Understanding the Cost of Responsibly-Sourced Recycled Plastics: Insights from Case Studies in India and Kenya

June 2026

EXECUTIVE SUMMARY

Implementing responsible sourcing in recycled plastics value chains requires sustained, system-level investment, with an estimated $40 to $50 per tonne over conventional recycled plastic in emerging economies.

The plastics recycling sector is undergoing a rapid transformation, driven by increasing demand for recycled content and stronger regulatory requirements. However, while expectations for responsible sourcing are rising, the current economics of recycled plastics do not support the investment required to build responsible, inclusive value chains.

Prior to the war in the Middle East, the cost of recycled plastic resin was higher than its virgin equivalent, and the price paid for recycled resin did not allow for the investment required to make the recycled plastics supply chain "responsible" – that is, to safeguard the human rights of informal waste sector workers and promote ethical business practices in line with responsible sourcing standards.

While there are additional costs associated with ensuring that plastic is responsibly sourced, there has been limited insight into the scale and composition of these costs, as well as a lack of a clear, evidence-based business case for investment. This creates a significant barrier to scaling responsible sourcing practices.

To address this gap, The Circulate Initiative is undertaking research to understand the key cost drivers, estimate investment needs, identify pathways to bridge the financing gap, and assess potential benefits. The research follows a phased approach. In the first phase, we completed an identification and estimation exercise to establish a baseline of responsible sourcing costs in selected markets. This will be followed by an analysis of financing mechanisms and an assessment of the benefits of investment in responsible sourcing. For the cost estimation, we used a bottom-up, value-chain-wide approach aligned with the Harmonized Responsible Sourcing Framework for Recycled Materials (Harmonized Framework), the industry standard for responsible sourcing in the recycling sector. The study identifies 18 cost drivers, validated through case studies in India and Kenya. This report summarizes the findings on the cost of responsible sourcing based on these case studies.

KEY FINDINGS

The cost of responsibly-sourced recycled plastics ranges from US$ 41 to 49[1] per tonne, a 9 to 31% increase – specifically for rPET – over current recycled plastics costs.

1 **Compliance, traceability, and supplier engagement are the primary cost drivers,** accounting for 34 to 47% of total responsible sourcing costs. Critically, these are recurring operational expenditures rather than one-time investments, underscoring that responsible sourcing demands sustained investment across the value chain.

2 **These estimates represent a business-led baseline –** that is, costs within direct business control and visibility – and do not fully capture systemic costs such as living income, remediation, and grievance mechanisms, suggesting that actual costs are higher. Cost visibility declines across lower tiers, particularly within the informal sector, leading to a likely underestimation of full value chain costs.

3 **The cost assessment across India and Kenya reflects differences in market maturity –** assessed across policy environments, waste collection infrastructure, and the organisation of informal waste sector workers. Market maturity shapes both the scale and nature of investment required. These findings suggest that market maturity is a critical variable in determining not just how much responsible sourcing costs, but how those costs are distributed, who bears them, and how much remains invisible.

While this study provides a business-led baseline, it underscores that achieving responsible sourcing at scale will require system-level investment, long-term buyer commitment, and blended financing approaches, along with stronger collaboration among value chain actors.

INTRODUCTION

As global momentum builds around circular economy goals and responsible supply chains, the plastics recycling sector is increasingly expected to deliver not just environmental outcomes, but also social performance across value chains. In many emerging economies, recycling systems are deeply reliant on informal waste sector workers, who play a critical role in material recovery and often operate without adequate protections, recognition, and access to basic services. Improving the lives of these workers is essential to ensure that the transition to circularity is both inclusive and equitable. Through this study of the economics of responsibly-sourced recycled plastic, we aim to provide a structured understanding of the investments required to embed responsible practices within recycling value chains in emerging economies.

In this context, responsibly-sourced recycled plastics refer to plastics that are collected and recycled according to robust ethical and sustainable practices that respect the human rights of all workers, including waste pickers. This includes recognizing and integrating informal waste sector workers, strengthening traceability, and taking action to prevent and remediate risks such as unsafe working conditions, child labor, and lack of social protections.

—

[1] Currency conversion rates at the time of assessment: US$ 1 = INR 90 for India; KES 1 = US$ 0.0077 for Kenya.

