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Measuring Our Success: How Better Data Can Help Keep Plastic Out of the Ocean

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Table of Contents

01	Introduction	3
02	Summary of Findings	6
	1. Understanding the Challenge	
	2. Identifying Solutions and Modeling Potential Impact	
	3. Monitoring and Evaluating Progress and Impact	
	4. Assuring Results	
03	Conclusions	12
04	Taking Action	14
05	The Potential for Impact	17
06	Appendix and References	18

Introduction



Over the past several years, preventing the flow of plastic into the ocean has become a global priority, with science and data proving to be critical drivers of both commitments and strategies.

The now-famous 2015 *Science* paper by Dr. Jenna Jambeck and her colleagues provided the first real estimates of the quantity and sources of plastic flows into the ocean each year.¹ Their conclusion, that approximately eight million metric tons of plastic leak into the ocean each year, the majority from just five countries in Asia, has driven pledges and investments by governments, corporations, and civil society. And yet, five years on, these same actors are struggling to develop better, more targeted and actionable estimates of how much plastic waste is still entering the ocean, where it is coming from, and what actions are making a difference in stopping this flow.

Our inability to consistently understand the problem and measure impact in comparable ways hinders our ability to pursue collective action and make progress for the environment, people, and the global economy.

For The Circulate Initiative, this challenge is an obstacle to achieving our mission to build thriving, inclusive economies and end ocean plastic pollution.

Through The Incubation Network, TCI, along with our partner SecondMuse, launched the Plastics Data Challenge earlier this year to source, support and scale innovative solutions that leverage data to understand and address plastic waste leaking into the environment.²

TCI also initiated efforts to strengthen our collective knowledge base by convening an Impact Metrics Working Group, with participation from many of the foremost experts and investors working on advancing measures in this space. In the past six months - through insights gathered from incubating our first cohort of ten data ventures, interviewing more than forty experts and researchers, and reviewing dozens of reports - The Circulate Initiative has learned more about the current state of the plastic pollution challenge and solutions.

In the midst of our efforts, COVID19 hit the world. Recent reporting suggests the pandemic will exacerbate the amount of plastic waste leaking into the environment, as more single-use packaging and personal protective equipment shows up in waste streams and in waterways. At the same time, pandemic shutdowns are disrupting existing infrastructure and innovations responsible for managing waste and recycling. Despite the disruption, the topline message we heard over and over again speaks to the emerging solutions and pathways of opportunity ahead of us:

There is a global shift from simply recognizing the problem of plastic waste in the ocean to pursuing solutions.



As these solutions are implemented on the ground, investors, governments, companies, researchers and citizens need to understand what effect they are having, and to adapt and adopt new approaches. Yet no one has a full picture of the problem, let alone the impacts being created.

How will we know which solutions should be accelerated and scaled?

In order to make better decisions and ultimately have impact on the ground, **actors must address four critical data needs** at key moments:

