CEIC
Circular Economy
Indicators Coalition

Corporate circular target-setting guidance

2023

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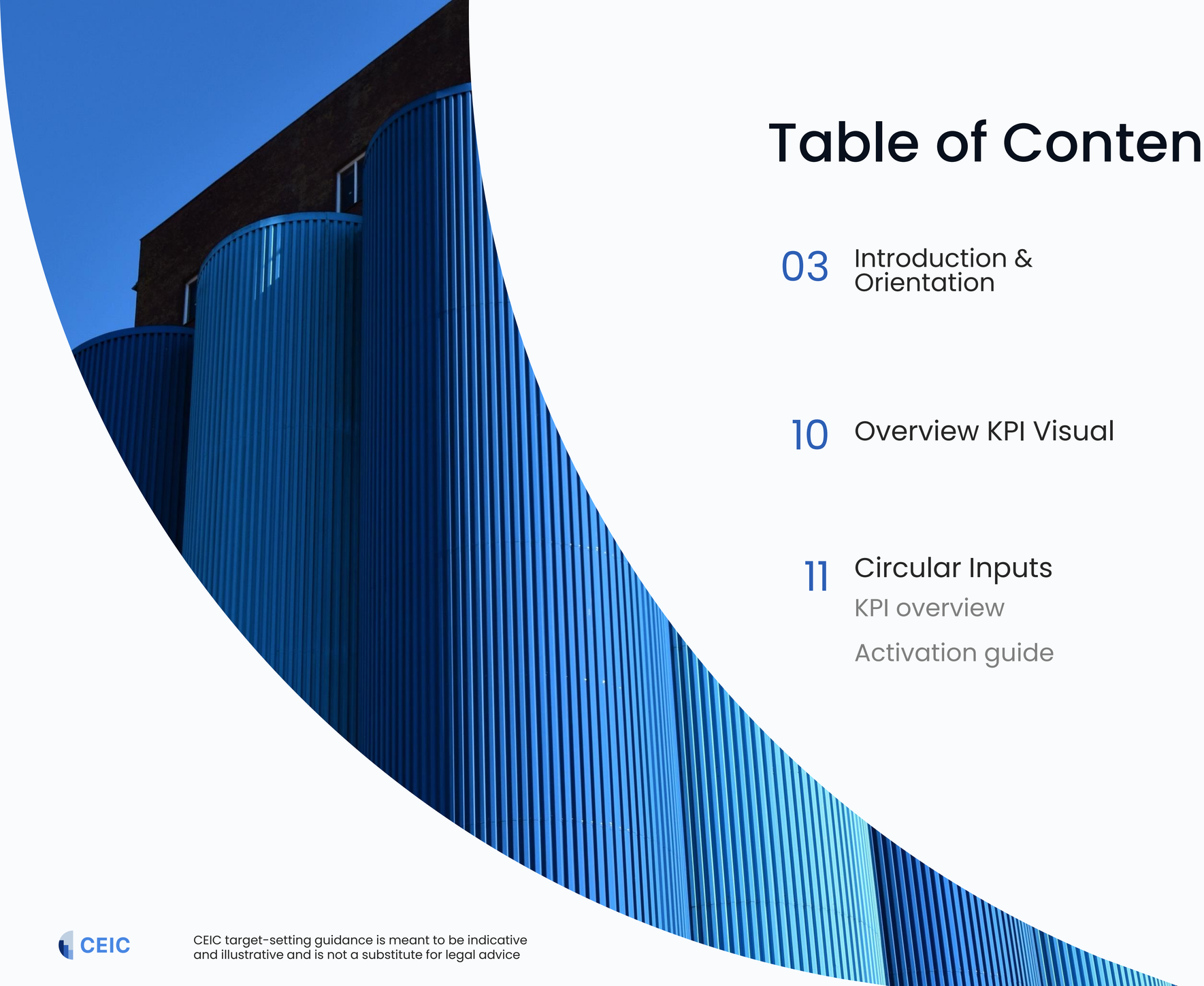

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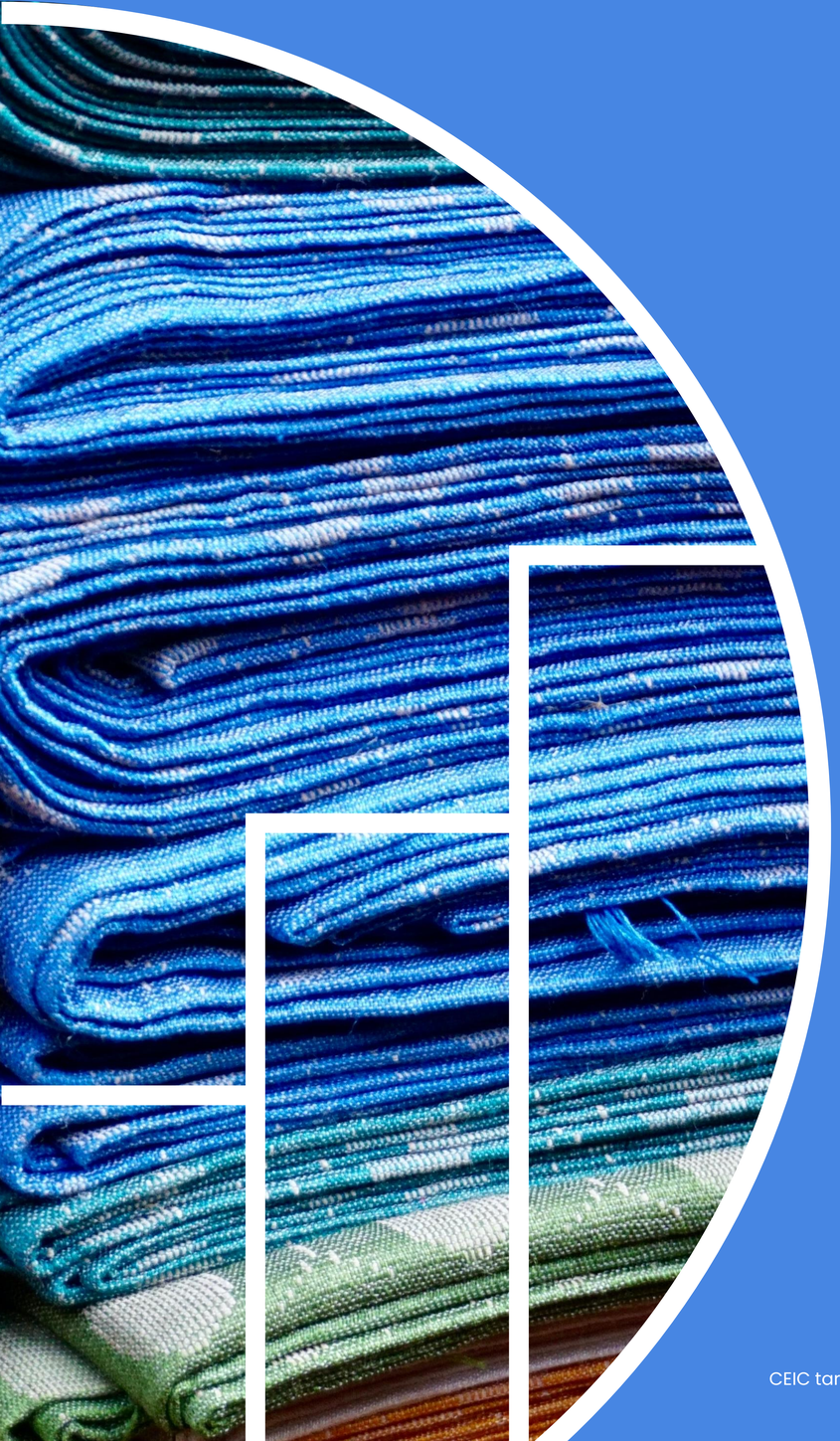


Introduction

This document expands on the research and findings introduced in the 2022 Circular Economy Indicators Coalition (CEIC) discussion document “Corporate target-setting for the circular economy: Mobilizing measurable progress.”

Its aim is to enhance corporate circular target-setting and harmonize the circular metrics landscape rather than duplicate or replace existing circular tools or support. It seeks to provide businesses with a clear launching point for selecting and reporting against impactful circular targets.

Circular target setting continues to be a work in progress, and as such, this document will be iterated on over time as frameworks and approaches evolve. Please use this guidance to drive discussion and increased traction for target setting within and across organizations and industries.

It is generally accepted that what gets measured, gets managed. As we rally around this initial set of impactful Key Performance Indicators (KPIs), we can work with a shared understanding and common language to ensure businesses will be in a stronger position to set and achieve circular targets.

Key Contributors

The Circular Economy Indicators Coalition (CEIC), co-hosted by PACE and Circle Economy and supported by Accenture, aims to build on the current metrics landscape to:

1. Increase the use of meaningful circular indicators to measure the progress and impact of the circular economy.
2. Connect key initiatives and stakeholders to facilitate exchange, improve alignment, and bridge critical gaps.

PACE is a global collaboration platform for key public and private decision makers to share a vision and best practices and scale the circular economy together. PACE was created in 2018 by the World Economic Forum and is now hosted by the World Resources Institute.

Circle Economy is a global impact organization with an international team of passionate experts based in Amsterdam. Circle Economy aims to empower businesses, cities and nations with practical and scalable solutions to put the circular economy into action. Their vision is an economic system that ensures the planet and all people can thrive.

