

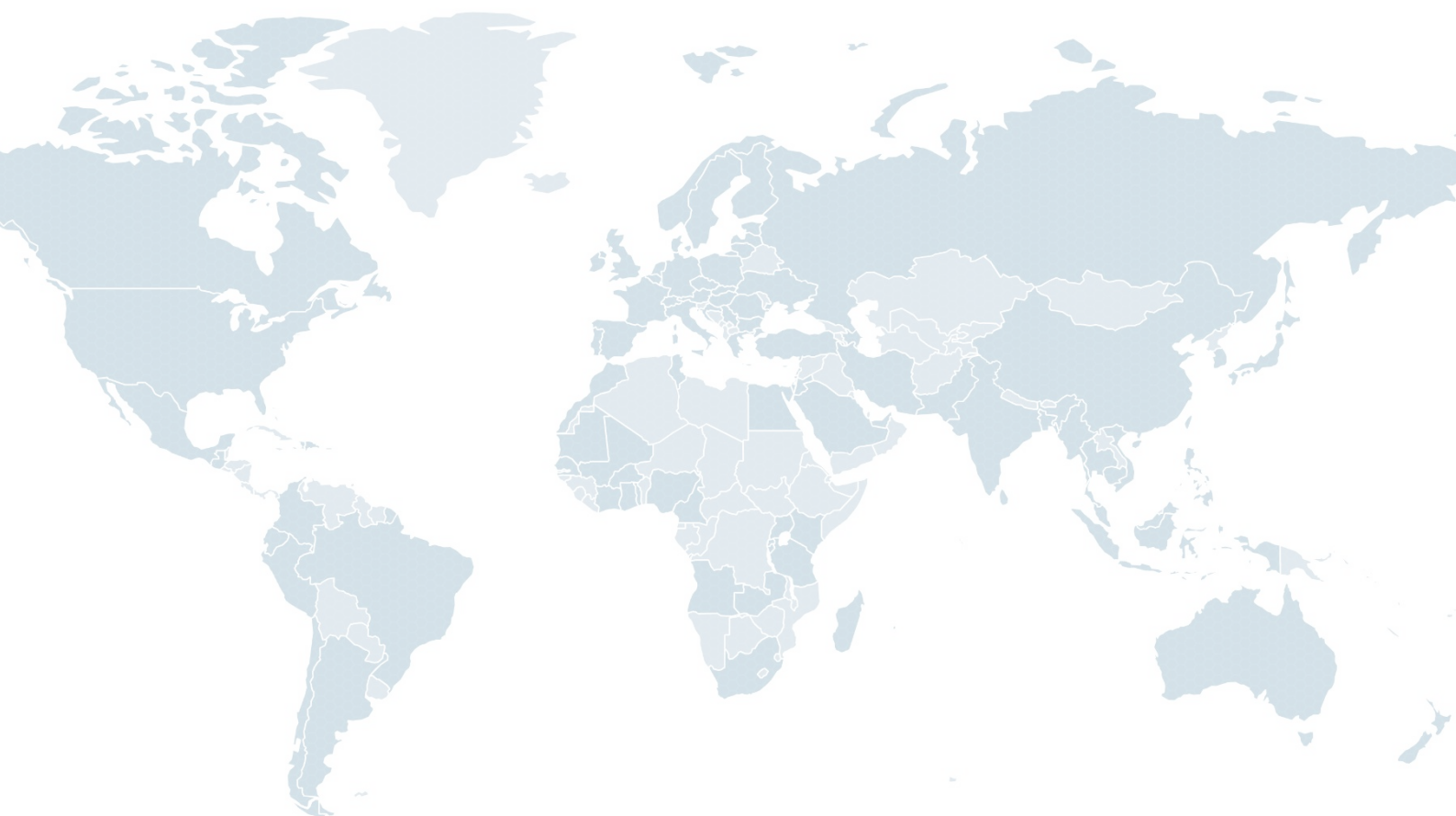


The Private Investment Landscape for a Global Circular Economy for Plastics: Insights from the Plastics Circularity Investment Tracker

JULY 2024

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Forewords



Michael Sadowski
Executive Director
The Circulate Initiative

In November 2024, negotiators will convene for the fifth meeting of the Intergovernmental Negotiating Committee (INC), with the goal of developing an international legally-binding instrument on plastic pollution, including in the marine environment (ILBI). The stakes are enormous – 22 million tonnes of plastic waste leaked into the environment in 2019, and this could double by 2060.

There are solutions to the plastic pollution crisis, yet the financial resources required to deploy them are substantial. An estimated US\$ 17 trillion in public and private investment is needed between 2025 and 2040 to reduce mismanaged plastic waste by 90% relative to 2019 levels. Knowing this figure is key, as is understanding the gap between this amount and the current level of investment.

To this end, The Circulate Initiative is thrilled to launch, with support from the International Finance Corporation (IFC), the third edition of the Plastics Circularity Investment Tracker (“Investment Tracker”). The Investment Tracker contains a wealth of data on over 5,500 private investments in plastics circularity from 2018 to 2023. Policy-makers, investors, corporations, and other users can access investment data across geographies, investment archetypes (e.g., recycling, refill/reuse), and sources of investment (e.g., banks, private equity).

I am hopeful that negotiators will agree to a strong treaty in November, which includes provision for significant financial resources. I look forward to policy elements that will spur private investment, such as extended producer responsibility (EPR) and recycled content requirements at local and national government levels. We will refresh the Investment Tracker on an annual basis to keep track of our progress in closing the financing gap and stemming the tide of plastic waste.



Jamie Fergusson
Global Director, Climate Business
International Finance Corporation

Plastic pollution is not merely an environmental issue; it poses a major risk to our planet's ability to support life and to our continued fight against poverty.

The Circulate Initiative's latest report shines a light on the financial flows driving plastics circularity on a global scale. The Plastics Circularity Investment Tracker aggregates private sector investments in plastics circularity, offering a unique perspective on the current landscape.

Despite efforts from companies to adopt sustainable practices, the trend towards increased use of virgin materials remains a stark reminder of the challenges ahead. The report highlights that while the ambition is there, the scale is not. Half of the transactions in plastics circularity with deal value information available stand at a million dollars or less. Early-stage investment and aggregation are therefore key. The private sector must play a pivotal role in driving scalable solutions.

As we build on the momentum of the negotiations for a global plastics treaty, it is imperative that the public and private sector work together to translate the potential commitments from this treaty into tangible actions. IFC is ready to support companies investing in emerging markets, which currently only receive six percent of investments, to foster a circular economy that benefits all.

Achieving our global climate and net-zero goals will require a fundamental shift to the circular economy. Let us not just anticipate a future where circularity is the norm but actively work towards it. Together, we can turn the tide on plastic pollution and create a resilient, climate-smart world.

Executive Summary

Insights on financial flows are critical to support decision-making to tackle plastic pollution and drive a circular economy for plastics. The third edition of the Plastics Circularity Investment Tracker (“Investment Tracker”), launched in cooperation with IFC, highlights the significant financing gap that exists in tackling plastic pollution and the critical role private investments play in addressing it. This report provides the latest data and insights on the state of private investments in plastics circularity and sheds light on several examples of successful private capital mobilization. With ongoing discussions on the international legally binding instrument on plastic pollution, including in the marine environment (ILBI), the findings signal the urgent need for greater transparency to support data-driven decision making.



US\$ 32 billion in private investments annually is a fraction of the more than US\$1 trillion needed per year

Between 2018 and 2023, global investments in plastics circularity totaled US\$ 190 billion, averaging US\$ 32 billion annually. This is significantly below the US\$ 1 trillion needed per year to meet the 2040 targets for reducing mismanaged plastics globally.¹ Importantly, extended producer responsibility (EPR), recycled content mandates, and other policy initiatives in several countries have encouraged investments. For example, the European Union’s directive on the use of single-use plastics in restaurants enabled France-based reuse startup Pyxo to raise EUR 7 million (US\$ 7.9 million).