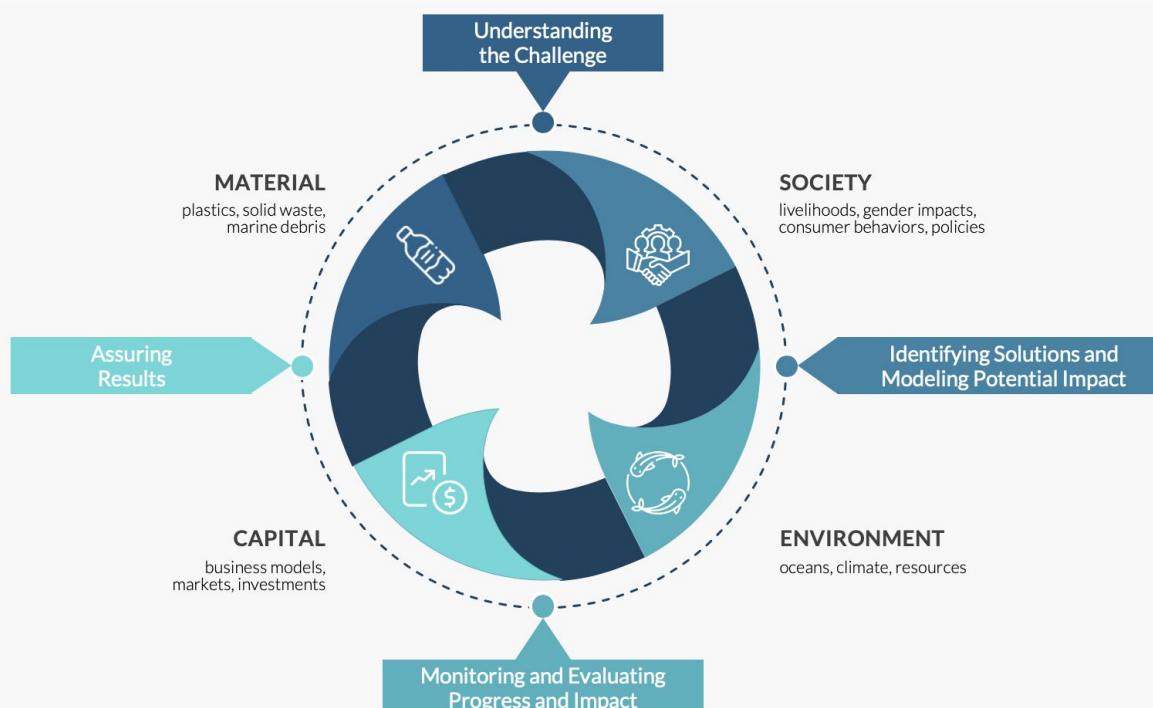
1. **Understanding the challenge** with timely, locally relevant baseline data
2. **Identifying solutions and modeling potential impact**, at the individual project or enterprise level, and across systems
3. **Monitoring and evaluating progress and impact** using cost-effective methods that deliver actionable data
4. **Assuring results** are delivering as intended, in alignment with globally accepted standards and methods

Measurement is made more complex by the multiple dimensions of impact that are often part of this work. Fundamentally, we need to measure the amount of plastic flowing into the ocean, and how that flow changes based on different interventions.

This is often complicated by the lack of available data on **material flows** (e.g., the material types, formats, and quantities that are generated in a given market, how materials flow through systems, and where leakages occur). Identifying and tracing plastic that is no longer leaking into the environment, and instead flowing through a circular economy, requires a different approach to measurement as well.

Data on material flows must then be coupled with an analysis of **capital flows, public policies and environmental sustainability** (e.g., reduced resource extraction and greenhouse gas emissions). For emerging markets in particular, there is great interest in understanding the extent to which interventions to stop ocean plastic pollution also have other social benefits, such as changing **consumer behaviors** and improving the **livelihoods** of waste workers and women. These topics each require their own research methods and metrics.

With these key needs and impact areas in mind, we see a measurement landscape begin to emerge.



Working with a multisectoral group of experts, The Circulate Initiative has surveyed the data, resources and tools that exist to help key actors address their measurement needs as they work toward solving the problem of ocean plastics.

Our conclusion is that development of metrics and methods for measuring and monitoring ocean plastic is proceeding quickly, with many promising approaches, but critical gaps remain.

More needs to be done to create common language, align various approaches and make them more practical and accessible to a wider audience. If we can advance measurement by addressing these gaps, it is our hope that we can accelerate action by governments, capital providers, innovators, and other decision-makers seeking to end plastic pollution in our oceans.



In Support of This Research



“The Circulate Initiative’s work is crucial not just for investors, but for policy makers and others.

A common understanding of both the problem of plastic leakage into the ocean and the effectiveness of various strategies and interventions to stop the flow are critical to ensure that we are prioritizing the most effective solutions.”

Chever Voltmer
Director of Plastics Initiatives
Ocean Conservancy



“This report does the important job of strategically framing the scope of information and tools needed to address the plastic waste crisis and illustrates where critical data gaps are.

World Wildlife Fund’s approach to addressing this global issue is led by science, and the improved availability of accurate, representative information will be the linchpin to accelerating the interventions we need to take for real, transformative change.”