Accenture is a global professional services company with leading capabilities in digital, cloud and security. Combining unmatched experience and specialized skills across more than 40 industries, we offer Strategy and Consulting, Technology and Operations services and Accenture Song — all powered by the world's largest network of Advanced Technology and Intelligent Operations centers. Our 738,000 people deliver on the promise of technology and human ingenuity every day, serving clients in more than 120 countries. We embrace the power of change to create value and shared success for our clients, people, shareholders, partners and communities. Visit us at www.accenture.com.

We would like to express our sincere appreciation to the below organizations that have contributed to the development of this shared perspective and the wider circular target-setting initiative. This document is solely the product of the CEIC and does not necessarily represent the opinion of the contributing organizations. We look forward to working with you and the broader community as we build upon this initial guidance and strengthen corporate circular target-setting going forward.

Now is the time to set impactful circular economy targets

WHAT IS THIS GUIDANCE?

This guidance has consolidated a myriad of materials to point users towards relevant standards, tools, approaches, and methodologies. Holistically, these materials will enable companies to announce and achieve credible and impactful circular targets.

Coalescing around this guidance will support businesses to develop meaningful and impactful circular economy KPIs and make concerted progress towards increasing global circularity.

Regulatory examples referenced throughout this and other sections are meant to inform business decision-making but are not intended to be signs of support for current regulations and policies or a recommendation for any regulatory or policy changes.

WHO IS THIS GUIDANCE FOR?

Sustainability and functional leaders who are seeking to learn about and take action on best practices for circular target-setting will benefit the most from this guidance.

CEIC target-setting guidance is meant to be indicative and illustrative and is not a substitute for legal advice

WHY NOW?

With less than a decade to deliver on the UN's Sustainable Development Goals (SDGs), 'cascading and interlinked global crises and conflicts' are derailing progress. As we face some of the most daunting environmental, health and socio-economic challenges seen in a century, we have an enormous opportunity—and obligation—to reconsider the way we live, work, produce and consume. Today's take-make-waste linear model is exacerbating these crises, but the principles of the circular economy offer a route to positive change: to decouple growth from the consumption of materials, creating new value chains that are regenerative by design.

A step-change is needed to put the world on track for sustainable production and consumption. Here, the circular economy can play a critical role. In the fight against climate change, it is estimated that the energy transition alone can only address 55% of global greenhouse gas (GHG) emissions, but changing how we design, produce, and consume resources could contribute significantly to reducing the remaining 45% of GHG emissions.

To drive progress, government leaders and regulators continue to expand ESG disclosures including those directly covering or adjacent to the circular economy. Regulatory examples included on sector supplements are meant to provide a point of reference on potentially applicable disclosures and are non-comprehensive.

Although the circular economy presents a framework for tackling our global challenges, meeting the needs of the growing global population requires more resources not less – widening the circularity gap. The world needs measurable progress on circularity now.

HOW WILL THIS GUIDANCE HELP?

The circular economy can begin to be measured by evaluating critical levers across a business's value chain.

KPIs were evaluated and selected to align with a circular value chain, with consideration for their ability to impact and advance progress towards a circular economy.

However, it is important to keep in mind that achievement of these KPIs individually is not synonymous with the overall circularity of a company.

Given this, and the fact that circular economy targets are still in their very early stages, businesses can help to advance accountability by leveraging the information in this guidance to transparently disclose the definitions (e.g., ISO, GRI) and frameworks (e.g., Circular Transition Indicators (CTI), Circulytics) used to track and report on progress.

WHAT'S NEXT FOR CIRCULAR TARGETS?

This guidance serves not only as a resource, but as a call to action for companies to engage in the development of a science-based approach to circular target setting. It will help companies take the next steps on a journey to decouple their economic activities from the consumption of resources.

Advancing circularity is inherently a systems-based opportunity, and it will require engagement from organizations across industries and across the value chain to drive lasting progress in both the setting and achievement of quantifiable circular targets.

How to get started

Guide Methodology

This document is primarily formatted as a reference guide that seeks to collate and harmonize information that will drive action in businesses. It is **not a new framework** but instead intends to point users to existing frameworks and target-setting guidance.

KPI OVERVIEW VISUAL

This image visually depicts the value chain stages to which a KPI is most closely aligned. It helps a business to understand where a KPI is measured versus where that KPI may be enabled or supported by other programs and influencing actions. Circularity-related decisions can be made at many points in the value chain, with each one impacting KPI outcome and achievement.

KPI OVERVIEWS

For each of the Outcome KPIs, the overview provides a short description, examples of key supporting standards, an overview on measurement approach, disclosure requirements, and examples of corporate leaders. It is best used as an introduction to KPIs or a reference for KPI discussions.

OUTCOME KPI ACTIVATION GUIDES

The two-page KPI activation guides are structured to help a business understand what success looks like and how to achieve that same success in setting, measuring, and reporting a circular KPI.

It opens by providing a detailed overview of the KPI and why it is important to business and the planet. It includes guidance on organizational ownership, overcoming common challenges, and outlines steps for a business to get started.

It also highlights useful standards, measurement approaches related to the KPI. Regulatory examples referenced throughout this, and other sections are meant to inform business decision-making but are not intended to be signs of support for current regulations and policies or a recommendation for any regulatory or policy changes.

SECTOR SUPPLEMENT

Circular KPIs are most impactful when considered through an industry lens. This section considers how the Outcome KPIs can be applied within five sectors; textiles, plastics, food, electronics, and capital equipment. It highlights industry specific data points, regulatory and disclosure considerations, and organizations to support further development.

How to get started

Targeted Outcomes

GUIDANCE CONTEXT

Businesses can use this guidance to learn about best practice KPIs for the circular economy and understand how to select and set these KPIs. The KPIs have been supplemented with detailed guidance to assist a business' circular target setting journey.

The materials point users to helpful resources and tools such as existing standards, measurement frameworks, disclosure requirements, key considerations and questions to ask, and leading examples.

The guidance is oriented around ensuring a business can select impactful targets that will help to answer four fundamental questions about their value chain and overall impact:

1. What materials are you using?
2. What waste are you producing?
3. Of the products that go to market, what are you collecting and recycling?
4. How are you enabling circular business models and circular engagement with customers?

AFTER READING THIS GUIDE, YOU WILL BE BETTER EQUIPPED TO

- Identify and evaluate circular economy KPIs material and impactful to your value chain and industry
- Recognize which standards and disclosures are relevant to your business operations and desired outcomes
- Identify KPI owners within the organization
- Find relevant data sources and recognize data gaps
- Understand measurement approaches and how to access supportive tools
- Develop an initial plan for identifying and setting circular economy KPIs

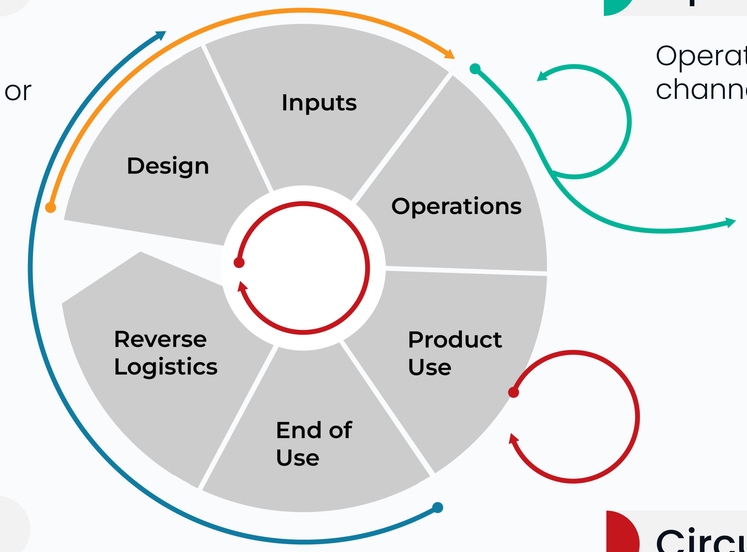
These capabilities will support our ultimate objective of ensuring all businesses can develop and achieve meaningful and impactful circular economy KPIs for their value chains.

Setting your Outcome KPIs

Outcome KPIs are indicators that measure the results of circularity processes, programs, and operating models at a company level. These KPIs should be used for public target setting, and are enabled in part by circular design, waste production & transparency, product life extension & utilization, and output collection

Circular Inputs

Product and packaging materials that are non-virgin, or virgin materials that are renewably, regeneratively, or sustainably produced (total weight & %)



Operational Waste

Operational waste to circular channels (total weight & %)

Circular Outputs

Post-use waste recovered for re-use, upcycling or downcycling (total weight & %)

Circular Revenues

Revenue from circular products, services and solutions (total monetary value & %)

Enabler KPIs

Enabler KPIs assess a company's progress towards the establishment of circular processes, programs, and operating models and help lead to the achievement of Outcome KPIs at multiple points across the value chain.