While emerging markets are hotspots of plastic pollution, they only received 6% of investments²

High-income economies attracted significantly more investments compared to emerging markets, at US\$ 179 billion and US\$ 11 billion respectively. The disparity between investments in emerging and high-income economies highlights differing waste management priorities and the availability of investment-ready companies. To illustrate, Africa received only 0.3% of total investments in 2023, despite 8% of plastic waste leaked to the ocean coming from the continent.³ Further compounding the challenge, tackling plastic pollution in emerging economies is more expensive than in high-income countries.

¹ Nordic Council of Ministers. (2023). *Towards Ending Plastic Pollution by 2040 – 15 Global Policy Interventions for Systems Change* [online]. Available from: <https://www.norden.org/en/publication/towards-ending-plastic-pollution>

² Investments are recorded in the country where the headquarters of the investee/recipient company is based. However, some of these investments may be directed to other countries

³ Meijer, L. J. J. et al. (2021). *More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean*. *Science Advances* [online], 7(18). Available from: <https://www.science.org/doi/10.1126/sciadv.aaz5803>



82% of investments were in recovery and recycling, while only 4% went to refill and reuse

According to the Investment Tracker, downstream solutions, such as recovery and recycling, received US\$ 155 billion, or 82% of all investments. Refill and reuse solutions received just US\$ 8 billion (4%). Upstream solutions, such as materials and redesign, received US\$ 23 billion, with the remaining investments made in support services, such as marketplaces for recycled materials, on-demand waste pickup services, digital mapping services for plastic waste flows, and consulting services. The value chain requires investment in both waste management and upstream solutions to reduce and reuse plastics.



Financing by banks contributed to 37% of private investments, driven by large ticket deals

Banks and corporate investments contributed 37% and 31% of deal value, with 402 and 1,267 deals respectively. Private equity also played a significant role, accounting for 23% of all investments across the value chain. Firms in the early stages of development received only US\$ 4.4 billion, or 2% of the cumulative deal value, financed mostly through a combination of venture capital, accelerator/incubator funding, and individual/crowdfunding investments. There are a handful of examples of early-stage investments, such as Circulate Capital's loan to Tridi Oasis in 2020, which laid the foundations for a subsequent joint venture for the company with ALBA Asia Plastics Recycling in 2022. However, investors direct the bulk of their investments in plastics circularity towards more established and creditworthy businesses.



About this Report

The Intergovernmental Negotiating Committee (INC) issued the latest draft text of the international legally binding instrument on plastic pollution, including in the marine environment (ILBI), in July 2024. Discussions by countries involved in the negotiations emphasize a need to increase the mobilization of private capital and align public and private investment to meet the objectives of the ILBI. Stakeholders need to mobilize financial resources from all sources – government bodies, development finance institutions, multilateral environmental funds, institutional investors, commercial banks, corporations, and foundations – and ensure a multiplier effect of that capital to effectively end plastic pollution.

Data and insights on financial flows to tackle plastic pollution is a critical input to ensure that sufficient capital is mobilized from different sources and directed towards relevant geographies and solutions. The latest edition of the Investment Tracker provides data on private investment in solutions that drive a circular economy for plastics for the period of 2018 to 2023. Through the Investment Tracker, we aim to improve the overall understanding of financial flows into plastics circularity globally by tracking third-party private investments.

Private investments in plastics circularity totaling US\$ 190 billion between 2018 and 2023, or approximately US\$ 32 billion annually, highlights a significant financing gap vis-à-vis the more than US\$ 1 trillion dollars needed annually from 2025 to 2040 to reduce annual mismanaged plastic volumes by 90% relative to 2019 levels.⁴ The ILBI provides an opportunity to develop not only a financial mechanism to address the financing gap, but to establish the taxonomies, metrics, and monitoring and reporting systems needed to effectively solve the crisis.

The third edition of the Investment Tracker is launched in cooperation with IFC. This edition builds on the first two that were released in 2023, with data now available for 100 countries (43 high-income and 57 emerging economies) across eight solution archetypes and seven investment categories. We collated, analyzed, and reviewed more than 5,500 deals across 3,000 companies to arrive at the insights presented in this report. As investments in businesses that drive a circular economy continue to grow, the Investment Tracker will be updated on an annual basis with new insights and case studies to provide the necessary evidence base for decision-making to finance solutions to tackle plastic pollution.

This report draws on the latest edition of the Investment Tracker with:

100
COUNTRIES

3,000+
COMPANIES

5,500+
DEALS

⁴ Nordic Council of Ministers. (2023). *Towards Ending Plastic Pollution by 2040 – 15 Global Policy Interventions for Systems Change* [online]. Available from: <https://www.norden.org/en/publication/towards-ending-plastic-pollution>

Scope of The Investment Tracker

Plastics Circularity

For the purposes of the Investment Tracker and the report, we define “Plastics Circularity” as a system that drives a circular economy for plastics, which includes technologies, business models, or other solutions that eliminate, reduce, reuse, or keep plastic materials in circulation without leaking into the environment.

Geographies

The Investment Tracker focuses on plastics circularity-related investments globally. Any references to investments in countries represent investments in companies headquartered in that country. Some of these investments may have been redirected to other countries.

We group countries as emerging markets (comprising low-income economies, lower-middle-income economies, upper-middle-income economies) and high-income economies, as identified by the World Bank.⁵

Time Frame

Data provided is for the period January 1, 2018 to December 31, 2023, hereinafter referred to as the “review period.”

Investment

“Investment” is defined as private financing in the form of grants, equity/quasi-equity, debt, and blended finance structures, including credit guarantees and other similar financial instruments. This analysis seeks to capture the allocation of capital flows to companies, and technical assistance accompanying other forms of investment rather than the provision of in-kind investments, such as non-monetary technical assistance. Funding via bilateral or multilateral donor aid agencies or from national, state, or local governments is not included.

Deal Value Information

The Investment Tracker includes more than 5,500 investment transactions related to plastics circularity. Investment value in this report is based on disclosed data only. Sensitivities associated with confidentiality make it challenging to capture the deal values of all transactions. Of the more than 5,500 transactions, 57% have available information on deal value. As a result, dividing deal value by the total deal count to arrive at an average ticket size per deal will not be an accurate reflection of the investment ticket size.

⁵ World Bank. (2024). *World Bank Country and Lending Groups* [online]. Available from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>

Regions



Africa



Asia



Europe



Latin America and the Caribbean



North America



Oceania

Archetypes



Materials



Redesign



Refill/Reuse



Services (driving plastics circularity or plastic waste management)



Operational Platforms enabling plastics circularity



Digital Mapping



Recovery



Recycling

Classification by Income



Emerging market economies



High-income economies

Investment Categories

1

Accelerator/Incubator Investments

2

Corporate Investments

3

Financing by Banks

4

Individual/ Crowdfunding /
Philanthropic Investments

5

Private Equity

6

Initial Public Offering (IPO)

7

Venture Capital

Please refer to the [Supplementary Material](#) for detailed definitions.

Terminology and Research Approach

Investment

The Investment Tracker seeks to capture all third-party private investments in plastics circularity.

The Circulate Initiative consulted various databases (Crunchbase, Environmental Finance, Net Zero Insights, PitchBook Data Inc., and Tracxn) covering private market transactions and filtered data for third-party investments made in plastics circularity solutions globally for the review period. We cross-checked the information compiled from these databases against publicly available information. We included known deals from publicly available sources and those identified through discussions with investors that were not captured by the databases. We categorized investments according to investment categories and archetypes, and aggregated the data to generate insights while maintaining the transactions' anonymity.

We screened the transactions included in the Investment Tracker to meet one or more of the following criteria:

- Plastics circularity is a core function of the business operations of the investee company. For example, a company that is involved in producing bioplastics.
- Where plastics circularity is not a core function of the investee company, the investment should be directly attributed to a plastics circularity-linked purpose. For example, an investment in a fast-moving consumer goods company for the collection of polyethylene terephthalate (PET) bottles for recycling.
- The use of proceeds of the investment fall within one of the eight archetypes.