Erin Simon
Head, Plastic Waste + Business,
World Wildlife Fund (WWF)

Summary of Findings

Of more than 80 resources identified, over two dozen have been announced or released in the first half of 2020.

Conversations suggest that this momentum will continue, as different actors seek to become better informed and engaged.

For example, some resources are intended for governments, while others are directed at corporations or capital providers. Some can be used to establish baseline data on the extent and nature of a region's or company's plastic waste problem, while others can help model the impacts of different interventions and solutions.

As part of our analysis of the landscape of existing resources and tools, we identified four key needs that actors in this sector have, then looked at how existing tools can meet one or more of these needs, highlighting examples for each. In addition, we identified key gaps and opportunities for advancement on this issue.



Understanding the Challenge



This is important for establishing baseline assessments for how much, and what types of, plastic are leaking into the ocean from a particular region, but also for establishing baseline greenhouse gas emissions, social behaviors, or performance of existing infrastructure.

KEY QUESTIONS INCLUDE:

- What's the current state or situation?
- What's the scale and nature of the problem, and associated negative impacts?
- What data exists, and what data systems are in place?
- What are the needs or gaps that need to be addressed?
- Who's involved?

RESOURCE EXAMPLES:

Baseline assessment tools: Danone's Ecosystem Fund has created a comprehensive handbook for inclusive recycling solutions that addresses the full cycle of decision points we've outlined here - from identifying the problem through planning and executing solutions to evaluating progress and impact. One key area of the handbook provides initial baseline tools, such as stakeholder maps and a materiality matrix, for program designers and practitioners to deep dive into a systems-level understanding of the situation.³

Material footprinting tools: WWF's ReSource: Plastic program helps companies maximize the impact of their plastic waste actions through a measurement framework that renders comprehensive footprints of their plastic packaging and products. Uniquely, ReSource: Plastic estimates, based on country-level waste management data, the extent to which the plastic is recycled, landfilled, incinerated, or mismanaged.⁴

The **Plastic Leak Project**, led by Quantis and EA, offers companies a methodology for measuring plastic leakage across the corporate value chain, laying the foundation to be able to model impacts of interventions and track progress over time.⁵

Mapping tools: For those looking specifically at plastic leakage in South and Southeast Asia, the recently launched **UN Environment's CounterMEASURE** data visualization tool presents geo-located data on infrastructure, waterways, and waste generation to better anticipate and monitor plastic leakage. CounterMEASURE is currently being piloted in communities in the Mekong and Ganges river basins.⁶



Identifying Solutions and Modeling Potential Impact

This is important for setting strategies and realistic targets for impact.

KEY QUESTIONS INCLUDE:

- What's the right strategy and solution set?
- Of all the interventions that we could pursue, which are the best suited to our context and goals?
- What impacts do we expect them to deliver?
- How do we weigh the costs and benefits?
- What are the risks, and how might they be mitigated?

RESOURCE EXAMPLES:

Recommended strategies and interventions: As more stakeholders seek to help solve the problem, perspectives on the best solutions have emerged. **Circulate Capital's Handbook for Investing** provides a detailed analysis of the landscape of investment opportunities in waste management and recycling in South and Southeast Asia.⁷

Ocean Conservancy's Policy Playbook provides a framework and pathways for utilizing a suite of effective public and private levers to improve the economics of plastic waste collection. The playbook details individual actions under four overarching strategies, and quantifies how they can be combined to address the net financing gap for plastic waste collection.⁸

Impact modeling tools: Researchers are also analyzing how and to what extent interventions drive reductions in plastic waste. **The Plastics Pollution Emissions Working Group**⁹ are developing a model that indicates the impacts of policy interventions on plastics in the environment.



Monitoring and Evaluating Progress and Impact

This is important for setting strategies and realistic targets for impact.

KEY QUESTIONS INCLUDE:

- How are we defining “performance”?
- What are the most relevant indicators?
- How are we monitoring activities, tracking progress, and managing to our KPIs and other indicators of impact?
- Is an intervention delivering its intended impact?
- What are we learning from our activities and investments?