Circular Design

Products and packaging designed with circular design criteria (%)

Waste Production & Transparency

Reduction in waste produced across operations (total weight & %)

Product Life Extension & Utilization

Improvement in average product use life and utilization (total number or %)

Output Collection

Post-use waste collected (total weight & %)

- Circular Design
- Output Collection

- Circular Design
- Waste Production & Transparency

- Circular Design
- Output Collection
- Product Life Extension & Utilization

- Circular Design
- Output Collection
- Product Life Extension & Utilization

Source: The Circular Economy Handbook: Realizing the Circular Advantage, 2020

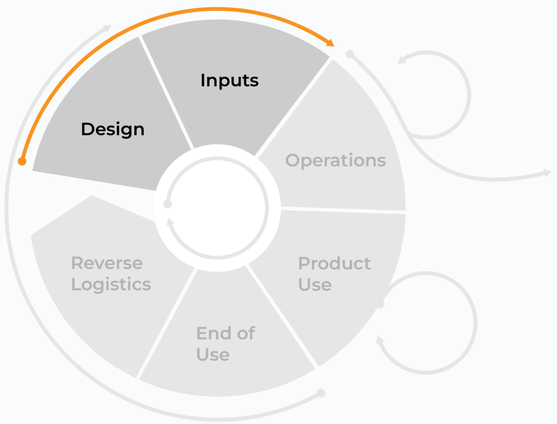
Outcome KPI Overview: Circular Inputs

Product and packaging materials that are non-virgin, or virgin materials that are renewably, regeneratively, or sustainably produced (total weight & %)

Description

Transitioning away from finite, virgin materials in products and packaging towards circular alternatives, reducing overall material consumption

Circular Inputs



Enabler KPIs

- Circular Design
- Output Collection

Supporting standards *

What:
International guidelines / definitions for 'recycled', 'renewable', 'sustainable procurement[1]' etc.

Example standards:

ISO 14001 ISO 26000
ISO 14021 ISO 20400

GRI 301

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Circular inflow (%)

CIRCULYTICS — 6a. Product and Materials Inflows

Measured in: Metric tons, kg, %

Leadership examples

Patagonia:
100% recycled, reclaimed or renewable resources in apparel by 2025

Dell:
100% packaging & >50% of product from recycled or renewable materials by 2030

PepsiCo:
Sustainably sourcing 100% of key ingredients

CEIC target-setting guidance is meant to be indicative and illustrative and is not a substitute for legal advice

* Non-exhaustive

Circular Inputs

Product and packaging materials that are non-virgin, or virgin materials that are renewably, regeneratively, or sustainably produced (total weight & %)

Key impacts

74% of supply chain leaders expect their circular activities to increase 2022-2025 profits

80% of product-related environmental impacts are determined during the design phase

Linear supply chains are contributing to a 46-year high in global food prices and fuel poverty for 6.7 million households in the UK

Why is this important?

We are rapidly depleting earth's finite natural resources, risking the permanent inability to renew them (UIA). Simultaneously, resource constraints increase volatility in availability and cost across global supply chains.

Circular inputs are the 'ingredients' that go into products, replacing finite, virgin resources with re-used, recycled, or regenerative alternatives. These material changes can insulate operations from volatile raw materials prices, while also supporting climate strategies (WEF).

Circular inputs will also help businesses achieve their net zero carbon commitments. The extraction and processing of inputs contributes to half of total GHG emissions and 90% of biodiversity loss and water stress globally (UN).

What does success look like?

Owned by supply chain & procurement

Develops and manages supplier relationships, procurement strategies, and incentive programs that would lead to increased usage of circular inputs

Product and packaging design will heavily influence circular input procurement requirements

Requirements for success at scale

- Design products and packaging with recycled, renewable, or sustainably procured inputs
- Advance a holistic and coordinated supplier engagement strategy across the value chain to increase material flow transparency and increase the use of non-virgin materials
- Consider take-back and recycling programs to incorporate and recapture valuable materials
- Consider the business and environmental impacts to shifting to circular inputs, using tools such as LCA, to assess implications of decisions

Overcoming common challenges *

Illustrative prompts to initiate internal conversations

Q: **What steps will we take to fund the upfront and ongoing cost of a circular inputs program?**

Consider price premiums; identify opportunities to bring costs down to parity or better; build new product lines or businesses around sustainable alternatives; invest in technological innovations

Q: **How can we increase access to and volume of adequate viable virgin material alternatives?**

Engage, educate, and incentivize suppliers, secure supply with long-term contracts; re-design to reduce resource needs; consider industry and cross-sector coalitions; consider scrap materials resources, not waste

Q: **How can we drive consumer adoption of recycling, re-use, take-back, or related programs?**

Research consumer preferences; consider industry collaborations; pilot programs in favorable markets

Q: **What can we do about safety and/or performance related certifications that limit the percentage of recycled content in a product?**

Seek to achieve maximum allowable circular inputs; focus initial efforts on products that do not require a certification

Leading examples

Apple Inc.

Use only recycled and renewable materials in our products and packaging, and enhance material recovery

In fiscal year 2021, nearly 20% of the materials shipped in Apple products came from recycled sources, and Apple doubled its use of recycled tungsten, rare earth elements, and cobalt.

PepsiCo

Sustainably source 100% of our key ingredients, expanding to include not only our grower-sourced crops (potatoes, whole corn and oats), but also key crops from third parties, such as vegetable oils and grains

PepsiCo has established a Sustainable Farming Program for grower-sourced crops to guide growers and define environmental claims. For supplier-sourced crops, third-party standards are leveraged.

Steps to set a circular inputs target

1 Assess materiality and gather data

- What are the biggest quantities of materials, in aggregate and by product?
- How is material sourced today?
- What is the environmental impact of materials used?

2 Identify initiatives and prioritize

- What non-virgin material alternatives exist in the market and what is the business case for transition and adoption?
- What design changes or sourcing actions have the greatest impact?
- What take-back and/or recycling systems are needed?

3 Set ambition and announce targets

- What disclosures are required regionally and globally?
- What are peers committing to?

4 Execute strategies & report on achievement

- Who owns the target in the business?
- What level of supplier engagement is needed to achieve the target?
- Are new systems needed for reporting?

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* Non-exhaustive

Circular Inputs

Product and packaging materials that are non-virgin, or virgin materials that are renewably, regeneratively, or sustainably produced (total weight & %)

Enabler KPIs *

Circular Design

Products and packaging designed with circular design criteria (%)

> Incorporate circular inputs criteria into product specifications up front, ensuring alignment with performance requirements

Output Collection

Post-use waste collected (total weight & %)

> Track weight and types of materials collected at end of use for potential input materials

How do you measure and report success?

Supporting standards *

Standards bodies like ISO, GRI, CDSB, and Cradle to Cradle can help businesses by providing guidance on how to define and communicate relevant circular information and impacts

Common Environmental Terms

Use ISO 14021 to understand the appropriate usage of common environmental terms such as recycled, recovered, and reusable in self-declared environmental claims

Sustainable Procurement

Use ISO 26000 and ISO 20400 to understand what social responsibility in business is and how to integrate sustainability and social responsibility within procurement, respectively

Material Types

Use GRI 301 to disclose the type and materials used by an organization in manufacturing and packaging products and services

Environmental Management Systems

Use ISO 14001 to develop requirements for the organization's environmental management system that can be used to enhance environmental performance

Measurement approaches *

There are several frameworks to measure circular KPIs. CTI and Circulytics are some of the most referenced, but businesses can select what helps them best capture and report data.

Circular Transition Indicators — Circular Inflow

Circular inflow can be calculated for non-virgin or renewable content from sustainably grown bio-based sources and is calculated for each material flow. (CTI)

Applicable Section	Sample Calculation Methodology
% circular inflow (per material flow)	% renewable circular inflow = total renewable content (metric tons) / total content (metric tons)

CIRCULYTICS™ — Product & Material Inflows

Product & Material Inflows scores the mass inflow values using the percentage and type of sourcing (i.e. non-virgin, by products, virgin but renewable and sustainably produced, etc.) (EMF)

Applicable Section	Sample Calculation Methodology
6a. Product & Material Inflows including packaging (indicator) 0r. Mass Inflow (question)	% non-virgin inflow = total non-virgin content (metric tons) / total content (metric tons)

Data Sources *

1. ERP or product lifecycle or materials management systems
2. Supplier declarations
3. Part drawings
4. Bill of materials

Note: For companies with Environmental Product Declarations (EPDs), you may be able to leverage some of the same data sources used in the development of those documents when compiling circular inputs data

Sector Supplement: Circular Inputs

Textiles

Under a business-as-usual scenario, the growth in material volume of textiles would see non-renewable inputs increase over 200% from 98 to 300 million metric tons per year by 2050 (EMF)

Sector specific considerations to accelerate achievement of target

- **Regenerative materials:** Source inputs from regenerative and restorative natural systems that replenish the natural environment while eliminating environmental leakage and are safe for textile workers and textile users
- **Materials & collection:** Design products and circulation of materials to keep different materials separate or easily separable such that components and materials can be reused, remade, or recycled
- **Hazardous materials:** Re-evaluate and eliminate the use of hazardous performance enhancing chemicals and additives against their long-term circular viability
- **Innovation:** Coordinate industry efforts to eliminate concerning substances in textiles to enable large-scale reuse and recycling

Source(s): Fashion and the circular economy; Vision of a circular economy for fashion; ISO14021; Circular design guide; A new textiles economy

Supplemental guidelines & disclosure requirements *

EU legislation:

- EU EC Textiles Strategy seeks to ensure that by 2030 EU textile products are made as much as possible of recycled fibers, free of hazardous substances and produced in a way that respects social rights and the environment; includes mandatory Ecodesign requirements that enable recycling and reuse (EU EC)
- Additional EU schemes include EU Ecolabel criteria for Textile Products, EU GPP criteria for textiles products and services, Industrial Emissions Directive, Best Available Techniques Reference Document (BREF) for the Textiles Industry

US third party organizations:

- The American Circular Textiles Policy group was launched to align stakeholders and influence policy makers on reuse and recycling

Additional resources

ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation is supporting business leaders in the textiles industry via their interactive learning hub and collaboration across their global network