For companies where plastics circularity is not the core function, we conducted additional reviews of the company's business and the relevant transaction to ascertain suitability for inclusion in the Investment Tracker. Details of reviews undertaken for various sectors are available in the [Frequently Asked Questions](#) document.

The following additional considerations apply to debt financing, including loans, sustainability-linked bonds, green bonds, and blue bonds:

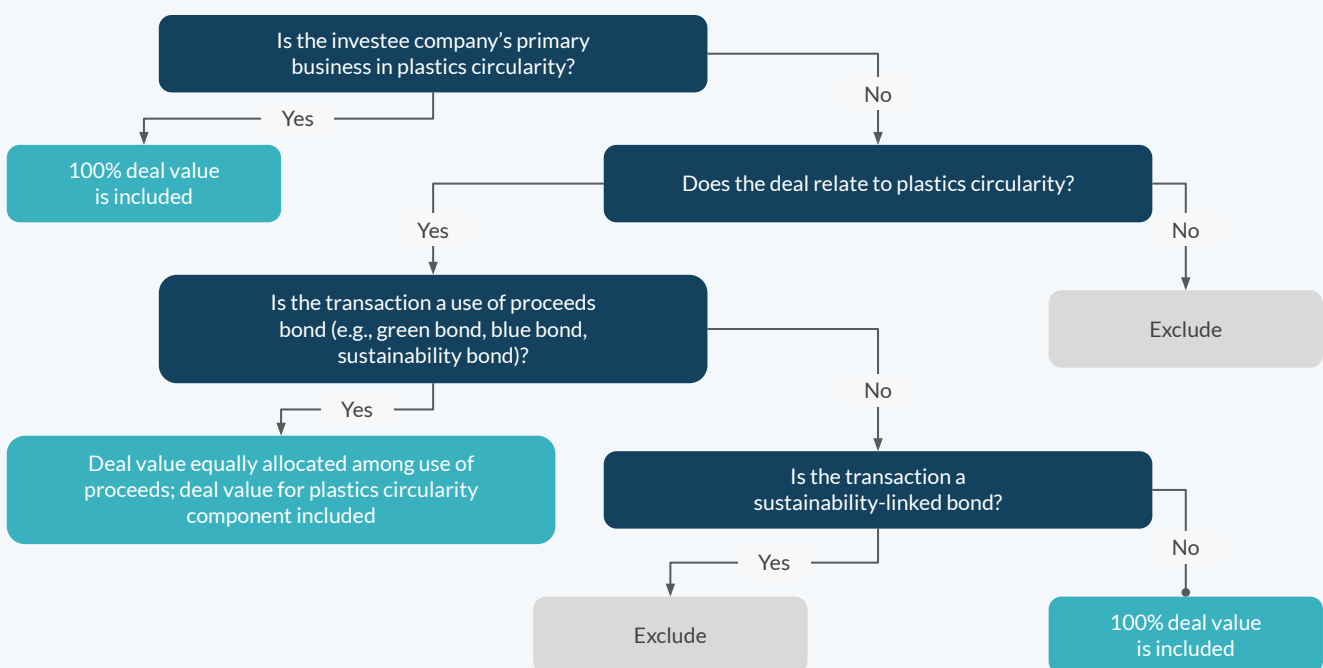
- Loans, syndicated or otherwise, for which information is not available in the public domain or through the databases accessed are excluded.
- Sustainability-linked bonds:
 - Issued by plastics circularity-focused companies are included in their entirety.
 - Issued by other companies are excluded. Proceeds from sustainability-linked bonds are intended to be used for general purposes and information on the exact quantum of money applied to plastics circularity is typically unavailable. For example, a US\$ 100 million sustainability-linked bond issued by a fast-moving consumer goods company is excluded even if one of the key performance indicators relates to recycling.

- ▶ Use of proceeds bonds (e.g., green bonds, blue bonds, sustainability bonds):
 - ▶ Issued by plastics circularity-focused companies are included in their entirety.
 - ▶ Issued by other companies, and where a part of the use of proceeds is allocated for plastics circularity, are included as the use of proceeds for these bonds are more specific. For these transactions, the total quantum of the investment is divided into equal proportions among the various use of proceeds indicated by the issuer. For example, US\$ 25 million is included in the year of issue from a US\$ 100 million green bond issued by a fast-moving consumer goods company that has reported four types of use of proceeds, one of which relates to recycling.
- ▶ Transactions involving spin-off, debt conversion, debt repayment, internal company projects, sale-leaseback facility, and share repurchase.
- ▶ Investments in alternative materials if the products were not primarily intended to replace plastics; e.g., investments in firms producing glass bottles for alcoholic beverages without the intention of replacing plastic.
- ▶ Deals where the investee’s primary business is not in plastics circularity or instances where the amount of financing received for such purposes was unavailable.
- ▶ General debt transactions for which information was unavailable in the public domain or through the databases accessed for the study.
- ▶ Money collected in a pool of funds or bonds raised in a collective manner by development finance institutions, where allocation of funds to specific companies is unavailable.
- ▶ Proceeds from the purchase or sale of plastic credits.

The Investment Tracker excluded the following data:

- ▶ Public funding; e.g., local government investment in waste management services.
- ▶ Paycheck Protection Program in the US: a loan backed by the U.S. Small Business Administration, provided to small businesses during the Covid-19 pandemic.

Figure 1: Decision Tree for Screening Plastics Circularity Deals and Deal Value



Key Insights on Private Investments in Plastics Circularity

1

US\$ 32 billion in private investments annually is a fraction of the more than US\$1 trillion needed per year

Over the review period, annual investments in plastics circularity averaged US\$ 32 billion. With the exception of 2021, where the offer by Veolia for Suez SA and the connected transactions resulted in a significant spike in investment value recorded,⁶ investments in plastics circularity have remained relatively steady over the review period. The average annual investment falls significantly short of the more than US\$ 1 trillion a year in private sector investments needed to reduce annual mismanaged plastic volumes by 90% relative to 2019 levels.⁷

Investments are expected to continue as more national and local policies such as EPR, single-use plastic bans, and minimum recycled content requirements come into effect in several countries. For example, the European Union’s directive on single-use plastics bans certain single-use plastics for which alternatives are available.⁸ The law requires restaurants to switch to reusable food containers from January 2023. This change in policy acted as a tailwind, enabling France-based reuse startup Pyxo to raise EUR 7 million (US\$ 7.9 million) from a consortium of investors in November 2021.⁹

The ILBI, which is to be finalized by the end of 2024, is expected to further support potential investments in plastics circularity. The final text will influence not only how plastic pollution can be ended but also the flow of investments into plastics circularity.

Figure 2: Global Plastics Circularity Investments 2018-2023



⁶ The offer by Veolia for Suez SA in 2021 and the connected transaction with a consortium comprising Meridiam, Global Infrastructure Partners, Caisse des Dépôts Group, and CNP Assurances for New Suez has been recorded at a deal value of EUR 10.4 billion (US\$ 12.1 billion) as a private equity transaction. The enterprise value offer by the consortium has been used as the deal value to avoid double counting of related transactions. Other transactions that involve the purchase or divestiture of businesses as required by various regulators have been treated as separate transaction

⁷ Nordic Council of Ministers. (2023). *Towards Ending Plastic Pollution by 2040 – 15 Global Policy Interventions for Systems Change* [online]. Available from: <https://www.norden.org/en/publication/towards-ending-plastic-pollution>

⁸ Global Plastic Action Partnership. (2022). *Unlocking the Plastics Circular Economy: Case Studies on Investment* [online]. Available from: <https://www.globalplasticaction.org/case-study-details/unlocking-the-plastics-circular-economy:-case-studies-on-investment/aJY680000008QIIGAM>

⁹ Dillet, R. (2021). *Pyxo wants to build the biggest network of reusable food containers* [online]. Available from: <https://techcrunch.com/2021/11/25/pyxo-wants-to-build-the-biggest-network-of-reusable-food-containers/>

**SPOTLIGHT**

Mobilizing private capital and investing in private enterprises to tackle plastic pollution

As Member States discuss the mechanics of the ILBI, ensuring funding for obligations that must be met as part of the instrument is critical. The ongoing negotiation processes may lead to the establishment of a new or hybrid financial mechanism or the utilization of an existing financial mechanism for meeting several of these obligations. As the negotiations continue, it will become clear which costs the financial mechanism will cover, and which other initiatives will require additional capital mobilization.