Responsible Sourcing

Responsible sourcing means that all participants in the recycled plastics value chain:

- Are meeting their responsibility to respect human rights and environmental standards in their own operations and throughout the value chain
- Recognize the informal waste sector as part of their own company's value chain and engage meaningfully with all suppliers
- Take mitigation and improvement action across all tiers of the recycled plastics value chain, from global brands that use recycled plastics to aggregators that receive materials and contract services from informal waste sector workers and waste pickers

RESEARCH OBJECTIVES

The objectives of this research are to:

1. Understand the key cost drivers for responsibly-sourced recycled plastics
2. Estimate the investment needed for responsibly-sourced recycled plastics
3. Assess the potential benefits of investment in responsibly-sourced recycled plastics
4. Identify potential ways to bridge the gap between responsible and current recycled plastics supply chains

This research is based on the hypothesis that **if the cost gap between responsible and conventional recycled plastics value chains is clearly understood, stakeholders will be better able to identify and unlock diverse financing mechanisms for responsible sourcing. Over time, this funding is expected to improve transparency and traceability, enhance the livelihoods of informal waste sector workers across the value chain,** and support the transition toward making responsibly-sourced recycled plastics the industry norm.

RESEARCH METHODOLOGY AND APPROACH

We adopted a phased approach to understand the cost of responsibly-sourced recycled plastics, combining desk research, stakeholder consultations, and field-level validation. We first identified the key cost drivers required to implement responsible sourcing practices across the full recycling value chain. Following the cost estimation exercise, the next phase will focus on identifying financing pathways and assessing the potential benefits of investment in responsibly-sourced recycled plastics.

Identifying the Cost Drivers

Cost drivers were identified through a structured process that included:

- Desk research on cost structures of responsible sourcing in other sectors
- Alignment with the Harmonized Framework, ensuring relevance to established indicators for meeting responsible sourcing standards
- Deep-dive consultations with recycling partners to validate applicability across different market contexts, and
- Feedback from an expert Working Group to refine and finalize the cost drivers

The identified cost drivers (added in Annex 1) are grouped into four categories representing key areas of investment:

1. Compliance and Documentation
2. Partnerships and Capacity Building
3. Worker Wellbeing and Inclusion
4. Vertical Integration

Cost Classifications

We classified the cost drivers based on two factors: the **timing of investments** and the r**esponsibility of stakeholders to cover costs.** On timing, initial costs refer to short- to medium-term investments required to establish responsible sourcing systems, including setup and transition costs (e.g., setting up traceability systems, upgrading health and safety provisions, establishing partnerships, and registering workers). Recurring costs refer to ongoing expenses needed to maintain compliance and continuously improve practices, which are expected to become part of regular operating costs as markets mature (e.g., regular audits, supplier engagement, risk assessment, and worker training).

On responsibility, direct costs are those borne by the businesses implementing responsible sourcing practices, while indirect costs can be shared or co-financed by external stakeholders such as brands, governments, and development partners.

Estimating the Cost of Responsibly-Sourced Recycled Plastics

Cost estimation in this study is based on the Harmonized Framework, aligned with the implementation of Human Rights Due Diligence (HRDD) across the recycling value chain. It captures costs across key phases of responsible sourcing, including stakeholder engagement, risk assessment, planning and implementation of improvement actions, and monitoring, evaluation, and reporting. By aligning cost estimation with HRDD elements, the approach ensures that costs are not limited to compliance alone but also include preventive and improvement actions, particularly those related to worker wellbeing and inclusion.

For the cost estimation, we followed a bottom-up, full value-chain approach, designed to capture the current costs of implementing responsible sourcing practices in selected markets that can be directly attributed to the value chain actors.

Data was collected through structured discussions with recyclers and suppliers, ensuring that estimates reflect operational realities. The estimation does not include costs related to living income, or to mitigation and remediation of salient risks required to meet advanced responsible sourcing standards.

All identified costs were:

- Annualized to reflect ongoing implementation
- Classified as initial or recurring, based on the timing of investment
- Categorized as direct or indirect, based on responsibility for cost coverage
- Normalized to a per-tonne basis using annual recycled volumes

Limitations of the Study

The resulting estimates represent a business-led baseline cost – that is, costs within direct business control and visibility – for initiating responsible sourcing. However, because many interventions – particularly those related to living income, grievances, and remediation for informal waste sector workers require multi-stakeholder collaboration, these costs are not captured. Additionally, limited visibility in lower tiers of the value chain, especially within the informal sector, further constrains the full estimation of responsible sourcing costs.

The analysis is based on two case studies, providing directional insights rather than a comprehensive representation of all markets, and costs are expected to vary by market maturity, geography, and supply chain structure. As companies advance in implementing HRDD, cost structures will evolve over time, and current estimates may not fully capture future investment needs.