RESOURCE EXAMPLES:

Impact frameworks: The **Blue Natural Capital Positive Impacts Framework** from IUCN and Five Oceans Environmental Services provides investors with guidance on aligning investments and measurement with five positive impact areas that support ecosystems, livelihoods and climate.¹⁰

Case studies and surveys: **WIEGO** (Women in Informal Employment Globalizing and Organizing) regularly publishes case studies and reports on the state of informal workers, including women waste workers, around the world. A recent survey, on the impact of COVID19 for recycling workers in Brazil, provides important data for monitoring impacts and current trends for this segment of the workforce.¹¹



Assuring Results

This is important for holding actors accountable and verifying the impact of their commitments and activities.

KEY QUESTIONS INCLUDE:

- Have we verified that activities are in compliance with regulations and standards, such as those around child labor or waste water treatment?
- Can claims be backed by certifications, such as those defined for recycled content?
- Have we verified that solutions are performing as expected, in alignment with targets?

RESOURCE EXAMPLES:

Responsible sourcing guidelines: The **UN Global Compact's A Guide to Traceability for SMEs** offers practical steps to SMEs on how to integrate traceability into their supply chains in order to better report on compliance standards for large global customers.¹²

In addition, major brands, such as **Unilever**¹³, **P&G**¹⁴, and **Danone**¹⁵, are working with suppliers to comply with responsible and sustainable sourcing standards, often using shared data platforms for reporting and external auditors for verification.

Global standards and certifications: While definitions and standards for responsible supply chains or recycled content, such as those developed by **ISO**¹⁶ and **ISCC**¹⁷, are well established, the emergence of circular solutions and plastics that have been leaked and recovered from the environment have created the need for new definitions and standards. There are several currently in development, including circular economy standards from **ISO** (Technical Committee 323)¹⁸ and the **Sustainable Packaging Coalition's Recycled Materials Standard**.¹⁹

Impact offsets, claims and credits: Building on these standards and certifications, impact-oriented programs, such as the **3R Initiative**, offer buyers an opportunity to contribute to plastic leakage prevention through the purchase of credits from certified waste reduction projects. These programs are at various stages of maturity and introduce the potential for an impact marketplace. Today, definitions and approaches remain bespoke, not standardized, and not yet widely adopted.



The table below provides a summary of the resources reviewed, according to their purpose and impact theme. While individual resources often fit more than one category, it is clear that more resources are available for baselines and strategy-setting. Far fewer exist for evaluating or verifying impact once interventions are implemented. Quantifying resources in this way gives a first picture of where gaps still exist.

TABLE 1:
Frequency of Resources by Impact Theme and Purpose

Analysis based on review of 87 resources. Note that individual resources often fit more than one purpose or impact theme. See Appendix for definitions.

	Understanding the Challenge	Identifying Solutions and Modeling Potential Impact	Monitoring and Evaluating Progress and Impact	Assuring Results
Material Flows	33	28	14	4
Capital Flows	25	31	11	3
Policy	25	21	6	2
Oceans	15	8	3	0
Behavior Change	12	12	4	0
Livelihoods	9	14	4	0
Climate	5	8	3	0
Gender	8	2	2	0

IMPACT THEMES

For more information

For those interested in exploring the above referenced resources, The Circulate Initiative has created a public, online [Knowledge Bank](#) to help investors, policymakers, private companies, and researchers more easily access key resources and tools for measuring impact on ocean plastics.

This curated, searchable database is launching with more than 80 assets and will be updated periodically as new ones become available. We invite readers to [recommend additional resources and tools](#).



Conclusions

The momentum around plastic waste has led to copious activity around data and measures. However, the current measurement landscape is shifting quickly, and is difficult to navigate. In order to make sense of the data, we will need to overcome some specific challenges.

We speak different languages. Inconsistent definitions and approaches limit our ability to draw meaningful insights across the system. For example, various actors use conflicting terms and definitions to describe unmanaged plastic waste, including “ocean plastic”²¹, “beach plastic”²², and “ocean-bound plastic”²³.