Private capital and investments in private enterprises play a critical role in addressing the plastic pollution crisis. Public sources of capital from national or sub-national budgets face competing spending priorities. Official development assistance (ODA) has limited availability. Data from the Investment Tracker and the Organisation for Economic Co-operation and Development (OECD) reveal that annual private investments in plastics circularity outstrip official development finance by a factor of 30, emphasizing the need for continued private investments. Innovative investment approaches such as thematic loans and bonds, blended finance, outcomes-based financing, or viability gap funding are critical to the mobilization of private capital for tackling plastic pollution. With the goal of increasing the participation of institutional capital, private equity investors, and philanthropic capital, innovative new financial instruments and vehicles that can align investor objectives are essential in solving the ocean plastic pollution challenge.

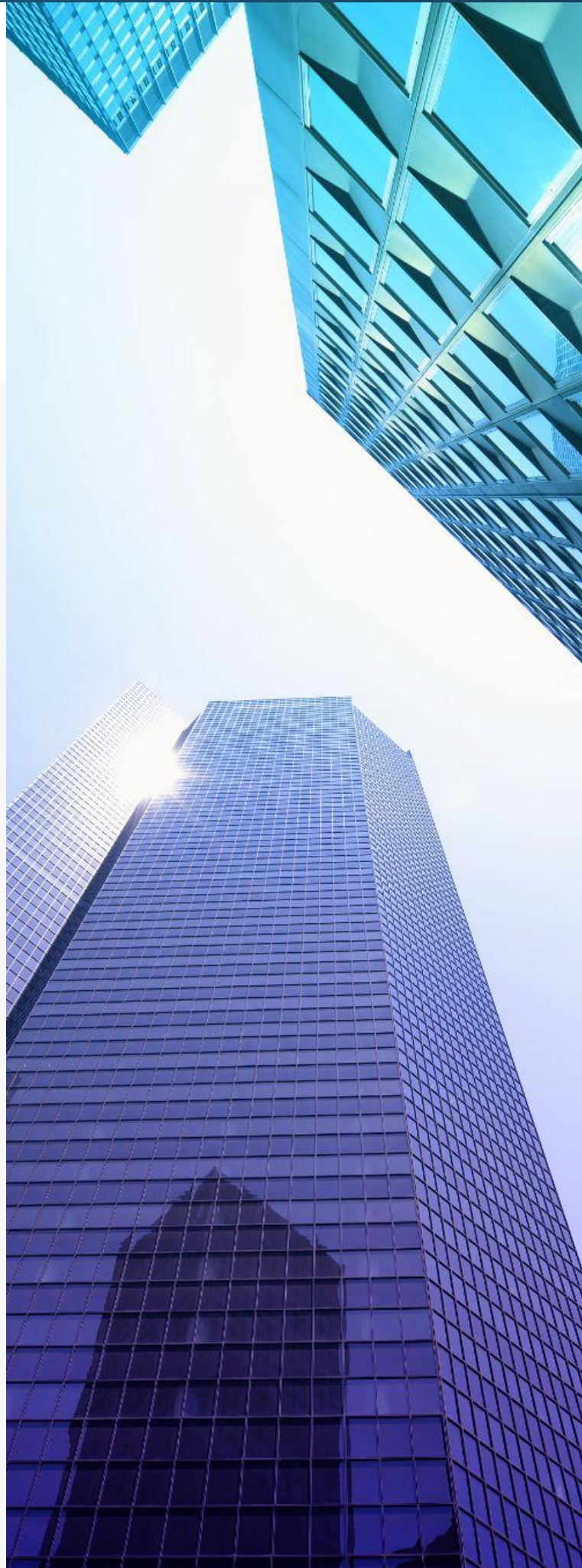


Table 1: Examples of Innovative Investments in Plastics Circularity

	Blue Loan for Expanding PET Recycling ¹⁰	Blended Finance to Improve Plastic Waste Collection	Outcomes-based Financing by Leveraging Plastic Credits ¹¹
YEAR	2020	2022	2024
Financial Instrument / Approach	Thematic bond	Blended finance/loan portfolio guarantee agreement	Outcomes-based financing
Characteristics of the Instrument / Approach	Blue loans offer capital at lower interest rates for projects that promote ocean- or water-friendly projects or water sanitation activities.	Blended finance combines development funding and private capital to achieve financial returns and sustainability goals.	Outcomes-based financing provides a financial return to investors linked to their investments in projects that deliver positive development outcomes.
Investor(s)	IFC, Asian Development Bank (ADB), and Deutsche Investitions- und Entwicklungsgesellschaft (DEG)	Circulate Capital, backed by the U.S. International Development Finance Corporation (DFC)	World Bank Group
Capital Recipient(s)	Indorama Ventures	Prevented Ocean Plastic Southeast Asia	ASASE Foundation and SEArcular
Investment	US\$ 300 million	Undisclosed	US\$ 14 million
Why is it Innovative?	The first ever blue loan provided to a company involved in plastics circularity.	The partnership combines the strengths of development agencies and private investment to bring coordinated technical expertise and blended financing to emerging companies.	This instrument provides upfront capital to two enterprises that are otherwise too large to qualify for microfinance, grants, or funding from accelerators or incubators, and they may be deemed too risky for financing from commercial banks.
About the Investment and its Contribution to Plastics Circularity	This loan expanded the production capacity for recycled polyethylene terephthalate (rPET) bottles, thereby preventing plastic waste from entering oceans and other water bodies.	This investment establishes collection and aggregation centers for plastic waste for recycling in underserved and hard-to-access coastal communities.	This financing will be used to establish collection and recycling sites in Ghana and a food-grade PET production facility in Indonesia.

¹⁰ IFC. (2020). *New Blue Loan to Help Indorama Ventures Recycle 50 Billion PET Bottles a Year by 2025* [online]. Available from: <https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=26079>

¹¹ World Bank Group. (2024). *World Bank Outcome Bond Mobilizes Private Capital for Projects that Tackle Plastic Pollution* [online]. Available from: <https://thedocs.worldbank.org/en/doc/a8e38e1c4426100de215af2a9212e6ed-0340012024/original/Case-Study-Plastic-Waste-Reduction-Linked-Bond.pdf>

2

While emerging markets are hotspots of plastic pollution, they only received 6% of investments

High-income economies attracted US\$ 179 billion of investments (94% of the total), while emerging markets received only US\$ 11 billion of total investments (6% of the total) in the review period.

The top 20 countries where 94% of plastic leakage to the ocean occurs are in emerging economies in Africa, Asia, and Latin America and the Caribbean.¹² For example, even though 8% of plastic waste leaked to the ocean comes from Africa,¹³ private investments in Africa remained modest at US\$ 92 million in 2023 (0.3% of the total for that year). The significant regional variations reflect the differing waste management priorities for different countries and the availability of companies that are ready to take on private investments.

