a sector-wide acknowledgment and inclusion of the rights, duties, and competencies of all involved stakeholders across various levels, with specific emphasis on youth and informal waste workers.

It's crucial that all relevant stakeholders acknowledge the rights, responsibilities, and capabilities of every actor involved in waste recycling, particularly recognizing the invaluable contributions of waste workers. Engaging young individuals, informal waste collectors, and other affected communities in finding solutions is essential. NGOs and waste picker associations hold a significant role in advocating for the needs of informal and marginalized waste workers.

Key Message 5:

Collaboration among stakeholders and policy alignment is crucial to move beyond isolated efforts and collectively foster green jobs for youth in waste recycling.

Aligned efforts, policies and strategies among various ecosystem actors are essential in overcoming existing barriers for effective recycling and promoting decent employment. This alignment reinforces the interdependence of finance, innovation, and awareness, showcasing how they mutually complement each other. It emphasizes the interconnected and collaborative nature necessary for advancing green jobs in plastic waste recycling.

Persistent Knowledge Gaps and Avenues for further Research

The key messages, insights, pathways, and recommendations in this report are all aimed at fostering green job opportunities for African youth in the plastic waste recycling sector. While the social enterprises serving as case studies are active in Kenya, the validation session with CFYE country leads and the literature study focused on the African continent as a whole. Nevertheless, there's an exciting opportunity to further amplify these efforts. **By conducting additional research tailored to specific country-contexts across the continent, the pathways and recommendations can be enriched and strengthened**, paving the way for impactful and tailored solutions for youth employment in this vital sector.

Additionally, while this report specifically examines plastic waste, many findings could be applicable to general waste recycling. **Conducting additional research into different types of waste would thus benefit the promotion of green jobs across the recycling sector.**

There are more persistent questions and findings that can be enriched with context-specific research. A complex quandary remains: **Can a job within the informal waste recycling sector ever be considered decent?**

Given that the research team did not visit company sites, comprehending the extent to which social recycling enterprises ensure decent working conditions in informal waste recycling is challenging. The case studies did show that there are multiple strategies to improve the quality of jobs by for example offering consistent prices for collected plastic, enabling growth opportunities, and listening to the needs of waste workers. However, specifically considering the inherent challenges linked to waste handling and the often-unhealthy work environments at landfills, the quality of work in the informal sector remains questionable. Additionally, work experiences among youth vary significantly based on context, emphasizing the necessity for tailored solutions to enhance the quality of work. This highlights the need **for more context-specific research and increased youth engagement into questions around job decency in waste recycling.**

Other aspects that would benefit from more context-specific research are the practical implications of observed positive developments in the enabling environment. There is a growing recognition of the economic, social, and environmental potential of plastic waste recycling, as evidenced by promising policies, incentives provided through international financial mechanisms, and partnerships aimed at advancing waste recycling. **Further research into these developments is necessary to elucidate their role and impact on generating green jobs within waste recycling across various country-contexts in Africa.**

At last, this research, with its focus on recycling, highlights another significant avenue for further research **concerning the potential for creating green jobs through remanufacturing or reusing materials in comparison to traditional recycling methods.** A related unresolved question pertains to **the fate of waste pickers' jobs in a circular system, where waste circumvents landfills and undergoes direct recycling for new material creation.** Although this scenario might appear less common due to the ongoing increase in waste routed to landfills, it remains a valid question. Potentially gaining greater relevance if the recent agreement by European lawmakers to ban plastic waste exports to non-OECD countries by mid-2026 materializes. This could lead to a decrease in the amount of plastic waste in Africa available for waste picking. Emphasizing remanufacturing and reuse methods requires urgent attention as these circular approaches possess the potential for a more substantial impact on climate issues compared to conventional waste recycling.

7. Green Jobs in Plastic Waste Recycling: Key Recommendations for Policy Makers and Practitioners

To strengthen the evidence-base for policymakers and practitioners, this report reveals four concrete pathways for green jobs for youth in Africa's Plastic Waste Recycling Sector. The resulting recommendations stemming from this research aim to assist stakeholders in propelling these opportunities forward. The interconnected strategies for green finance, green innovation, and green awareness are interlinked and culminate in the overarching green sector alignment pathway. The interlinkage underlines that **leveraging the potential of green jobs for youth in plastic waste recycling necessitates a collective endeavour from policymakers, researchers, and practitioners at all levels.**

The recommendations are grounded in insights derived from a literature review and two case studies examining plastic waste recycling initiatives in Kenya and offer a strong foundation for stakeholders invested in fostering green jobs in waste recycling. However, their successful implementation **demands a context-specific approach, adapting to the diverse policy landscapes and practical realities prevalent across the African continent.**

Specifically targeting employment opportunities for youth, these recommendations underscore that **youth employment policies and initiatives to create green jobs in waste recycling must ensure that youth's perspectives and their varying identity markers that shape their decent employment opportunities are taken into account** as well as their potential to gain new skills and increase their job prospects along the waste recycling value chain.