- Fashion and the circular economy
- EMF global network

Plastics

Demand for recycled plastic is decoupling from the price of oil and is instead being stimulated by consumer sentiment, corporate commitments, and anti-pollution regulations (GreenBiz)

Sector specific considerations to accelerate achievement of target

- **Recycled and reused materials:** Decouple the sourcing of inputs from virgin fossil feed stock, consider alternative chemicals and polymers
- **Materials & collection:** Design plastics & packaging products for recycling and longevity of use, consider new plastics that can be recycled indefinitely
- **Innovative materials:** Plastic alternatives, particularly for packaging, are increasingly popular, often not only reducing virgin inputs but also enhancing the after-use properties for selected applications, e.g., home compostable, water soluble, edible
- **Innovation:** Improve recyclability rate with technology investment or coalition building across industries

Source(s): Navigating the surge of circular plastics & packaging initiatives; The future looks bright for infinitely recyclable plastic; The new plastics economy: rethinking the future of plastics

Supplemental guidelines & disclosure requirements *

Potential disclosure requirements:

- The End Plastic Pollution resolution adopted by the UNEA puts forth a plan to adopt and finalize an agreement to globally prevent and reduce global plastic waste by 2024; it is anticipated to increase the availability of circular inputs for plastics production (WBCSD and Council on Foreign Relations)

Legislation:

- There are over 1,000 plastic pollution-related laws globally (GreenBiz)
- Persistent Organic Pollutant (POP) Regulation restricts certain types of POP that may exist in certain plastic products, such as flame retardants

Initiatives:

- WBCSD has characterized 20+ plastics business led initiatives

Tools:

- SPHERE is a packaging framework based on six environmental sustainability principles covering inputs and outputs that support decision making

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Products and materials
- WBCSD community

* Non-exhaustive

Sector Supplement: Circular Inputs

Food

Global food production threatens climate stability and ecosystem resilience and represents the single largest driver of environmental degradation (EAT-Lancet Commission)

Sector specific considerations to accelerate achievement of target

- **Regenerative materials:** Grow food in ways that generate positive outcomes for nature such as healthy and stable soils, improved local biodiversity, improved air and water quality
- **Source Thoughtfully:** Consider resilient sourcing that relies on a diversity of local, regional, and global sources
- **Soil health:** Increase organic soil carbon and reduce the need for inputs by investing in innovative cropping practices, e.g., through intercropping or double cropping
- **Innovation:**
  - Design for the creation of inedible by-products into new products like fertilizers
  - Design new products and recipes to guide preferences and habits towards regenerative food systems

Source(s): EMF: Food; Food and the circular economy; Prioritizing collective business action on and beyond proteins

Supplemental guidelines & disclosure requirements *

European Green Deal:

- EU's Farm to Fork Strategy aims to accelerate the transition to a sustainable food system, e.g., by promoting organic food and farming for its positive impact on biodiversity, along with innovation in the largely untapped circular bio-based economy for fertilizers etc.

Upcoming EU regulation:

- The new CAP in 2023 will have stronger requirements, e.g., GAEC (good agricultural and environmental conditions) for soil protection and quality, and GAEC on biodiversity and landscape

Opportunity areas:

- WBCSD has identified an opportunity to engage with policymakers to incentivize regenerative and sustainable agricultural practices, drive healthier consumption patterns, and reduce food loss and waste (WBCSD)
- WBCSD has identified a need to develop public procurement requirements that embed health and sustainability food requirements (WBCSD)

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Food and the circular economy
- WBCSD community

Electronics

Recycled gold generates 80% fewer GHG emissions per unit compared to primary extraction (WEF)

Sector specific considerations to accelerate achievement of target

- **Recycled & reused materials:** Source inputs from verified circular (reused, refurbished, remanufactured, or recycled) resources
- **Quality of materials:** Develop proper specifications to maintain performance considerations and requirements while meeting product longevity and repairability considerations
- **Material design:** Design for easy repair, upgrade, and recovery during product use and end of life
- **Circular infrastructure:** Design for waste mitigation in infrastructure installation, which has the potential to save $8B, and establish a streamlined process for waste shipment

Source(s): Circular electronics system map

Supplemental guidelines & disclosure requirements *

Existing action plans:

- The Circular Economy Action Plan prioritized electronics and information technology, with initial guidelines expected to require enhanced durability, easy repair, upgrade of devices and new means for reuse and recycling (EU Parliament)
- EU Action Plan on Critical Raw Materials (CRM) launched the European Raw Materials Alliance (ERMA) around challenges and actions that diversify the EU CRM supply and improve resource efficiency and circularity (ERMA)

EU Directives:

- RoHS Recast Directive 2011/65.EU and RoHS3 (EU 2015/863) restricts the use of hazardous substances and requires the substitution of these materials
- Others include The EU REACH Regulation, The EU Waste Framework Directive (WFD), and EU 2019/1021 POPS recast regulation (Stockholm Convention)

US regulation:

- The Toxic Substances Control Act (TSCA)

Additional resources

CEP circular electronics partnership

The Circular Electronics Partnership aims to support business leaders in reimagining the value of electronic products and materials through their blueprint for action and partner and member community

- CEP: Our vision of a circular electronics industry
- CEP community

Sector Supplement: Circular Inputs

Capital Equipment

The industry collectively consumes more than seven billion tons of materials a year to create long-lasting products with high potential for circularity (PACE)

Sector specific considerations to accelerate achievement of target

- **Quality of materials:** Design equipment for long-term serviceability, on-going upgradability
- **Lifetime extension:** High upfront costs for the capital equipment industry incentivize the design and manufacture of equipment for durability and reuse
- **Circular design:** Focusing both on inputs as well as possibilities for when products come to the end of their first useful cycle – this includes adopting modular design, designing for renewable materials, designing for easy repair and disassembly, and designing products with backwards compatibility to enable multiple applications and a longer lifetime
- **Collaboration:** There is an opportunity to engage with regulators to ease barriers around cross-boundary movement of used parts for processing or re-use

Source(s): 3 shifts can scale the circular economy; Measuring circularity for capital equipment; Circular trade: vertical & horizontal

Supplemental guidelines & disclosure requirements *

EU product compliance regulations & directives:

- The EU REACH Regulation
- The EU Waste Framework Directive (WFD)
- EU 2019/1021 POPS recast regulation (Stockholm Convention)
- RoHS Recast Directive 2011/65.EU and RoHS3 (EU 2015/863)

US regulation:

- The Toxic Substances Control Act (TSCA)

Additional resources

CIRCLE ECONOMY

Circle Economy are aiding businesses, cities and nations to make tangible progress via their actionable resources and knowledge hub

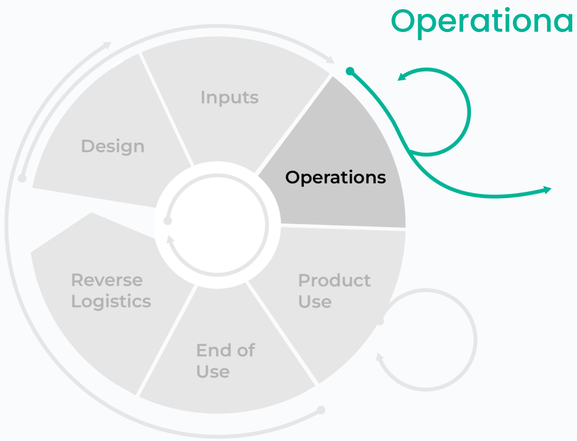
- Measuring circularity for capital equipment
- Circle Economy network

Outcome KPI Overview: Operational Waste

Operational waste to circular channels (total weight & %)

Description

Concurrently reducing overall operational waste while progressing towards higher value recovery of those materials, moving away from only ‘zero waste to landfill’ to reduce total waste and greater transparency and measurement of circular channels e.g., reuse, downcycling, upcycling.



Enabler KPIs

- Circular Design
- Waste Production & Transparency

Supporting standards *

What:
International guidelines / definitions for diverting operational waste for reuse or recycling

Example standards:

ISO 14001

GRI 306-4 GRI 306-3
GRI 306-1

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Circular inflow (%)

CIRCULYTICS — 6b. 6c. Processing Waste

Measured in: Metric tons, kg, %

Leadership examples

GSK:
All waste is repurposed for beneficial use by 2030

Microsoft:
Zero waste across Microsoft’s direct waste footprint by 2030 (across operations, products and packaging)

* Non-exhaustive

Operational Waste

Operational waste to circular channels (total weight & %)

Key impacts

Designing to reduce operational waste can contribute to reduced material costs

45% of GHG emissions are from materials, thus waste reduction is vital to meet carbon targets

2B metric tons of waste is produced annually, with mismanaged waste killing <1M people

Why is this important?

45% of the world's emissions result from how we design, produce, and consume products (EMF). Therefore, organizations must reframe waste as an asset, not a liability that you pay to dispose (WEF).

A common first step in a company's circular journey, circular operational initiatives are often more straightforward and tend to have a relatively short-term payback with significant revenue generation and cost saving opportunities. These initiatives often build upon or act as an umbrella for existing efficiency and sustainability efforts across energy, emissions, water and waste (Accenture). Organizations have also found ways to sell operational waste streams to other industries as inputs ensuring materials are kept in their highest possible value.

Organizations must begin to shift from linear to closed-loop circular processes, reinventing production to minimize and ultimately eliminate waste. However, the ultimate goal of operational circularity is net neutrality – enabling planetary regeneration and a thriving society at large.