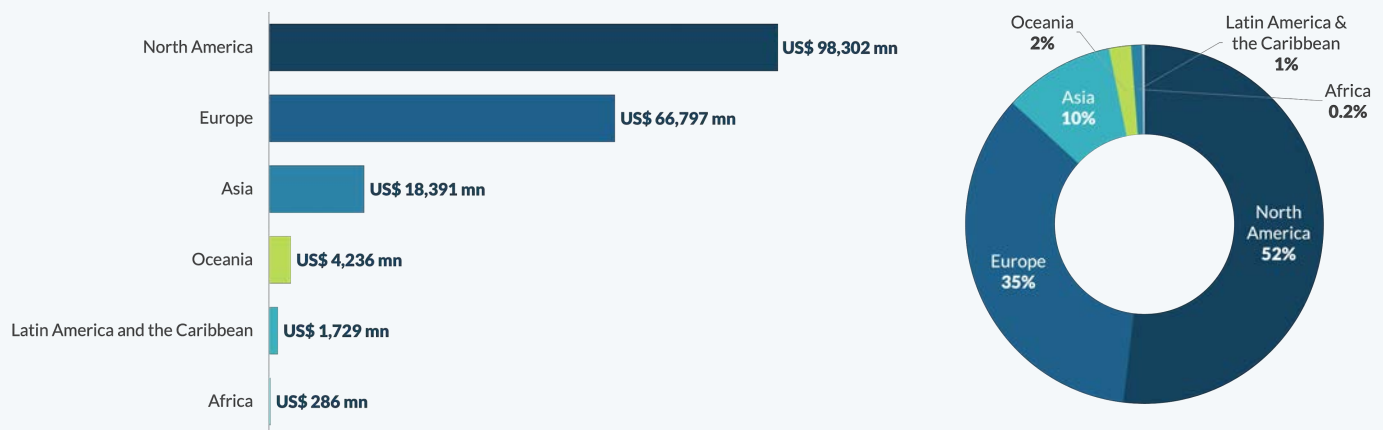
Plastic pollution also disproportionately impacts the economies of emerging nations. Dealing with plastic pollution is eight times more expensive for a low- or middle-income country compared to a high-income country.¹⁴ Implementing a global set of policies from a baseline scenario to reduce plastic pollution by 2040

impacts Gross Domestic Product (GDP) in OECD countries by only 0.4%, while the same policies would reduce GDP in sub-Saharan African countries by 1.5%.¹⁵

Investments in companies headquartered in North America reached approximately US\$ 16 billion in 2023, up from US\$ 14 billion in 2018. Europe also received a large proportion of investments, driven by policies and legislation pertaining to the production and use of plastics, waste management, and ambitious recycling targets. US\$ 9 billion was invested in Europe in 2023, with substantial funds directed towards downstream solutions.

The companies operating in Europe and North America are at more mature stages of development with proven business models, which contributes to increased investor interest in these regions. Investments in these regions are often also bolstered by stringent environmental regulations and strong public demand for sustainable practices, which provides the necessary assurance of a stable policy environment for investments to both entrepreneurs and investors, driving financial commitments towards plastics circularity.

Figure 3: Global Plastics Circularity Investments by Region 2018-2023



¹² Meijer, L. J. J. et al. (2021). More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean. *Science Advances* [online], 7(18). Available from: <https://www.science.org/doi/10.1126/sciadv.aaz5803>

¹³ ibid

¹⁴ World Wildlife Fund. (2023). *Who Pays for Plastic Pollution: Enabling global equity in the plastic value chain* [online]. Available from: <https://www.fint.awsassets.panda.org/downloads/wwf-report---who-pays-for-plastic-pollution.pdf>

¹⁵ OECD. (2023). *Towards Eliminating Plastic Pollution by 2040: A Policy Scenario Analysis* [online]. Available from: <https://www.oecd.org/environment/plastics/Interim-Findings-Towards-Eliminating-Plastic-Pollution-by-2040-Policy-Scenario-Analysis.pdf>

In emerging economies, catalytic capital has the potential to attract follow-on third-party investments. For example, Circulate Capital's investment in 2020 in Dalmia Polypro ("Dalmia"), a PET and polyolefin recycler in India, served as a catalyst for a US\$ 30 million loan from the U.S. International Development Finance Corporation (DFC) in 2023.

”

Catalytic capital supports Dalmia Polypro's growth ambitions

“We're honored to be part of Dalmia's growth journey as they advance India's recycling ecosystem and lead the way in the development of high-quality food-grade applications in the market. DFC's recent funding illustrates how catalytic capital can demonstrate the investment potential and unlock more financing for the plastics circular economy sector.”

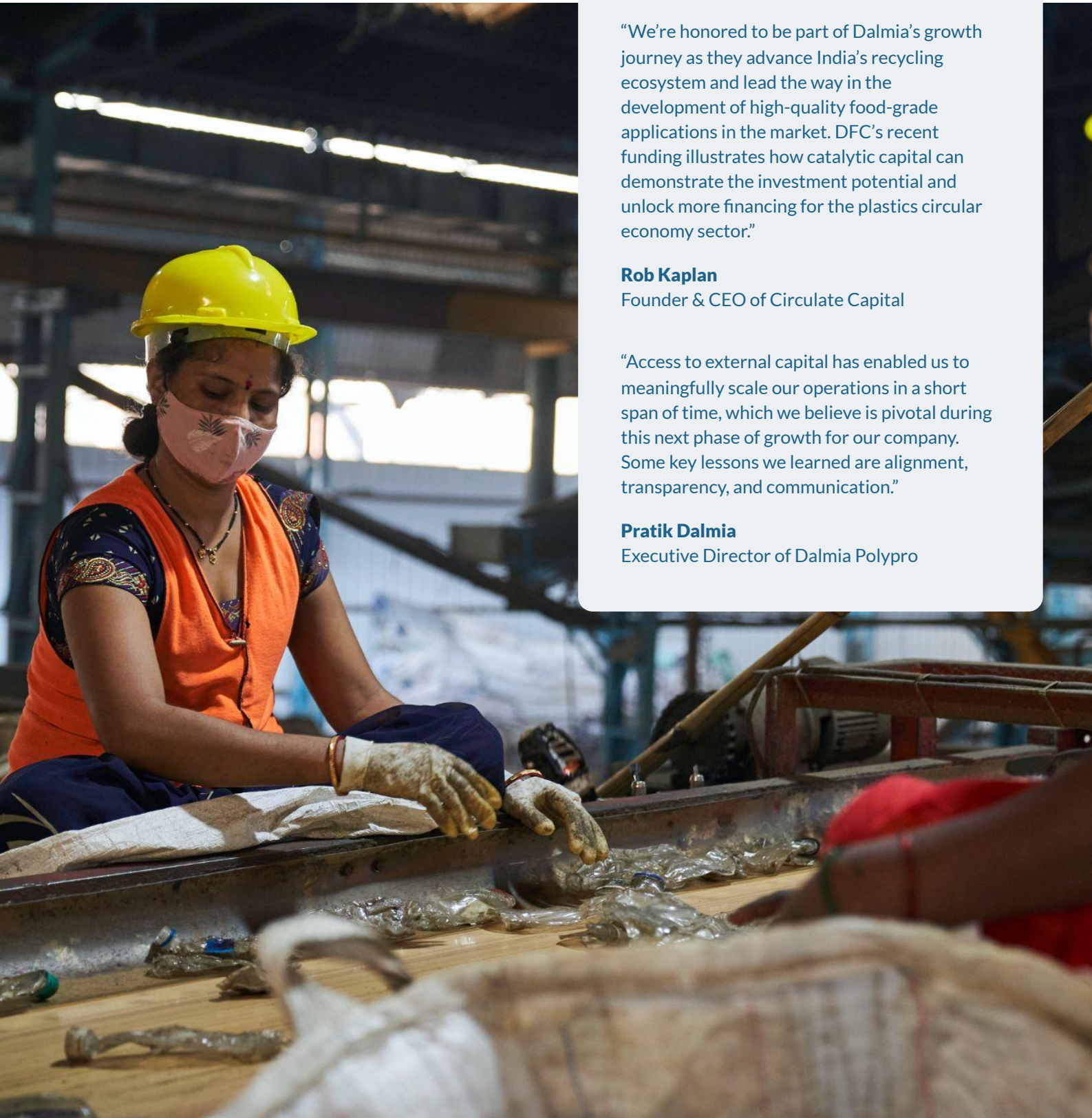
Rob Kaplan

Founder & CEO of Circulate Capital

“Access to external capital has enabled us to meaningfully scale our operations in a short span of time, which we believe is pivotal during this next phase of growth for our company. Some key lessons we learned are alignment, transparency, and communication.”