For many actors - from large corporations and institutional investors, to entrepreneurs and municipal governments - it can be difficult to navigate the many measurement approaches and assess which one best fits their needs. In a recent meta-study, IUCN described the extent and nature of methods used for understanding the problem of plastics pollution in marine environments:

"There is currently no standard methodology to measure the extent of the plastic problem... [A] review of methodologies covers 19 that had been identified as of early 2019...[and] concludes that there could be stronger convergence between methodologies in this fast-developing area and that ... methodologies are lacking in several ways."²⁴

As a result, resources are dedicated to data collection and reporting, yet competing approaches prevent us from being able to compare results. The lack of leverage means that decisions and actions are taken more slowly by policy makers, ESG- and impact-oriented investors, private industry, and others.

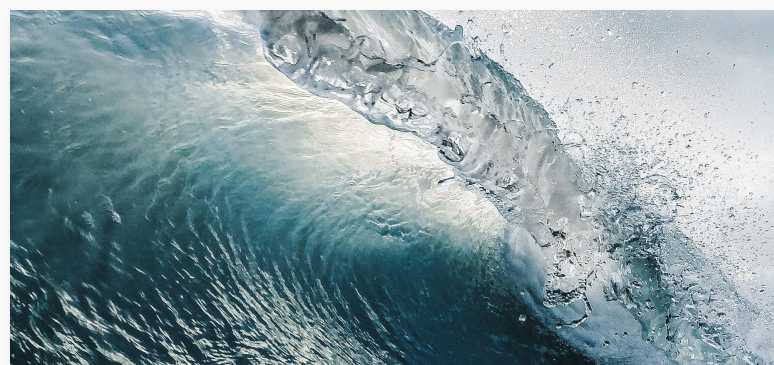
We are not looking at the same data. Working on their own, independent actors will collect and interpret data that paint an incomplete picture. Waste worker cooperatives know about impacts of various interventions on livelihoods, while ocean scientists know how plastics behave in the environment.

The municipal solid waste that cities see is not the same as units of consumer packaged goods sold by a major brand in that market. The demand for plastics from the global petrochemical industry is not the same demand that local recycling businesses see. As a result, those trying to solve the problem - including both newcomers and experts who have worked on the issue for decades - struggle to access what they need when they are at a key decision point, particularly if they are trying to address multiple concerns, such as reducing plastic leakage and improving livelihoods.

Further complicating the picture, when data for a given geography, or company, is collected, it is often not shared beyond the immediate actors who collected it, resulting in multiple assessments of the same area, using different methodologies, wasting resources and further confusing the picture.

"A deep and holistic understanding of the issue at the community level and aligning vocabulary used by different actors are key to setting the right measurement KPIs and methodology."

Alexandra Bordes
Coordinator, Sourcing, Inclusive Recycling &
Watershed Management, Africa & Asia
Danone Ecosystem Fund