What does success look like?

Owned by operations

Develops and manages resource data across internal operations to gain efficiencies and cut costs

Maintains a line of sight into supply chain capabilities, along with finance teams to ensure dedicated investment

Requirements for success at scale

- Embed circularity into everyday operational decision making to create a closed loop system and reduce total waste produced
- Obtain a data-driven view of waste streams to measure and manage resource flows
- Identify the most material waste streams to design your target around (across emissions, energy, water and waste)
- Secure leadership buy-in and focus on maximizing value
- Explore forming new partnerships within and outside your industry to leverage new capabilities and enable further business growth, (e.g., automated waste segregation)
- Assess tradeoffs with other sustainability and non sustainability targets (e.g., infrastructure)

Overcoming common challenges *

Illustrative prompts to initiate internal conversations

Q: **How can we overcome gaps in data availability, and anticipate future gaps in required data?**

Prioritize investment or consider forming new partnerships to develop and implement new capabilities, e.g., innovative waste management solutions, automated waste segregation; Hold workshops with data owners to align on what data needs to be collected along with the data quality

Q: **How can we overcome ambiguous data ownership to ensure accountability to measure and report on circular progress?**

Mature existing ownership models to clearly differentiate the responsibility from accountability of data stakeholders - as a common challenge is that data owners do not have the know-how of business purposing around data. Source

Q: **How can we create linkages from circular to end enterprise value so that businesses can realize a performance premium from their investments in data?**

Dedicate a resource with strong knowledge of the business to oversee the end-to-end operations data

Leading examples

GSK

Zero operational waste, including eliminating single use plastics by 2030*

GSK will achieve zero operational waste through a 20% reduction in the amount of both hazardous and non-hazardous waste generated, and diverting the material generated into circular cycles - for example reuse, recycling and composting.

* Where safety, quality and regulations permit

Microsoft

Zero waste across Microsoft's direct waste footprint by 2030 (across operations, products and packaging)

To date they have diverted more than 15,200 metric tons of solid waste and certified four datacenters as Zero Waste

Apple Inc.

Eliminate waste sent to landfill from Apple's corporate facilities and suppliers

In fiscal year 2021, for the second year in a row, 100% of established Apple final assembly sites maintained zero waste to landfill operations

Steps to set an operational waste target

1 Assess materiality and gather data

- What are your existing waste pools? Which is the biggest waste pool?
- Who are your waste vendors and what are their capabilities?
- What internal and external systems are you leveraging to ensure you can access the required data to enable reporting?

2 Identify initiatives and prioritize

- How are you measuring and managing resource flows?
- What are your internal operations baselines, i.e.. energy consumption, tons of waste?
- What enablers are crucial to accelerate adoption, e.g., technology for automation and increased efficiency?

3 Set ambition and announce targets

- How are you framing waste, as a challenge or a value?
- Are you dedicating investment into building new capabilities for sorting and categorizing waste to meet re-circulation requirements?

4 Execute strategies & report on achievement

- How are you engaging with new partners to leverage innovative waste management solutions?
- How will you assess the success of the implemented strategies?
- How will you constantly evaluate and evolve to ensure impactful strategies and meet changing regulatory requirements?

Operational Waste

Operational waste to circular channels (total weight & %)

Enabler KPIs *

Circular Design

Products and packaging designed with circular design criteria (%)

> Embed design for manufacturing into product development to ensure minimum waste in operations

Waste Production & Transparency

Reduction in waste produced across operations (total weight & %)

> Actively track all waste generated during manufacturing, including sources and recycling or disposal methods

How do you measure and report success?

Supporting standards *

Standards bodies like ISO, GRI, CDSB, and Cradle to Cradle can help businesses by providing guidance on how to define and communicate relevant circular information and impacts

Environmental management systems

Use ISO 14001 to identify hazardous waste and handling materials efficiently and responsibly to understand best-practice waste management

Diverted waste from disposal

Use GRI 306-4 to disclose the total weight of waste prevented / diverted from disposal diverted from disposal in metric tons, and a breakdown of this total by composition and/or recovery operations

Waste certifications

Use waste certifications programs to measure, improve, and recognize your organization's zero waste performance (e.g., TRUE, Carbon Trust, SCS Global Services, Green Circle, NSF Landfill-Free Verification)

Waste generation impacts

Use GRI 306-1 to disclose the actual and potential waste-related impacts to waste generated in the organization's own activities or to waste generated upstream or downstream in its value chain

Waste generation composition

Use GRI 306-3 to disclose the total weight of waste generated in metric tons, and a breakdown of this total by composition of the waste

Measurement approaches *

There are several frameworks to measure circular KPIs. CTI and Circulytics are some of the most referenced, but businesses can select what helps them best capture and report data.

Circular Transition Indicators — Circular Inflow

Circular outflow assesses a business' ability to design outflow to be recoverable and recover said outflows.

Recovery potential is generally no potential (0%) or full potential (100%) and Actual recovery assesses the amount recovered at the end of its initial lifecycle., varying for biological and technological cycles. (CTI)

Applicable Section	Sample Calculation Methodology
% circular outflow (per material flow)	% circular outflow = % recovery potential x % actual recovery

CIRCULYTICS™ — Product & Material Inflows

Processing waste assesses the waste that goes to landfill or incineration from products designed to be consumed (6b.) and used (6c) (EMF)

Applicable Section	Sample Calculation Methodology
6b. & 6c. Processing waste	% processing waste = total waste incinerated (metric tons) / total processing waste (metric tons)

Data sources *

1. Operational data on resource consumption
2. Location based facilities data
3. Environmental management systems
4. Vendor data

Sector Supplement: Operational Waste

Textiles

By 2050, textiles production could use more than 25% of the carbon budget for a 2°C pathway, with operational inefficiencies responsible for 12% of the industries waste, from offcuts and overstock liquidation (EMF)

Sector specific considerations to accelerate achievement of target

- **Off-cuts:** 25% of materials are cut off during production – leveraging software to analyze and reduce offcuts through direct reuse in production also increases profitability
- **Open-source platforms:** Enable increased transparency and information sharing, offering a route to rapid adoption of innovation, improved processes and resource reduction
- **Sizing customization:** New technologies, e.g., 3D body-scanning and body-mapping analysis, could enable on-demand manufacturing and waste reduction
- **Innovation:**
  - Solvent recovery in cellulose-based fiber production
  - Locally printed and distributed 3D printed clothing that is easily assembled by the customer

Source(s): A new textiles economy: redesigning fashion's future;

Supplemental guidelines & disclosure requirements *

Existing legislation:

- EU EC Textiles Strategy to ensure CE principles are applied to production, products, consumption, waste management and secondary raw materials

Upcoming disclosure requirements:

- EU Waste Framework Directive enforcing separate textile waste collection in 2025

Tools:

- The Material Circularity Indicator (MCI) is an assessment tool for companies to improve product design and material procurement, with detailed appendices for calculating and tackling production losses
- The Higg Index comprises of five tools that assess the social and environmental impacts of products, with specific facility measurement tools

Additional resources

ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation is supporting business leaders in the textiles industry via their interactive learning hub and collaboration across their global network

- A new textiles economy: redesigning fashion's future;
- EMF global network

Plastics

Global plastic waste generation more than doubled from 2000 to 2019 to 353 million metric tons, with nearly two-thirds from plastics with lifetimes of under five years (OECD)

Sector specific considerations to accelerate achievement of target

- **Localization:** Localized and digitized production reduces packaging requirements for transport and protection, e.g., plastic film, as blanket wraps tend to be used
- **Shared design:** Standardizing reusable PET bottles across brands optimizes operations for sorting and transportation and avoids production of 1.8B single-use bottles in Latin America annually
- **Dematerialization:** Light-weighting innovation captures significant material savings for production and usage of plastic packaging. However, it requires balancing to avoid aggravating system leak aging and creating a lock-in into linear infrastructure
- **Innovation:**
  - Nano-printing reduces plastics volume required, simplifying material content by layering at the micron scale and building material from the bottom up

Source(s): Upstream innovation: a guide to packaging solutions; The new plastics economy: rethinking the future of plastics

Supplemental guidelines & disclosure requirements *

Tools:

- The Material Circularity Indicator (MCI) is an assessment tool for companies to improve product design and material procurement, with detailed appendices for calculating and tackling production losses
- Plastic Leak Project (PLP) to map, measure and forecast plastic leakage along the value chain
- ReSource footprint tracker provides a standard methodology to track plastic footprints and publicly report on progress of plastic waste commitments

Guidelines:

- 3R Initiative guidelines for corporate plastic stewardship, incl. assessment metrics

Upcoming disclosure requirements:

- CDP are introducing plastic to corporate disclosure, proposing reporting on total volumes of plastics used and feedstock types

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Products and materials
- WBCSD community

Sector Supplement: Operational Waste

Food

Manufacturing processes contribute to a significant portion of food waste due to a lack of standardization of processes, resulting in on average 1 ton of food being lost for every 35 tons of food produced (Brunel University)

Sector specific considerations to accelerate achievement of target

- **Prevention:** Transitioning to a circular food system largely requires eliminating food waste before and during production, predominantly by prevention and redistribution
- **Processing:** Use integrated crop-livestock systems to improve production efficiency and nutrient cycling and minimize the negative impacts of intensive farming
- **Packaging:** Improving the long-term resistance of products to spoilage, e.g., canning, pickling, drying, reduces quantity of damaged food, with next generation approaches on the rise, e.g., thin lipid coating of fruits and vegetables from organic sources
- **Handling and storage:** Limited refrigeration and food processes lead to large storage losses, yet innovative, cheap alternative storage systems provide powerful technical solutions, e.g., evaporative coolers, and PICS bags to reduce pest damage