Pratik Dalmia

Executive Director of Dalmia Polypro



3

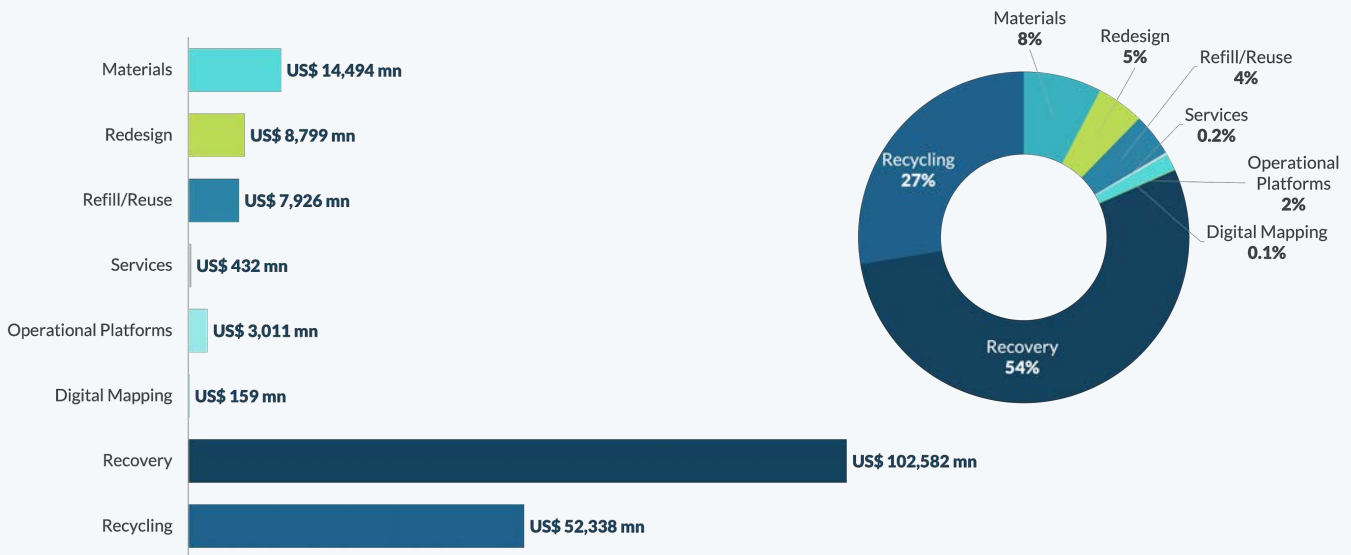
82% of investments were in recovery and recycling, while only 4% went to refill and reuse

The majority of investments – US\$ 155 billion – were in downstream solutions (i.e., recovery and recycling). Refill and reuse received US\$ 8 billion, or 4% of all investments during the review period. Upstream solutions (i.e., materials and redesign) received modest investments at US\$ 23 billion.

Downstream solutions focus on plastic when it becomes waste, and businesses operating in this segment of the value chain are generally more mature and established compared to firms that lie further upstream. While it is necessary to continue investing in such waste management infrastructure, more investment is needed in diverse companies upstream in the value chain that are implementing solutions to reduce and reuse.

Upstream solutions that are in the earlier stages of development require patient capital and smaller investment sizes. These businesses must receive adequate funding at the early and growth stages to succeed. For instance, Cruz Foam, a US-based company that provides alternative compostable foam products to expanded polyethylene (EPE) and expanded polystyrene (EPS) in shipping, participated in several startup competitions and accelerator programs in the early years of its establishment in 2017. The proceeds obtained were used to fund research and development, and to build prototypes. The early-stage funding and experiences paved the way for the company to secure US\$ 18 million in Series A funding in 2021 and to commercialize the product in 2024.

Figure 4: Global Plastics Circularity Investments by Archetypes 2018-2023





SPOTLIGHT

Accelerating the circular economy transition through digital technologies

Digital and data-driven solutions have the potential to significantly drive forward the transition to a circular economy for plastics. Some of the benefits of such solutions include improving the transparency and traceability of material flows, and streamlining and improving the efficiency of existing processes.

In many cases, technology-first businesses are working to solve more than one of the challenges presented by a lack of transparency and traceability, and an absence of formalized systems in waste management and recycling. Thanks in part to their multifaceted business models, these startups are often regarded as digital or technology solutions first and waste management solutions second, which has helped to increase their attractiveness to investors.

- Recykal has raised more than US\$ 30 million in funding since 2018 from a range of investors, including Morgan Stanley India and Circulate Capital. It has developed an operational platform that connects buyers and sellers of scrap material across India on one platform to bridge the gap in demand and supply. The platform also offers digital mapping solutions and services that enable brands, recyclers, and the public sector to monitor and track waste flows and comply with EPR regulations.
- Greyparrot uses computer vision and AI to enhance the sorting and quality control processes at material recovery facilities (MRFs), ultimately helping to reduce contamination and improve the quality of recycled materials. Greyparrot has raised more than US\$ 30 million since 2019.



Investments in digital solutions were around US\$ 5 billion during the review period. On many occasions, waste management companies and recyclers preferred to develop and implement these technologies in-house, rather than depend on third-party service providers. However, investments in such emerging, digitally-led businesses that address the complexities of waste management and recycling must increase so that the suite of technology-first solutions is available to a wider range of businesses. These solutions should also work in tandem with the informal waste management systems in emerging economies. Startups and emerging businesses should consider capitalizing on investor interest in, and comfort with, digital technology solutions to deepen their impact on the plastic waste crisis.

Digital technology investments in plastics circularity 2018-2023¹⁶

386
COMPANIES

835
DEALS

US\$ 5 BILLION
INVESTMENTS

¹⁶ In firms that offer digital mapping services, operational platforms, smart bins, reverse vending machines, and sorting technologies

4

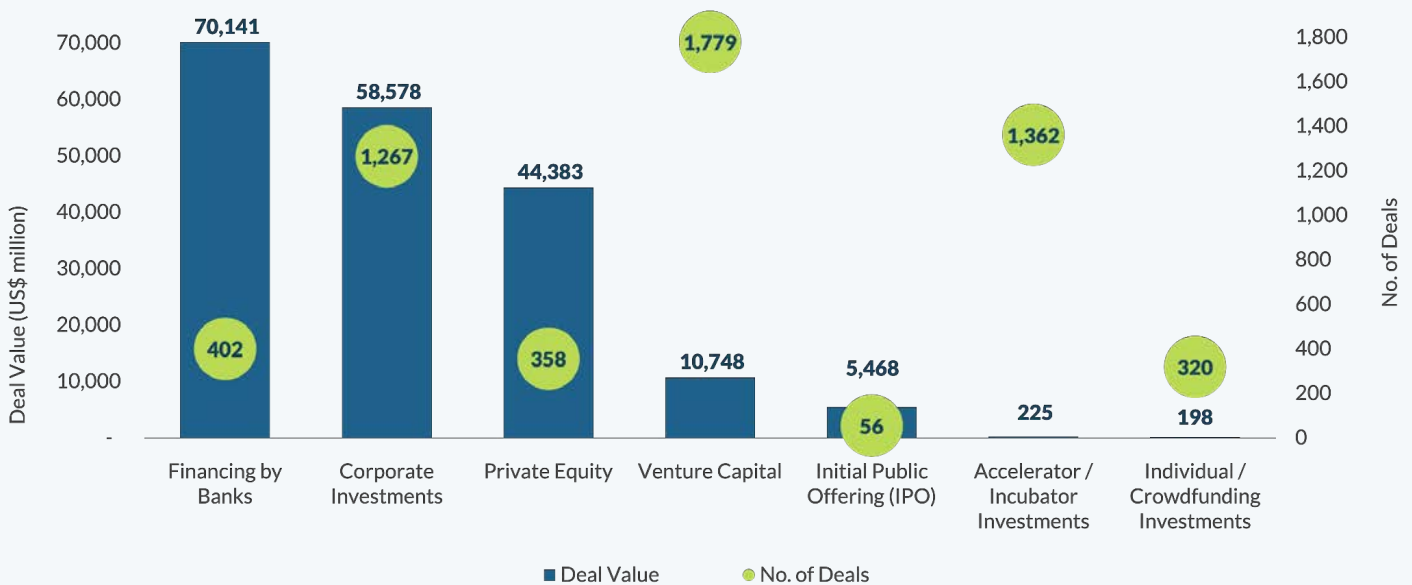
Financing by banks contributed to 37% of private investments, driven by large ticket deals