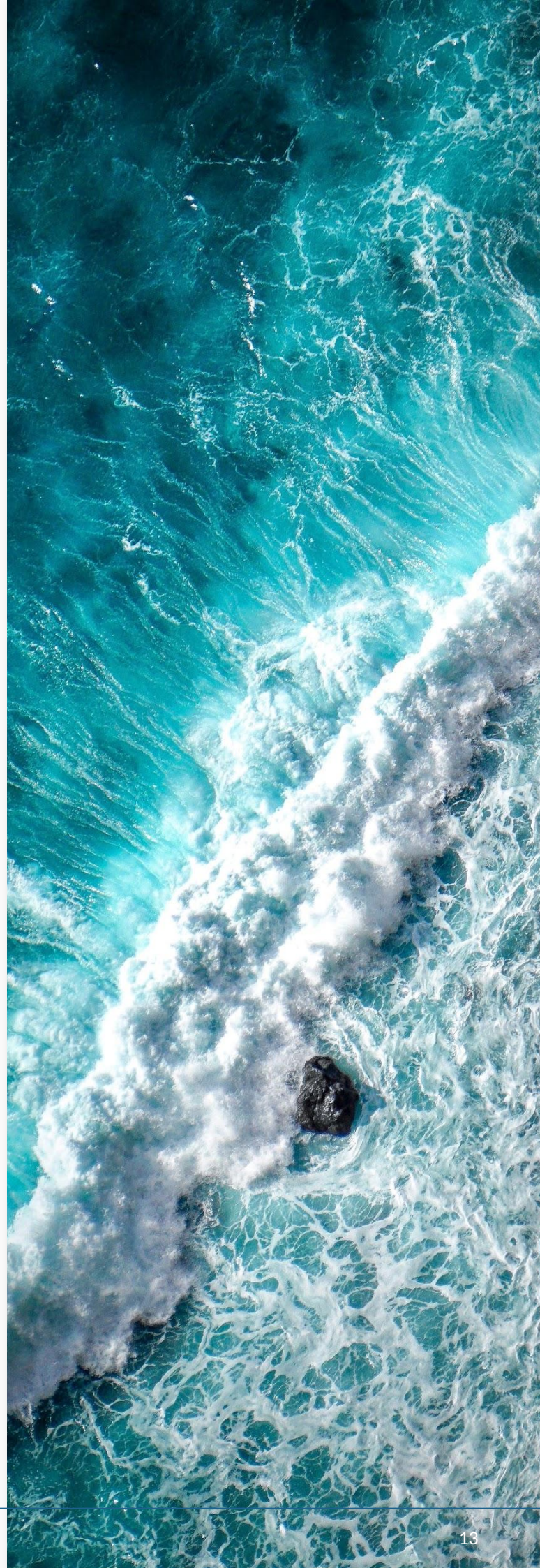


We do not have the right tools. Much of our understanding of the impacts of recycling and waste management are built upon tools developed for mature markets.

For example, the U.S. Environmental Protection Agency's Waste Reduction Model (WARM) provides a detailed look at emissions savings, job creation and economic benefits generated from recycling and reducing use of numerous materials.²⁵

Built on assumptions and research that reflects US infrastructure, WARM does not offer an easy impact modeling solution for infrastructure built in emerging markets, such as those in South and Southeast Asia, where actors are focusing their attention and resources to addressing unmanaged waste. Furthermore, standards and certifications are being adapted from other supply chains, are at various degrees of sophistication, or account for materials using competing methodologies.

However, in the case of ocean plastics, we need to look at materials, people and environment. We do not yet have good systems in place to monitor and track material. Developing the right tools for such a complex system will be difficult to do well at scale.





Taking Action

The complex challenge of preventing plastics pollution and leakage into the environment requires dramatic systemic solutions. With so much at stake, we need effective approaches to measurement now. Addressing the gaps outlined in this report will ensure that we can keep pace with interventions and understand their impacts. **To start, actors can pursue five key actions to improve metrics and measures.**

01

Establish practical standards and accounting methods that increase transparency and traceability around material flows.

Assurances for compliance, claims and credits in a complex post-consumption supply chain are emerging, but not yet at scale. Individually, they may focus on ocean plastics prevention, responsible labor practices, or amount of recycled content, but all together, they create time intensive and costly hurdles for private companies to meet. If investors and regulators are going to reward manufacturers and brands for meeting their commitments and complying with laws, or hold them accountable when they do not, they need approaches that lead to more consistent and actionable reporting.

02

Make data and decision-making tools locally relevant and accessible for setting baselines and impact targets.

Many tools for modeling impacts of interventions often rely on data and data systems designed for more mature markets. There are fewer that directly address the context of emerging markets and SMEs -- which are themselves extremely diverse.

As a result, “global” data systems may not achieve what they set out to do. Innovative tools to track local waste flows, as well as environmental and social benefits, more rapidly and cost effectively, such as those identified through The Incubation Network’s Plastics Data Challenge, are emerging and need to be further tested and scaled. If more cities and other actors in emerging markets are going to enact policies to better manage waste, locally relevant, accessible data and decision-making tools are critical.