MARKET MATURITY

To better understand how costs vary across geographies, we developed a market maturity framework that categorizes different markets based on key parameters, including policy environment, waste management infrastructure, and the organization of informal waste workers, to reflect their impact on responsible sourcing costs. The following table outlines the criteria for high, medium, and low-maturity markets.

Based on this framework, the market in India reflects a medium-maturity context, with existing EPR and public sector policies, but inconsistent recognition and integration of informal workers. Waste collection infrastructure is partially developed, and informal workers are organized to some extent, with many operating with limited influence.

By contrast, the market in Kenya reflects a low-maturity context, where EPR and public policy frameworks are still evolving, and policies do not consistently recognize informal workers. Waste collection infrastructure is fragmented and uneven, and informal workers are largely not integrated into policy mechanisms.

These differences in market maturity influence the level of investment required, the visibility of costs across tiers, and the extent of stakeholder collaboration needed to implement responsible sourcing practices.

Table 1: Market Maturity Framework

Elements	High Maturity	Medium Maturity	Low Maturity
Extended Producer Responsibility (EPR) and Public Sector Policies	EPR and public sector policies exist with clear implementation plans, targets, and recognition of informal waste sector workers as essential service providers	EPR and public sector policies exist, but do not consistently recognize informal waste sector workers	EPR policies do not exist, and waste management policies exclude informal waste sector workers
Waste Collection Infrastructure	Well-developed waste collection and management infrastructure	Partial or uneven access to waste collection and management infrastructure	Infrastructure for waste collection and management is limited or unavailable
Organization of Informal Waste Sector Workers	Workers are integrated in formal systems and are strongly organized	Waste pickers are partially organized, often in informal groups with limited recognition or influence	Waste pickers are unorganized, lack representation, and have limited recognition and influence within the existing policy framework

CASE STUDY

The Cost of Responsibly-Sourced Recycled Plastics in India

India generates approximately 9.4 million tonnes[2] of plastic waste annually, of which around 60% is recycled – largely driven by the informal sector. The plastic recycling market in India reached 11.92 million tonnes[3] in 2025, reflecting the rapid expansion of the sector, driven by increasing regulatory momentum and evolving circular economy commitments. As markets evolve, building traceable and responsible value chains presents both opportunities and challenges in balancing economic viability with responsible sourcing standards.

Key Findings

This case study is based on a recycler (Tier 1) operating in India under medium-maturity market conditions, processing a diverse range of materials including PET, PP, and HDPE, with an annual throughput of approximately 48,000 tonnes at the time of assessment. The value chain includes around 60 Tier 2 suppliers, 300 Tier 3 aggregators, and approximately 6,600 informal waste sector workers, reflecting a complex and multi-tiered supply ecosystem.

The assessment in India indicates that transitioning to a responsibly-sourced recycled plastics value chain requires an additional initial investment of **US$ 49 per tonne,** representing a **9 to 11% increase** – specifically for rPET – over conventional recycling costs.

Table 2: Percentage Share of Responsible Sourcing Cost Categories in India

Cost Category	Direct	Indirect	Initial	Recurring
Compliance and Documentation	47.3%	0.0%	1.3%	46.0%
Partnerships and Capacity Building	7.0%	0.0%	0.0%	7.0%
Worker Wellbeing and Inclusion	3.3%	3.0%	4.8%	1.5%
Vertical Integration	39.4%	0.0%	28.2%	11.3%
Sub-Total	**97.0%**	**3.0%**	**34.3%**	**65.8%**

–

[2] Swachh Bharat Mission (Urban) (2019) Plastic waste management: Issues, solutions and case studies. Ministry of Housing and Urban Affairs, Government of India [online]. Available from: https://sbmurban.org/storage/app/media/pdf/SBM%20Plastic%20Waste%20Book.pdf [Accessed: April 1, 2026].

[3] IMARC Group (n.d.) India waste plastic recycling market size, share, trends and forecast by treatment, material, application, recycling process and region [online]. Available from: https://www.giiresearch.com/report/imarc1941606-india-waste-plastic-recycling-market-size-share.html [Accessed: April 1, 2026].

CASE STUDY

The Cost of Responsibly-Sourced Recycled Plastics in India

Initial investments are primarily driven by costs required to support vertical integration[4] (28%) of the recycling supply chain and setting up worker wellbeing mechanisms. These upfront costs reflect the need to establish traceability systems, supplier networks, and foundational processes for responsible sourcing.

Over time, recurring costs are the majority (66%), with a significant share attributed to compliance and documentation activities, including ongoing data collection, supplier management, and system maintenance. While training, partnerships, and capacity building represent a smaller proportion of total costs, they remain structurally recurring, highlighting their importance in sustaining responsible sourcing practices.