Source(s): Food and agriculture roadmap; Creating a sustainable food future

Supplemental guidelines & disclosure requirements *

Upcoming EU regulation:

- The new CAP in 2023 will have stronger requirements, e.g., PDO and PGI supply regulation will extend to all sectors; optional sustainable processing criteria markers. The Commission will also propose an improved methodology for incorporating climate tracking through delegated regulation for application after 2025

US regulations:

- Environmental Protection Agency has consolidated laws and regulations that apply to agricultural operations by farm activity
- Resource Conservation and Recovery Act (RCRA) contains the regulations for non-hazardous and hazardous waste alongside other RCRA regulations

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Food and agriculture roadmap
- WBCSD community

Electronics

E-waste is the world's fastest growing waste stream, with a material value of $57B (CEP) and a $20-30B opportunity for embedding circularity in operations (Telia)

Sector specific considerations to accelerate achievement of target

- **Network infrastructure:** Largest impact originates from excavation of soil, stone and gravel during construction of networks accounting for 96% of total waste. Waste mitigation in infrastructure installation has an annual potential of $8B by 2030, and a further $8B annually can be realized through the resale of retired infrastructure
- **Manufacturing facilities:** Close the loop within own operations and manufacturing by reintroducing on-site waste materials, e.g. production by-products, back into the internal value chain, as well as improve recycling capabilities to accelerate achievement of zero waste certifications
- **Resource recovery:** Resale of infrastructure assets to re-circulate valuable metals
- **Network sharing:** Financially beneficial for providers to share network infrastructure since efforts do not need to be replicated per operator and fewer physical sites are needed while ensuring fast deployment of broadband offers, e.g., Telia and Telenor

Source(s): The Shift: the role of Telcos in the circular economy

Supplemental guidelines & disclosure requirements *

- Circular economy-related legislation is ramping up across the globe, with the EU setting a high bar and breadth of requirements
- **E-waste regulations are emerging globally, including:**
  - EU Waste Electrical and Electronic Equipment (WEEE) Regulation (2012)
  - UK Waste Electrical and Electronic Equipment (WEEE) (2018)
  - China Recovery and Disposal of Waste Electric and Electronic Products (2011)

EU action plans:

- The Circular Economy Action Plan has legislative and non-legislative measures to lead global efforts on circular economy, including reduction of electronic and electrical waste

Additional resources

CEP circular electronics partnership

The Circular Electronics Partnership aims to support business leaders in reimagining the value of electronic products and materials through their blueprint for action and partner and member community

- CEP: Our vision of a circular electronics industry
- CEP community

CEIC target-setting guidance is meant to be indicative and illustrative and is not a substitute for legal advice

* Non-exhaustive

Sector Supplement: Operational Waste

Capital Equipment

Capital equipment companies use over seven billion metric tons of raw materials each year to manufacture their products

Sector specific considerations to accelerate achievement of target

- **Circular design:** Refusing and reducing materials rank highest on the waste management hierarchy, and circular design strategies involving dematerialization and digitalization can support waste reduction in the manufacturing phase
- **Innovation:** 'Digital twins' as virtual models that reflect the properties of a physical product to enable predicative maintenance
- **Data centers:** Maximize utilization through visualization, alongside circular design / identification of re-use/upgrade options to tackle limited lifespan of servers - leaders are refurbishing decommissioned servers and assets into newly deployable servers e.g., Google and Microsoft
- **Digitalization:** Optimizes value intensity by using less hardware and fewer materials to deliver the same outcome or improve performance, consequently reducing waste
- **Servitization approaches:** Support high utilization rates and optimal usage through remote diagnostics and monitoring, predictive maintenance and scheduling upgrades to reduce manufacturing waste and idle equipment

Source(s): Measuring circularity for capital equipment

Supplemental guidelines & disclosure requirements *

- The Capital Equipment Coalition released a report titled High Level Insights on Circular Economy Policy Matters, which covered several policy focus areas that could hinder circular progress, including chemical legislation, cross-border movement of capital equipment and parts, and right to repair

Cross-border movement of waste:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal covers the transfer of hazardous waste around the globe. Potential updates to the convention could impact the trade of products for circular economy-related activities such as repair.

EU directives:

- The EU Waste Framework Directive (WFD)

Additional resources

CIRCLE ECONOMY

Circle Economy are aiding businesses, cities and nations to make tangible progress via their actionable resources and knowledge hub

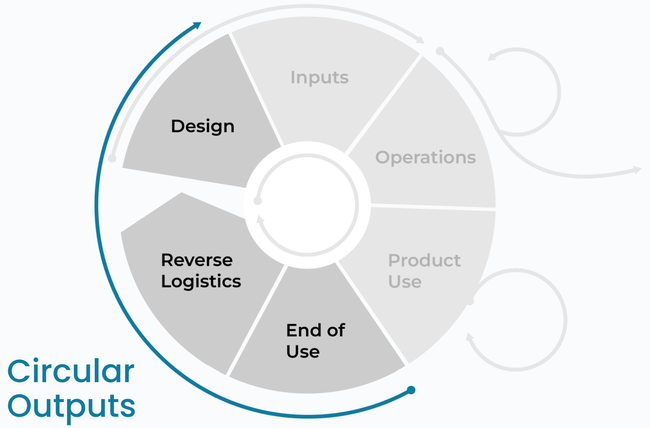
- Measuring circularity for capital equipment
- Circle Economy network

Outcome KPI Overview: Circular Outputs

Post-use waste recovered for re-use, upcycling or downcycling (total weight & %)

Description

Moving from linear model for design and production, to closing the loop, this KPI targets an increase in the share of addressable post-use waste, by weight, that is actually recycled (incl. re-used, upcycled, downcycled) following collection



Enabler KPIs

- Circular Design
- Output Collection
- Product Life Extension & Utilization

Supporting standards *

What:
International guidelines / definitions regarding the recycling and reuse of waste

Example standards:

ISO 14001
ISO 15270

GRI 306-2
GRI 306-4

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

Circular Transition Indicators — Circular outflows, % recovery type

CIRCULYTICS — 6f. Product & Material recirculation

Measured in: Metric tons, kg, %

Leadership examples

IBM:
Divert more than 90% of after-use plastic from landfill and incineration, towards circular channels, by 2025

Indorama:
Recycle 750 kt (50 bn) PET bottles p.a. by 2025

* Non-exhaustive

Circular Outputs

Post-use waste recovered for re-use, upcycling or downcycling (total weight & %)

Key impacts

In 2021, the recycling industry contributed over $115 billion to the US economy

45% of GHG emissions from material usage and production can be reduced by effective recycling

<1% of used clothing gets recycled into new garments, overwhelming developing countries

Why is this important?

There will be more plastic than fish in the ocean by 2050 given current production levels (Plastics Foundation), and each industry has contributed in different ways to this environmental impact story. For this and other reasons collection of end-of-use products is critical.

A functional circular system keeps products and materials at their highest value disposition. At the consumer use phase, this can be achieved by optimizing product durability and by deploying rental, repair, and sharing models. However, closing the loop at the end of a product's first useable life presents more complex challenges from a design, logistics, and handling perspective.

It requires complex and coordinated reverse logistics infrastructure to enable a useful product return flow. Processes and systems to track and analyze return volumes, product types, flow paths, and customer demand maximize circular revenues (Accenture; EMF). Prioritizing the waste hierarchy of "reduce, reuse, repair, recycle, recover, dispose," maximizes use and value. Measuring and tracking circular outputs monitors the success of the circular models and design-phase product innovation by reflecting actual post-use circular outputs (OECD).

What does success look like?

Owned by supply chain, ops, product marketing

Supply Chain: Manages overall supply chain management, with an end-to-end view of upstream design decisions and the implications for downstream recycling processes; considers partnership decisions and coordinates across the supply chain

Operations: Manages post-use waste intake for reuse and recovery

Product Marketing: Drives demand by creating post-use waste recovery customer engagement programs and awareness

Requirements for success at scale

- Support upfront CAPEX investment in recycling infrastructure, enabled by ongoing OPEX spend to run recycling operations
- Create stable, agile and routinely managed partnerships with third-party processing and handling facilities
- Maintain a robust and cost-effective logistics network to recover products post-use
- Embed circular economy expertise and ensure an understanding of the highest value reuse channels for products, materials and component parts
- Assess tradeoffs with other sustainability and non sustainability targets (e.g., energy, revenue, customer engagement)

Overcoming common challenges *

Illustrative prompts to initiate internal conversations

Q: **How can we ensure that we are pursuing the highest value use pathway for post-use products, component parts and materials?**

Supplier training; published guidelines; sustainability criteria for partner selection/procurement

Q: **Where do we assign accountability and responsibility for progressing the organization towards our recycled output targets?**

Publish a RACI; Assign leadership roles; Liaise with HR on cross-value chain responsibilities

Q: **How do we make sure that products are being designed and manufactured with recyclability in mind from the outset?**

Roll out sustainable design training; publish circular design principles; invest in circular incentives and rewards

Q: **How do we effectively measure and communicate the quantities of waste being processed across end-of-life channels?**

Upgrade product tracking technologies; ensure plug-in compatibility with supplier product handling systems

Leading examples

IBM

Send no more than 3 percent (by weight) of end-of-life product waste to landfill or to incineration for treatment. Recycle or reuse at least 97 percent (by weight)

As a part of their 21 goals for environmental sustainability, IBM has continued to expand their post-use waste recycling and reuse programs

Microsoft

Increase reuse of servers and components through Circular Centers

By 2025, 90% of servers and components within our regional datacenter networks will be reused

The Circular Centers model has achieved 83 percent reuse and 17 percent recycle of critical parts while contributing to the reduction of carbon emissions by 145,000 metric tons CO2 equivalent.