“Having reliable, accessible data that is representative of the local operating context is paramount to credibly measuring and monitoring progress of our investment portfolio, which further enables the efficient flow of capital to high impact solutions.”

Rob Kaplan
Founder & CEO
Circulate Capital



03

Innovate approaches to collecting and sharing data that allow systems actors to develop a shared understanding of the current state and the progress that is being made.

As more actors develop, oversee, and finance interventions and solutions, considerable resources are wasted on one-off data collection activities and reports produced for limited audiences or timeframes. With credible, reliable shared platforms for data, we could better leverage individual efforts and set the stage for longer-term monitoring and accelerated impact across systems.

“Clearly communicated, meaningful data have the power to influence key stakeholders that have instrumental roles in tackling the global challenge of ocean plastic pollution--ranging from government, NGOs, and members of the private sector.

Thus, it is essential that these key stakeholders engage in the practice of obtaining, considering, and sharing their data and lessons learned to inform efforts to curb the flow of ocean plastics, as well as linked co-benefits, such as improved livelihoods of those that work in waste and recycling roles.”

Set Oya
Monitoring, Evaluation, and Learning Manager
USAID Clean Cities, Blue Ocean

04

Create holistic definitions of success and performance, that not only measure reductions in plastic waste leaking into the environment, but also include impacts on climate, economics, and livelihoods. Transforming systems around consumption, waste management and recycling, and ocean health require more than merely measuring tonnes of plastic. If public and private sector partners are going to build more inclusive, resilient and sustainable infrastructure, we need to make sure standardized, globally accepted definitions of success and performance include a more holistic picture of impacts.

“For the livelihoods of waste pickers, it is key that work on marine waste prevention builds from a holistic understanding of the need to improve solid waste management.

Baseline research should include a thorough scoping of the informal waste sector landscape, so that governments can conceptualize how to fill critical gaps in the waste system while also integrating the informal sector.”

Sonia Dias
Waste Specialist
WIEGO



05

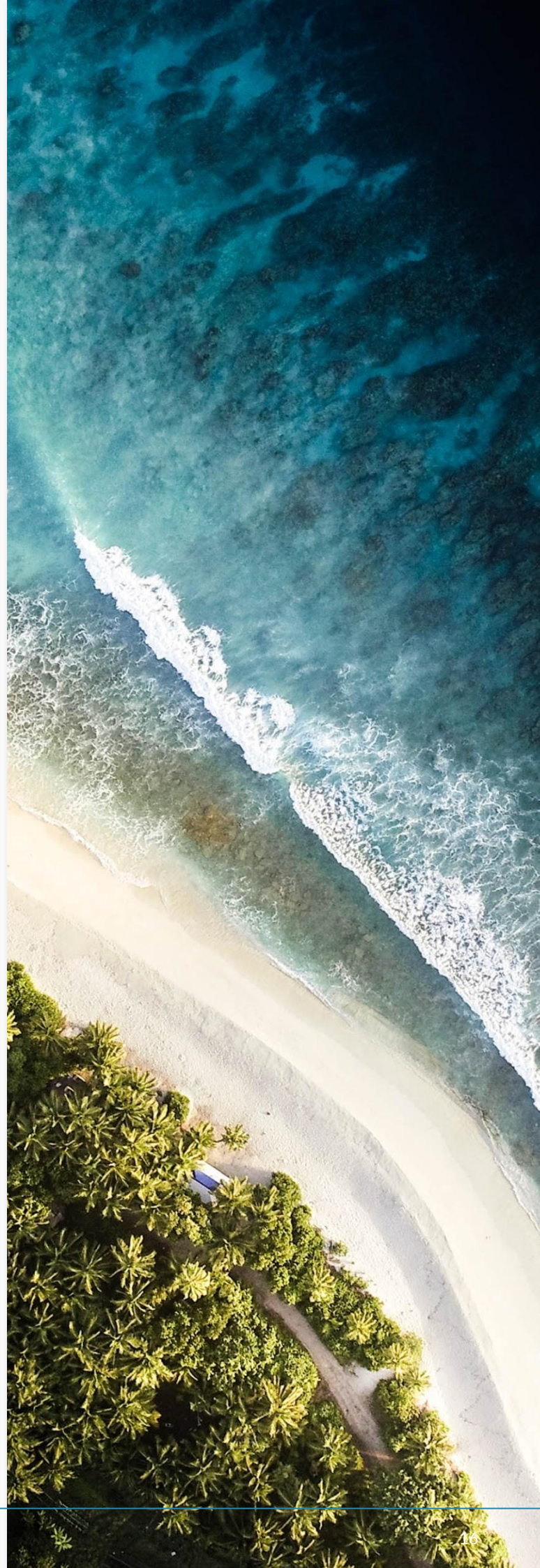
Align, integrate, and make widely available the resources and tools that we have. The current state of the knowledge landscape around ocean plastics is rich, but highly fragmented.