Financing by banks and corporate investments contributed to 37% and 31% of deal value, with 402 and 1,267 deals respectively. Financing by banks accounted for the bulk of the deal values as transactions typically involved debt or equity deals of hundreds of millions of dollars. Well-established, credit-worthy businesses were the recipients of the investments. Corporate investments saw mergers and acquisitions contributing to 41% of investments, followed by corporate bonds, highlighting a focus on strategic growth and expansion.

Private equity investments accounted for 23% of all investments during the review period. Private equity investments were observed across the whole plastics value chain and in both emerging and high-income economies. Deal sizes were typically US\$ 1 million and above, with most of these investments financing business growth or expansion.

Another source of investments are development finance institutions. These investments were made mostly in downstream solutions, namely recycling and recovery, while materials received the third highest investment amount. Most of these investments were of ticket sizes below US\$ 50 million, with the exception of a few deals above US\$ 100 million. Development finance institutions leverage multiple financing arrangements, including the provision of green and blue loans, and utilization of blended finance mechanisms, to cater to the various financial and operational circumstances of the capital recipients.

Figure 5: Global Plastics Circularity by Investment Categories 2018-2023





SPOTLIGHT

Sustainability debt financing provides a mechanism to attract greater volumes of capital to plastics circularity

As investors turn their attention to financing projects that help to mitigate and adapt to climate change, sustainability-linked bonds, green bonds, and blue bonds have emerged as increasingly popular financing mechanisms that align lending and environmental goals. Bloomberg reported that sustainable bond issuance reached more than a trillion dollars in 2023, driven by record levels of green bond issuance.¹⁷

Since 2018, the use of proceeds from sustainability-linked, green, and blue bonds for circular economy and plastics circularity-focused projects have seen an increase. Between 2018 and 2023, an average of US\$ 2.6 billion in plastics circularity investments was attributable to blue loans, green bonds, or sustainability-linked loans or bonds annually.

- In 2022, DBS Bank Taiwan offered the first blue loan in Taiwan to Far Eastern New Century Corp (FENC), a polyester and textiles producer that aspires to produce 1.5 million tons of polyester made from recycled PET bottles by 2030. The loan of NT\$ 1 billion (US\$ 33.65 million) will help FENC recycle more ocean plastic and implement ocean protection projects to help it achieve its goal.
- RetuRO Sistem Garantie Returnare, the administrator of the deposit-return system in Romania, received a green loan of EUR 86 million (US\$ 94.6 million) from ING Bank in 2023 for the implementation of the Guarantee-Return System that recovers beverage packaging to be reused. The project's goal is to recover and recycle more than six billion packagings annually.



- The Asian Development Bank (ADB) signed a US\$ 44.2 million blue loan with PT ALBA Tridi Plastics Recycling Indonesia (ALBA) in June 2023 to establish a PET recycling facility in Central Java, Indonesia. The plant is expected to recycle up to 48,000 tons of PET bottles annually, diverting them from landfills, open burning, or leakage into the ocean.

Beyond a tangible impact on plastic pollution and climate, sustainability debt financing, in particular blue and green bonds directed towards plastics circularity, can expand the pool of capital invested in the sector and align corporate and public sector efforts to transition to a circular economy.

Sustainability-linked debt financing for plastics circularity 2018-2023¹⁸

51
DEALS

33
COMPANIES

US\$ 16 BILLION
INVESTMENTS

¹⁷ Bloomberg. (2024). *Green bonds reached new heights in 2023* [online]. Available from: <https://www.bloomberglia.com/professional/insights/trading/green-bonds-reached-new-heights-in-2023/>

¹⁸ Calculated from deals explicitly identified as sustainability-linked bonds or loans, or proceeds bonds or loans

5

Early-stage investment is needed to foster innovation and new business models, but this accounted for only 2% of investments

Firms in the early stages of development (i.e., seed and early-stage investments) comprised 55% of the total number of investments, but they only received US\$ 4.4 billion, or 2% of the cumulative deal value. These investments are crucial for fostering innovation and driving new business ideas. In contrast, later-stage companies tend to secure larger investment sums, due to their established track records and clearer growth trajectories. Overall, median deal value sizes ranged from US\$ 147,032 for seed investments to US\$ 36.3 million for exits.

In a select number of instances, early-stage funding has contributed to the growth of enterprises involved in plastics circularity. This includes, for example, Circulate Capital's investment in Tridi Oasis, an Indonesian recycling startup, which received a loan in 2020 to expand and upgrade its flake production capacity. This impact investment laid the foundation for Tridi Oasis and ALBA Asia Plastics Recycling to form a new joint venture in 2022 for a new food-grade rPET plant and for Circulate Capital's exit.

Early-stage funding can also intersect with social investing. An example is the case of Upaya Social Ventures, an institutional impact investor providing investments to early-stage companies. The social impact-focused investment firm was the first investor in Green Worms, an India-based waste collection service provider, helping it to expand its collection facilities and enabling the creation of over 2,000 new jobs for the local community.

A few instances of initial capital supporting the growth of early-stage ventures exist, as investors have directed the bulk of the plastics circularity investments towards more established businesses.



Table 2: Global Plastics Circularity Investments by Investment Stage 2018-2023

Investment Stage	No. of Deals	Deal Value (US\$ million)	Median Deal Value (US\$) ¹⁹
Seed	2,435	1,425	147,032
Early Stage	635	2,971	2,380,000
Later Stage	1,308	108,787	8,250,532
Exits	1,166	76,558	36,285,000

¹⁹ Median instead of average deal value is provided as deal value is not available for all deals

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Scaling impact on job creation, gender and climate through early-stage investment in Green Worms

“At Upaya, we support business models centered on dignified job creation at the intersection of gender and climate, bolstering them with investments and other forms of support, like business advisory and network support. Green Worms stands as a shining testament to this ethos, illustrating how sustainable business expansion can simultaneously uplift underserved communities while fostering positive environmental change.”

Chakravarthy AB

India Country Director of Upaya Social Ventures

“Access to private capital has helped us scale our operations while also building the infrastructure. The capital raised also helped us in optimizing our operations. The investors also helped with advisory support and market access. There is very limited capital for social business, especially when you are in the waste sector. Getting investment is a sign of growth. In the fundraising process, we learned a lot about compliances that we have to adopt and now it has made our next round of fundraising easier.”

Jabir Karat

Co-Founder & CEO of Green Worms













6

The top 10 deals accounted for 25% of deal value, with most in recycling and recovery

The top 10 deals accounted for 25% of the transactions for which deal value information was available. With the exception of one deal, all the top 10 deals were in recycling and recovery. Regardless of the state of development of plastics circularity solutions, investors are placing their money in downstream businesses, which have more established business models and are considered less risky for investment.