Steps to set a circular outputs target

1 Assess materiality and gather data

- What % of pre- and post-consumer waste is recycled at present?
- Is our organization operating at full capacity for current recycling infrastructure?

2 Identify initiatives and prioritize

- How should we prioritize waste channels for our product portfolio?
- Which product will have the highest positive environmental impact when recycled?

3 Set ambition and announce targets

- What existing waste targets have we set and are we on track to meet them?
- What are our peers committing to with regards to recycling?
- Are we positioned to be a potential market leader?

4 Execute strategies & report on achievement

- Where does accountability for recycling targets sit?
- What additional third-party, or internal, infrastructure is required to enable recycling at scale?
- Do we have adequate budget to invest in scaling recycling?

CEIC target-setting guidance is meant to be indicative and illustrative and is not a substitute for legal advice

* Non-exhaustive

Circular Outputs

Post-use waste recovered for re-use, upcycling or downcycling
(total weight & %)

Enabler KPIs *

Circular Design

Products and packaging designed with circular design criteria (%)

> Design products for re-use, repair, remanufacturing, and recycling

Output Collection

Post-use waste collected (total weight & %)

> Track weight and types of materials collected at end of use for potential reuse, upcycling, or downcycling

Product life extension & utilization

Improvement in average product use life and utilization rates
(total number of uses or total time period or %)

> Design durable products more likely to be reused or upcycled

How do you measure and report success?

Supporting standards *

Standards bodies like ISO, GRI, CDSB, and Cradle to Cradle can help businesses by providing guidance on how to define and communicate relevant circular information and impacts

Managing waste-related impact

Use GRI 306-2 to understand the waste-related impacts of your organization's activities across the value chain, incl. third parties, to support determination of mitigation strategies

Recovery and recycling of plastics waste

Use ISO 15270 to develop standards and specifications relating to the recovery of plastics from pre- and post-consumer waste, including recycling

Building environmental management systems

Use ISO 14001 to understand how an environmental management system could enhance your organization's environmental performance and achieve intended outcomes

Diversion of waste from disposal to further use channels

Use GRI 306-4 to understand the breakdown of waste produced and diverted from disposal, as well as an understanding of the breakdown of waste composition

Measurement approaches *

There are several frameworks to measure circular KPIs. CTI and Circulytics are some of the most referenced, but businesses can select what helps them best capture and report data.

CTI Circular Transition Indicators

Circular Outflow

The output recycled can be determined using the circular outflow methodology and restricting the calculation to post-use material flow waste that is recovered for reuse (CTI)

Applicable Section	Sample Calculation Methodology
% circular outflow	$\text{\% circular outflow} = \frac{(\text{\% circular outflow A} * \text{mass A}) + (\text{\% circular outflow B} * \text{mass B}) + (\text{\% circular outflow C} * \text{mass C})}{\text{total mass of all outflow (A+B+C)}} \times 100$

CIRCULYTICS™

Product & Material Recirculation

Product & Material recirculation in practice counts the first cycle of recirculation, after initial use, within and outside of a company's own operations (EMF)

Applicable Section	Sample Calculation Methodology
6f. Part 1 – % (by mass) of products and materials recirculated in practice after initial use 6f. Part 2 – Average number of uses products have before reaching the end of their functional life	$\text{\% recirculated products/ materials} = \frac{\text{Mass of products/materials recirculated (metric tons)}}{\text{Total mass of products/ materials produced (metric tons)}} \times 100$

Data Sources *

1. ERP or product lifecycle or materials management systems
2. Supplier declarations
3. Third-party waste handling and processing quantities
4. Outflow (mass)

* Non-exhaustive

Sector Supplement: Circular Outputs

Textiles

Effective recycling, and broader circular transformation, could unlock an estimated $500bil for the industry (EMF); currently less than 1% of material used to produce clothing is recycled (EMF)

Sector specific considerations to accelerate achievement of target

- **Design:** Align on circular processes across the value chain so that textiles are designed and selected based on their compatibility with recycling technologies
- **Data:** Drive data harmonization and consider sharing data across platforms to obtain a data-driven view of materials to inform decision making on post-consumer materials, to keep products in their highest value for as long as possible, e.g., decide the best option between resell, upcycling or recycling
- **Logistics:** Implement, scale and advertise textile collection networks across new and existing markets and provide clear guidelines for consumer best practices
- **Demand:** Accelerate demand for recycled materials through transparency, communication and clear commitments to using recycled inputs in products
- **Upcycling:** Enables materials to be converted into new materials or products of better quality and/or higher value, giving materials a second useful life
- **Innovation:** Invest in technological innovation for textile sorting and recycling to increase the quality and economics of material recycling outputs and processes

Source(s): A New Textiles Economy

Supplemental guidelines & disclosure requirements *

EU framework:

- The EU strategy for sustainable and circular textiles (2020) aims to ensure that by 2030 textile products placed on the EU market are long-lived and recyclable, made as much as possible of recycled fibers and free of hazardous substances

Supplementary standard:

- The Recycled Claim Standard (RCS) and Global Recycled Standard (GRS) set requirements for third-party certification of recycled input and chain of custody according to ISO norms

Guidelines

- Ellen MacArthur's Circular Design for Fashion Book offers industry-wide design guidelines, supporting process alignment and facilitating greater value capture through recycling

Additional resources

ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation is supporting business leaders in the textiles industry via their interactive learning hub and collaboration across their global network

- A new textiles economy: redesigning fashion's future;
- EMF global network

Plastics

Currently only 9% of plastic waste is recycled (OECD) but demand is increasing, and the recycled plastics market is estimated to grow with an average CAGR of 8.5% from 2022-2027 (MDF)

Sector specific considerations to accelerate achievement of target

- **Design:** Communicate closely across the value chain to enable collaboration on the redesign and convergence of materials, formats, and after use systems for plastics
- **Demand:** Enable secondary markets and increase the viability of post-use plastics through industry partnerships and collaborations
- **Logistics:** Improve and scale after-use collection and storage infrastructure to handle high processing quantities and prevent leakage
- **Innovation:** Weight innovation investment towards opportunities with the potential to scale reprocessing technologies and/or improve material quality

Source(s): The New Plastics Economy

Supplemental guidelines & disclosure requirements *

Existing and upcoming legislation:

- The EU's Packaging and Packaging Waste Directive relates to the management of packaging waste and prevention; includes measures to reduce the impact of packaging and packaging waste by setting recovery and recycling targets
- European Commission proposed measures to tackle packaging waste, including target for all packaging to be recyclable by 2030

Certification:

- Sustainable Certifications Group: award Sustainably Sourced Plastic (SSP) Certification, utilizing the BSI Flex 6228 standard to physically measure recycled content % in PET

Commitment/coalition & tools:

- The Global Commitment 2022 tracks progress towards a circular economy for plastics across key metrics including post-consumer recycled content
- ReSource footprint tracker provides a standard method to track plastic footprints and publicly report on progress of plastic waste commitments

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Products and materials
- WBCSD community

Sector Supplement: Circular Outputs

Food

One third of all food produced in the world for human consumption never reaches the table, resulting in 1.3B metric tons of food waste (FAO)

Sector specific considerations to accelerate achievement of target

- **Prevention:** Transitioning to a circular food system largely requires eliminating food waste before it reaches a post-use phase, predominantly through prevention and redistribution
- **Innovation:** There is a limited, but growing, market for organic matter processing solutions. Innovative technologies such as biological digestion, non-biological volume/weight reduction and thermal processing can convert organic matter into a variety of commercial outputs

Source(s): A circular economy for food will help people and nature thrive

Supplemental guidelines & disclosure requirements *

- The EU's Farm to Fork Strategy, presented on 20 May 2020 by the European Commission, aims to create a sustainable EU food system that safeguards food security and protects people and the natural world

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Food and nature
- WBCSD community

Electronics

An estimated 50 million metric of electronic waste is thrown away each year, of which only 17.4% gets collected and recycled (UNEP, WEF) this waste amounts to over $62.5bil, which is more than the GDP of most countries (UNEP)

Sector specific considerations to accelerate achievement of target

- **Design for circularity:** Embed circular principles from the design phase of a product's lifecycle to extend consumer use phase and enable ease of disassembly at end of life
- **Logistics:** Design, develop and market appropriate collection and logistics infrastructure to facilitate consumer participation, streamline processes for waste shipment and ensure appropriate handling of e-waste
- **Safety & regulations:** Assess whether local labor laws and safety regulations are sufficient to adequately protect workers from hazardous materials and, where necessary, set more robust safety protocols on site that local regulations require

Source(s): Circular electronics partnership: our vision of a circular electronics industry

Supplemental guidelines & disclosure requirements *

International agreements:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal covers the transfer of hazardous waste around the globe. Potential updates to the convention could impact the trade of products for circular economy-related activities such as repair.
- The North Sea Resources Roundabout is a voluntary international agreement between France, the Netherlands, the UK and Flanders to support a circular economy of secondary resources; the NSSR has recently launched a fast-track pilot notification for shipments to compliant EU e-waste recyclers