The complexities of navigating this landscape become a barrier to engaging, and potentially slow our ability to invest in, and scale, effective solutions. Waiting for the best resources and tools to rise to the top organically could take years. If key actors committing to solutions also work to improve measurement, then data systems - and the insights we glean from them - will be stronger.

“Having frameworks in place for rigorous metrics and results is critical for helping development banks decide which actions will have the highest impact and return on investment.

Monitoring and evaluation supports learning and improved performance, and allows us to communicate results clearly to our stakeholders.”

Deborah Robertson
Environment Specialist
Asian Development Bank



The Potential for Impact

Efforts to quantify the ocean plastic problem and measure the impact of solutions to reduce it are just getting underway. Even though there is a wealth of information that has been produced, there are still gaps that need to be bridged in order for us to gain clarity around “what” and “how” to measure. Addressing critical gaps in measurement would build confidence in effective solutions and drive investment, and in so doing:

- Improve and accelerate evidence-based private and public sector decision-making on investments, policies, and management;
- Enable smart, consistent, actionable impact reporting that will allow more ESG- and impact-oriented investment capital to come in; and
- Create greater alignment across stakeholder groups for advancing more inclusive, circular economies and stopping the flow of plastic waste into our oceans.

We hope you will join us on this journey.

Appendix and References

Impact Theme and Purpose Category Definitions

From Table 1



PURPOSE DEFINITIONS

Understanding the challenge	Resources that provide qualitative and quantitative information to establish a baseline for the current state of the plastics problem, including scale, gaps, and key actors.
Identifying solutions and modeling potential impact	Reports focused on prioritization and recommending certain strategies and solutions, including evaluation of relative costs, benefits, risks, and potential for impact.
Monitoring and evaluating progress and impact	Tools and guides for monitoring and evaluating progress, selecting indicators, and selecting appropriate data collection methods; case studies and evaluation reports of implemented projects.
Assuring results	Resources to verify performance and impact of various solutions, as well as report on regulations and compliance standards.

IMPACT THEME DEFINITIONS

Behavior Change	The potential to analyze and influence consumer behavior around consumption, recycling and disposal of plastic waste
Capital Flows	Roles for investment or business models to tackle plastic waste; opportunities to address the economic barriers inhibiting improved collection and management of solid waste and plastic; value creation in waste and recycling supply chains
Climate	Impact of plastic use, leakage, and solutions on climate and greenhouse gas emissions
Gender	Understanding the ways in which gender differentiation is seen in waste value chains
Livelihoods	Social and economic impacts of plastic waste on informal and low-income waste workers, including decent work and development
Material flows	Tracking the flow of plastic throughout the value chain, on land and in the environment
Oceans	Impacts of plastic waste on ocean health; measuring marine debris
Policy	Role and impact of current or proposed policy interventions focused on solid waste management, recycling and plastic waste

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For more information on The Circulate Initiative and our mission to incubate, measure, and amplify inclusive solutions that stop plastic waste from flowing into the ocean and advance the circular economy while generating positive socio-economic outcomes in emerging economies, please visit:

thecirculateinitiative.org