Costs are predominantly direct (97%), largely associated with worker wellbeing and inclusion efforts. However, the full cost of worker wellbeing is not fully captured in this assessment, as it reflects a business-led baseline estimate. As a result, a significant portion of costs appears as direct, while actual costs – particularly at the informal sector level – are likely higher and would require broader ecosystem support to fully address.

—

[4] Vertical integration in supply chains is a strategy in which a company acquires or merges with its suppliers to control multiple stages of production and distribution. It enables companies to reduce costs, ensure quality control, and decrease dependence on external partners.

CASE STUDY

The Cost of Responsibly-Sourced Recycled Plastics in Kenya

It is estimated that Kenya generates approximately 0.5 to 1.3 million tonnes[5] of plastic waste annually, of which only 8% is currently recycled. This also reflects a low-maturity recycling market, with limited infrastructure, low formalization, and significant reliance on informal waste sector workers.

Key Findings

This case study is based on a recycler (Tier 1) operating in Kenya under low-maturity market conditions, processing materials such as HDPE, PET, and PP, with an annual throughput of approximately 10,000 tonnes at the time of assessment. The value chain includes around 146 Tier 2 suppliers, 725 Tier 3 aggregators, and approximately 2,500 informal waste sector workers, reflecting a highly fragmented and informal supply ecosystem.

The case study findings estimate that transitioning to responsibly-sourced recycled plastics requires an additional initial investment of **US$ 41 per tonne**, a **17 to 24%** increase for polyolefins and a **26 to 31%** increase for PET compared to current recycling costs.

Table 3: Percentage Share of Responsible Sourcing Cost Categories in Kenya

Cost Category	Direct	Indirect	Initial	Recurring
Compliance and Documentation	40.5%	0.0%	0.0%	40.5%
Partnerships and Capacity Building	13.0%	0.0%	0.0%	13.0%
Worker Wellbeing and Inclusion	24.8%	11.8%	19.1%	17.5%
Vertical Integration	9.9%	0.0%	0.3%	9.6%
Sub-Total	**88.2%**	**11.8%**	**19.4%**	**80.6%**

–

[5] Propak East Africa (2025) Kenya launches roadmap for recyclable plastics by 2030 [online]. Available from: https://www.propakeastafrica.com/news/kenya-launches-roadmap-for-recyclable-plastics-by-2030 [Accessed: April 1, 2026].

CASE STUDY

The Cost of Responsibly-Sourced Recycled Plastics in Kenya

Responsible sourcing costs in Kenya are largely a recurring investment - approximately 81% of the total. These costs are primarily linked to compliance, traceability systems, grievance mechanisms, health and safety training, audits, and ongoing supplier engagement.

Initial investments are concentrated in worker wellbeing and inclusion, including workplace health and safety systems, reflecting the need to establish basic enabling conditions in a low-maturity market. Costs are predominantly direct (88%), with a relatively higher share of indirect costs (12%) compared to the India case. These indirect costs are largely associated with worker wellbeing and inclusion, including facilitation efforts such as linking workers to social security, banking, and insurance systems. This further underscores the importance of partnerships with governments and civil society organizations, as achieving social outcomes requires coordination beyond individual business efforts.

—

[4] Vertical integration in supply chains is a strategy in which a company acquires or merges with its suppliers to control multiple stages of production and distribution. It enables companies to reduce costs, ensure quality control, and decrease dependence on external partners.

KEY TAKEAWAYS

The research findings and case studies provide a foundation to understand, plan, and invest in the transition toward responsibly-sourced recycled plastics, while recognizing that costs will evolve with market maturity, scale, and system development in specific operations. Costs will also vary depending on how advanced a company is in implementing HRDD and will evolve over time as implementation progresses. A significant share of costs is concentrated in the "Implement" phase, where risks are actively addressed, and these costs may increase as companies deepen their responsible sourcing practices.

These estimates do not fully account for living income, as it is largely influenced by government policies, social protection systems, and broader market conditions, and therefore remains only partially within the control of recycling companies.

The comparison between medium-maturity (India) and low-maturity (Kenya) markets highlights important similarities and differences in how costs are distributed across categories. Across both contexts, compliance and documentation represent a large and predominantly recurring cost category (46.0% in medium maturity vs. 40.5% in low maturity). This indicates that traceability, data management, and due diligence are foundational and ongoing requirements, regardless of market maturity. Indirect costs are significantly higher in the low-maturity market (11.8% vs. 3.0%), primarily driven by worker wellbeing and inclusion through public sector programs.