Green Finance: Recommendations

Increase finance and funding opportunities for new innovative solutions and scaling. Additionally, provide fees and subsidies for recycling and decent work initiatives.

- **Government:** subsidize waste recycling initiatives and improve the business climate by facilitating a conducive tax and policy environment.
- **International donors:** continue to make funding and grants available for supporting and piloting innovative technical and social innovation to promote green jobs.
- **Finance institutions:** make funding more accessible to increase scaling and improve recycling infrastructure. Commercial and development banks should design essential financial products to capture and support the economic potential of this sector.
- **International governmental organizations:** strengthen subsidies and financial mechanisms internationally in conjunction with supporting policies for conducive global plastic recycling value chains.

Green Innovation: Recommendations

Promote and facilitate the adoption of innovative solutions, knowledge exchange, and technical skills to enhance the effectiveness of plastic waste recycling and utilize social and digital innovations to improve the working environment within the sector.

- **Recycling enterprises:** develop effective and innovative recycling approaches for (previously unrecycled) waste and provide technical skills training on innovative methods for employees simultaneously.
- **International donors:** provide knowledge and mentoring on technological innovations in waste recycling through linking African recycling initiatives with experts in the field.
- **Knowledge institutions:** facilitate effective knowledge development and foster international collaboration to build and strengthen expertise in innovative recycling technologies.
- **Civil Society Organizations:** Advocate for and strengthen the capacity of communities, governments, and businesses to adapt and utilize innovative and circular waste recycling principles through training and programming.

Green Awareness: Recommendations

Raise awareness of all actors and the general public around the positive impact of waste recycling on the economy, well-being and the environment.

- **Governments:** Create awareness around the potential of waste recycling and the important role of waste workers through media campaigns and community involvement
- **Civil society organisations:** Initiate awareness campaigns and support existing waste picking initiatives to inform communities that recycling can provide an income and has a positive impact on the environment.
- **International governmental organizations:** Create awareness around the potential of waste recycling for the economy and the climate and strengthen conducive policies for green innovation and green finance.
- **Knowledge institutes:** Build and strengthen the evidence base around green jobs for youth in waste recycling to inform awareness raising initiatives and supporting policies and structures.

Green Sector Alignment: Recommendations

Create an efficient and fair plastics recycling ecosystem that acknowledges the rights, duties, and competencies of all actors.

- Ensuring equal and active participation of all stakeholders in decision-making processes is crucial for promoting decent and green jobs in waste recycling. This includes specifically incorporating the perspectives of **diverse youth and informal waste**

workers. Their insights and lived experiences into decent work are pivotal for devising strategies aimed at enhancing the quality of work within waste recycling.

- Collaboration among **international governmental organizations, national governments, NGOs, and the private sector** is essential to establish and implement tailored policies that address specific contexts. For instance, it's crucial to ensure the effective functioning of mechanisms like plastic credits, subsidies and carbon taxes, and to develop national standards for green finance in order to guide financial institutions in incorporating environmental considerations.
- **Strengthening multi-stakeholder** shared learning processes to collectively share and co-create diverse innovative technologies and social interventions aimed at addressing social and environmental challenges in a specific country context.
- Raising awareness and promoting the value of waste workers, combating social stigmas linked to their profession, and enhancing work conditions require joint efforts from all stakeholders. **Public education** on waste recycling should commence in schools and through **NGO** campaigns. **Knowledge institutions and international government organizations** must reinforce evidence and policy development, while the **government and private sector** should partner to offer decent employment opportunities.

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The Challenge Fund for Youth Employment is a 7-year programme funded by the Netherlands Ministry of Foreign Affairs and managed by Palladium, VSO Nederland and Randstad. The Fund aims to create a prosperous future for 230,000 young women and men in the Middle East, North Africa, Sahel & West Africa and Horn of Africa. This will be achieved by supporting youth employment initiatives in these regions. There is a key role for private sector in achieving this goal. Initiatives will offer youth, particularly young women, opportunities for decent work that delivers better prospects for personal development, is productive, and offers a stable income, social protection and safe working conditions.