Table 3: Top 10 Transactions in Plastics Circularity 2018-2023

Company	Archetype	Investor(s)	Investment Category	Deal Value (US\$ million)	Year	Country
Suez		Caisse des Dépôts Group, CNP Assurances, Meridiam, Global Infrastructure Partners	Private Equity	12,055	2021	France
Viridor Limited		Hermes GPE, Kohlberg Kravis Roberts & Co LP	Private Equity	5,243	2020	United Kingdom
Advanced Disposal		Waste Management Inc	Corporate Investments	4,600	2020	United States
Urbaser		Platinum Equity	Private Equity	4,200	2021	Spain
Suez ²⁰		Veolia UK	Corporate Investments	4,001	2020	France
Waste Management Inc		Not Applicable	Corporate Investments	4,000	2019	United States
GFL Environmental		BC Partners, GIC Private Limited, Ontario Teachers' Pension Plan	Private Equity	3,900	2018	Canada
Viridor Limited		Not Applicable	Financing by Banks	3,728	2022	United Kingdom
SodaStream International Limited		PepsiCo	Corporate Investments	3,200	2018	Israel
Novolex Holdings, LLC		Not Applicable	Financing by Banks	3,000	2022	United States

²⁰ Stake sale of Suez by Engie to Veolia



Refill / Reuse



Recovery



Recycling



SPOTLIGHT

Beyond the top 10 – a long tail of investments and enterprises seeking smaller volumes of capital

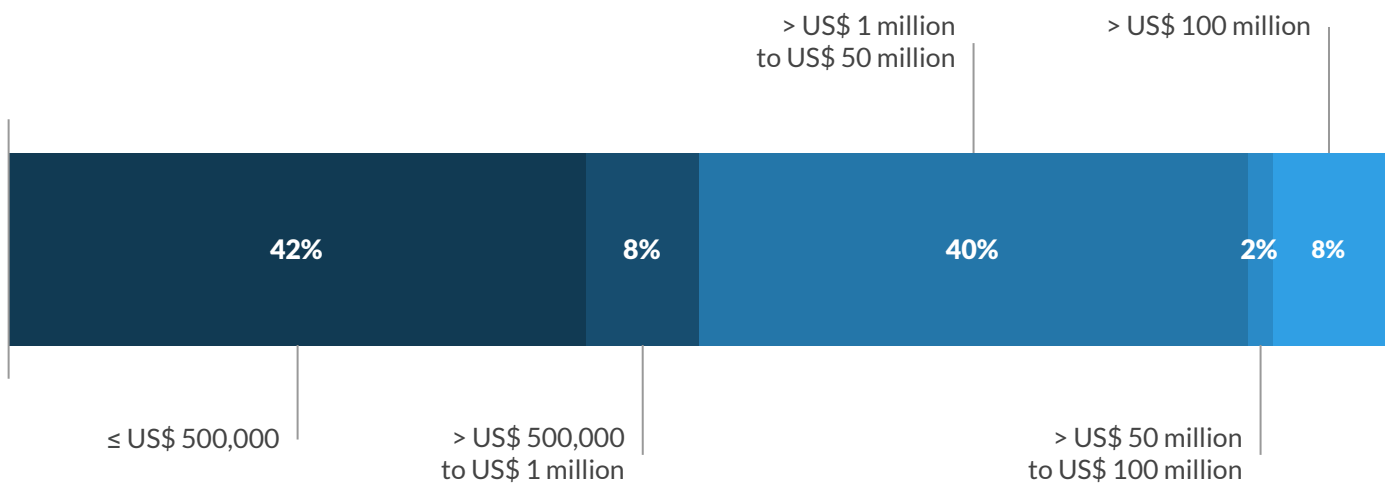
The Investment Tracker includes data for more than 3,000 companies with over 5,500 transactions captured. Billion dollar investments grab the headlines, but there is a long list of smaller enterprises and transactions with significantly lower deal values.

Among the transactions with deal value information in the Investment Tracker, 50% of deals had a ticket size of US\$ 1 million or less, with 82% of these categorized as seed investments. The considerable volume of deals with small ticket sizes reflects the fairly early stage of development of the businesses driving plastics circularity.

These micro, small, or medium enterprises (MSMEs) require significant investments. MSMEs critically need access to concessionary or philanthropic capital, and it’s crucial to disburse this capital in tranches that they can absorb.

Venture capitalists, accelerators/incubators, and angel investors that foster innovation and entrepreneurship commonly fund these enterprises through grants, award monies or offer other non-return-seeking financial assistance. Plug and Play Ventures, for instance, has supported early-stage organizations through its accelerator programs and equity investments. The company recorded more than 100 co-investment transactions across the whole value chain.

Figure 6: Global Plastics Circularity Investments by Ticket Sizes 2018-2023



Leveraging the Plastics Treaty to Mobilize Capital and Increase Transparency

While data availability on plastics circularity investments is improving, there remains little incentive for investors to be transparent and report on their investments. Introducing mandatory reporting requirements, offering tax incentives, and promoting industry-wide standards through the ILBI could help enhance transparency.

A global platform that tracks all financial flows – both public funding and private finance – will provide greater transparency and unparalleled access to data and insights to Member States, international finance institutions, investors, foundations, non-governmental organizations, and other stakeholders, enabling them to adopt a targeted approach to directing capital to solutions where maximum impact can be achieved.

The Investment Tracker is the only resource of its kind currently monitoring and providing insights on private investment flows to tackle plastic pollution. Third-party private investments in plastics circularity declined over two consecutive years – 2022 and 2023 – with a 14% decline in deal count. Looking ahead, national and sub-national policy measures such as EPR, minimum recycled content requirements, green public procurement, and incentives for companies involved in plastics circularity are expected to provide tailwinds to sustain private investments at levels similar to those observed during the review period over the next two to three years.

Downstream solutions, such as recovery and recycling, will continue to attract the bulk of the investments, although recyclers will remain under pressure due to the availability of cheaper virgin plastic, which can reduce the competitiveness of recycled plastic. At the other end of the plastics value chain, materials and refill and reuse business models need to prove their economic viability and remain price competitive to attract investments at scale.

Over the longer term, stakeholders are optimistic that negotiations around the ILBI will stimulate deal activity, reporting transparency, and investments. A legally binding global agreement that addresses the full life cycle of plastics, and which also puts in place a harmonized set of policies, clear taxonomies, and a uniform approach to tracking financial flows can provide further impetus for private investments. However, delays in reaching a binding agreement, or a voluntary agreement, will not generate the significant quantum of investment needed.

The ILBI offers an opportunity to establish the systems for monitoring financial flows, to mobilize additional capital, and to redirect it to the relevant geographies and solutions across the value chain. With INC-5, the final round of negotiations for the ILBI, set to take place in November and December 2024, this year will be critical in signaling the long-term future of investing in plastics circularity and fostering a collaborative global effort to end plastic pollution.



DISCLAIMER

This report "The Private Investment Landscape for a Global Circular Economy for Plastics: Insights from the Plastics Circularity Investment Tracker" (the "Report") and the Plastics Circularity Investment Tracker tool (the "Investment Tracker") are provided for general informational purposes only and should not be construed as professional, investment, financial or other advice. The Investment Tracker and the Report are intended to help users understand the types of investments that have been made for transitioning to a circular economy for plastics. The information shown in this document is based on data available at the time of our study (May 2024). The information is subject to change without notice. The Investment Tracker and the Report are for individual use only and no part of the Report or the Investment Tracker may be copied, shared, or used in any way other than for its intended purpose without The Circulate Initiative's prior written consent. All legal rights, including intellectual property rights of the Investment Tracker and Report, are reserved by The Circulate Initiative. The Circulate Initiative disclaims all liability and damages arising from your use of the Investment Tracker and the Report, or any information provided thereby. By using the Investment Tracker and the Report, you accept these terms and agree not to hold The Circulate Initiative or its affiliates or any third party service provider liable for any possible claim for damages arising from any decision you make based on information or other content made available to you through the Investment Tracker and the Report.