Expenses related to worker wellbeing and inclusion – including health and safety measures, access to ID cards, and related support – are significantly higher in low-maturity markets (~25%) compared to medium-maturity markets (~3%). As markets mature and develop supportive policies, infrastructure, and ecosystem partnerships, they enable improved integration, social protection, and welfare for informal waste sector workers.

The estimated cost range of responsibly-sourced recycled plastics (US$ 40 to 50 per tonne across both markets) is a conservative assessment that can help companies establish a practical entry point for transitioning to minimum responsible sourcing standards. Stakeholders should consider that after an initial set up phase, responsible sourcing requires a sustained operational and financial commitment

Looking ahead, future phases of this research will aim to further refine cost estimates by incorporating additional factors that influence variability across contexts and publish a full report with financing pathways and potential benefits. These may include differences in material types, scale and stage of operations, and the level of supply chain integration and market maturity. Accounting for these variables will help develop a more nuanced understanding of investment needs and support more targeted, context-specific approaches to scaling responsible sourcing.

The path forward is clear: with a realistic cost baseline in place, recyclers, brands, investors, and processors can plan investments, strengthen buyer negotiations, and prioritize resources to embed responsible sourcing into core business practices, while co-investing across the value chain to make inclusive and transparent recycling systems the norm.

Human Rights Due Diligence Implementation Phases

Annex 1: Key Cost Drivers[6]

The following table presents the final 18 key cost drivers across the four categories related to responsible sourcing in recycling value chains.

#	Cost Category	Cost Drivers
1	Compliance and Documentation	Implementing traceability and transparency systems
2	Compliance and Documentation	Setting up confidential grievance and reporting mechanisms
3	Compliance and Documentation	Conducting human rights due diligence risk assessments
4	Partnerships and Capacity Building	Advocacy and partnerships with local governments, NGOs, and communities
5	Partnerships and Capacity Building	Training suppliers on compliance and responsible sourcing practices
6	Partnerships and Capacity Building	Health and safety training for workers, including informal waste sector workers and waste pickers
7	Partnerships and Capacity Building	Vocational and skills training for all workers, including informal waste sector workers and waste pickers
8	Worker Wellbeing and Inclusion	Implementing workplace health, safety, and related compliance
9	Worker Wellbeing and Inclusion	Providing safe drinking water, sanitation, and hygiene in the workplace
10	Worker Wellbeing and Inclusion	Providing personal protective equipment (PPE) to all workers, including informal waste sector workers and waste pickers
11	Worker Wellbeing and Inclusion	Supporting access to ID cards, social protection, and financial services
12	Worker Wellbeing and Inclusion	Supporting the provision of living wages for employees and living income for waste pickers
13	Worker Wellbeing and Inclusion	Measures to address child labor (including education, childcare, and awareness programs)
14	Worker Wellbeing and Inclusion	Supporting the organization, formalization, and integration of waste pickers within the value chain
15	Worker Wellbeing and Inclusion	Providing financial literacy and inclusion training
16	Worker Wellbeing and Inclusion	Supporting access to health and life insurance for workers
17	Vertical Integration	Strengthening supplier relationships to ensure responsible sourcing compliance and long-term engagement
18	Vertical Integration	Investing in collection systems and facility upgrades to meet responsible sourcing standards

[6] These cost drivers reflect the primary categories identified through a multi-stakeholder consultation and are not exhaustive.

The Circulate Initiative

Understanding the Cost of Responsibly-Sourced Recycled Plastics: Insights from Case Studies in India and Kenya

June 2026

The Circulate Initiative is undertaking research to understand the key cost drivers, estimate investment needs, identify pathways to bridge the financing gap, and assess potential benefits. The research follows a phased approach. In the first phase, we completed an identification and estimation exercise to establish a baseline of responsible sourcing costs in selected markets. This will be followed by an analysis of financing mechanisms and an assessment of the benefits of investment in responsible sourcing. For the cost estimation, we used a bottom-up, value-chain-wide approach aligned with the Harmonized Responsible Sourcing Framework for Recycled Materials (Harmonized Framework), the industry standard for responsible sourcing in the recycling sector. The study identifies 18 cost drivers, validated through case studies in India and Kenya. This report summarizes the findings on the cost of responsible sourcing based on these case studies.

CONTACT

rsi@thecirculateinitiative.org

thecirculateinitiative.org

FOLLOW US

LinkedIn

Instagram

YouTube

Sign up for our newsletter