Additional resources

CEP circular electronics partnership

The Circular Electronics Partnership aims to support business leaders in reimagining the value of electronic products and materials through their blueprint for action and partner and member community

- Circular electronics system map
- CEP community

Sector Supplement: Circular Outputs

Capital Equipment

Capital equipment production uses 6 billion metric tons of raw materials a year (ING) and designing capital goods for ease of recycling represents a significant opportunity to unlock further value

Sector specific considerations to accelerate achievement of target

- **Design:** Designing capital equipment for circularity by incorporating modularity allows manufacturers to recover valuable component parts for repair, reuse or recycling
- **Supply Chain:** The complexity of capital equipment supply chains make circular transformation challenging; clear communication, supplier incentives and accountability are important to embracing a collaborative approach
- **Collaboration:** Stronger ecosystem mobilization is required between peers, competitors and public organizations to collaborate pre-competitively and enable recycling efficiencies

Source(s): Measuring Circularity for Capital Equipment; Capital goods: Transforming a key driver of the global economy

Supplemental guidelines & disclosure requirements *

The Capital Equipment Coalition released a report titled High Level Insights on Circular Economy Policy Matters, which covered several policy focus areas that could hinder circular progress, including chemical legislation, cross-border movement of capital equipment and parts, and right to repair

Cross-border movement of waste:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal covers the transfer of hazardous waste around the globe. Potential updates to the convention could impact the trade of products for circular economy-related activities such as repair.

EU directive:

- The EU's the Waste Framework Directive sets out a legal framework for dealing with waste and includes definitions of waste, recovery and recycling, in addition to outlining the concept of waste hierarchy and extended producer responsibility ('EPR')

Additional resources

CIRCLE ECONOMY

Circle Economy are aiding businesses, cities and nations to make tangible progress via their actionable resources and knowledge hub

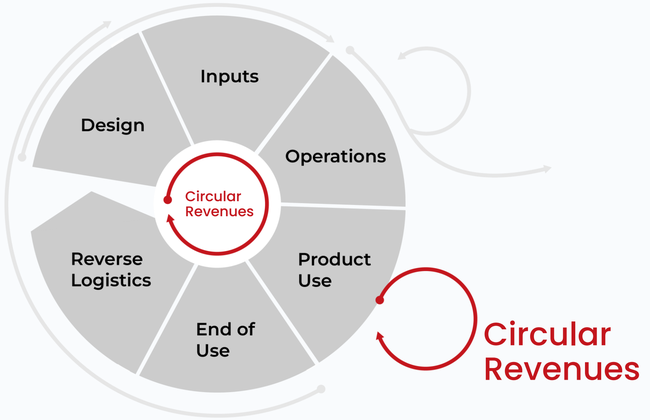
- Measuring circularity for capital equipment
- Circle Economy network

Outcome KPI Overview: Circular Revenues

Revenue from circular products, services and solutions (total monetary value & %)

Description

Shifting away from the linear economy “take-make-waste” model, this KPI captures the share of revenue generated from circular products, services and solutions, with the goal of decoupling economic parameters from resource use***



Enabler KPIs

- Circular Design
- Output Collection
- Product Life Extension & Utilization

Supporting standards *

What:
International guidelines / definitions for circular business model implementation are still under development, but some existing and upcoming standards are below

Example standards:

ISO 14008 ISO 59032.2 **
ISO 59010 **

GRI 201

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — CTI revenue (for a company)

CIRCULYTICS — 7a. Part 1 & 2 Circular Services

Measured in: Monetary value, %

Leadership examples

Philips:
Generate 25% of revenues from circular products, services & solutions by 2025

Enel:
Double their “Economic CirculAbility ©” performance by 2030 against a 2020 baseline

Selfridges & Co:
45% of transactions will come from circular products and services by 2030

Renault:
Generate >€1 billion in sales from circular products and services by 2030

CEIC target-setting guidance is meant to be indicative and illustrative and is not a substitute for legal advice

* Non-exhaustive; **Under Development, *** There is no standard definition for circular revenue today, but examples of circular products, services, and solutions are included in the activation guide. A number of businesses (e.g., Philips, Enel) are exploring full value chain KPIs, leveraging parameters such as revenues and EBITDA, reflecting a shift towards circular business models.

Circular Revenues

Revenue from circular products, services, and solutions (total monetary value & %)**

Key impacts

$200B savings per year can be realized by the circular economy by 2040

80% reduction in ocean bound plastic can be realized by the circular economy by 2040

<700,000 net additional jobs can be created by the circular economy by 2040

Why is this important?

As customer preferences shift and market policies tighten, circular models are fast becoming not just a strategic advantage, but a competitive necessity (EEA; EC). Research has found 40% of consumers strongly consider values-driven attributes in their decision making (Accenture), contributing to the estimated $4.5 trillion total value at stake from a circular economy by 2030 (Accenture).

Responding to this foundational shift in contemporary business, organizations are deploying circular business models across the value chain to create bespoke and innovative new supply chains that minimize waste, preserve value, and regenerate nature (EMF).

While circular business models reap financial returns by shrinking waste and optimizing resource usage, it remains challenging and expensive to reshape legacy linear infrastructure and systems and decouple growth from resource use. Measuring circular revenue enables organizations to track the financial stability and integrity of circular models. To drive meaningful, long-term change, circular business models must be robust, sustainable and, crucially, commercially viable.

What does success look like?

Owned by finance & strategy

Finance: Manages the tracking of cash flow and financial planning; accountable for ensuring financial returns on investment in circular models

Strategy: Manages forward-looking strategic planning process and execution; accountable for integrating circular revenue streams into broader company priorities often in collaboration with product management

Requirements for success at scale

- Identify and scale new, or existing, circular business models across the value chain
- Ensure accurate measurement and data collection across the value chain to monitor actual end-to-end costs and resource use
- Anticipate and mitigate cannibalization of existing revenue streams through new circular channels
- Invest in consumer research and marketing to ensure, and respond to, customer demand for specific circular products and services
- Assess tradeoffs with other sustainability and non sustainability targets across the value chain (e.g., revenue, compliance)

Overcoming common challenges *

Illustrative prompts to initiate internal conversations

Q: How can we understand and overcome market specific legal and regulatory barriers, and anticipate policy and regulations changes?

Seek local, market-specific specialist advisory support; Expand remit of existing legal and regulatory teams to circular risk assessment

Q: Where can we find the CAPEX budget to cover the high upfront costs of establishing new revenue streams and business models?

Allocate dedicated CAPEX and OPEX budget to cover the development and running of circular business modes; integrate circular revenues into long-term financial models

Q: How can we gauge and grow buy-in for circular business models across the business from an executive leadership level?

Introduce circular leadership rewards, incentives and remuneration; Create and roll out circular training materials; position circularity centrally within company communications and strategy

Q: How can we assess and update internal financial and reporting structures to ensure they are agile and futureproof, to support growth?

Invest in updating and replacing legacy systems; seek expert external advisory support on circular reporting solutions for your organization

Leading examples

Philips

25% of revenue from circular products, services and solutions by 2025

Circular revenues accounted for 16% of Royal Philips' revenues in 2021. This reflects revenue from validated circular products and services as a percentage of total revenues.

Philips defines circular revenues as specific revenue streams from service, hardware, and software. More detailed revenue stream descriptions are included in their annual report.

Enel

Double their "Economic CirculAbility ©" performance by 2030 against a 2020 baseline

Enel had since 2020 a circular target that compared energy produced vs. resource consumed (raw material and fuels) to build and operate power plants.

The approach has now been extended to include all Group activities. This new KPI, 'Economic CirculAbility ©' calculates Group EBITDA (€) divided by the resources consumed (materials and fuels) in tons in all Group business activities. This KPI provides a complete picture of Group transition towards circular economy, monitoring the progressive decoupling of resource consumption and economic output.

Steps to set a circular revenues target

1 Assess materiality and gather data

- How are we already unlocking value through circular models within our organization, if at all?
- What circular targets have we set as a business?

2 Identify initiatives and prioritize

- What opportunities exist for circular revenue capture within our business?
- What are profitable business models and products that scale?
- How should circular revenue opportunities be prioritized, e.g., materiality and resource flows?

3 Set ambition and announce targets

- What circular revenue targets have we already published?
- How ambitious should our circular revenue ambitions be?

4 Execute strategies & report on achievement

- Who is responsible for overseeing the delivery of circular revenues?
- How can we effectively measure and report upon circular revenues?

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Circular Revenues

Revenue from circular products, services, and solutions (total monetary value & %)**

Enabler KPIs *

Circular Design

Products and packaging designed with circular design criteria (%)

Design products to enable circular business models, including product as a service

Output Collection

Post-use waste collected (total weight & %)

Track weight and types of materials collected at end of use for accurate accounting of revenues and costs within business model

Product life extension & utilization

Improvement in average product use life and utilization rates (total number of uses or total time period or %)

Design durable products for which value can be captured across multiple life cycles

How do you measure and report success?

Supporting standards *

Standards bodies like ISO, GRI, CDSB, and Cradle to Cradle can help businesses by providing guidance on how to define and communicate relevant circular information and impacts

Identifying revenue streams

Use GRI 201 to understand the economic value generation and distribution in your organization and to identify opportunities for circular revenue and growth

Evaluating revenue models

Use ISO 14008 as a framework to understand the monetary valuation of environmental impacts and related environmental aspects, as relates to your business model

Transitioning to circular revenues

Use ISO 59010** to understand how to transition business models and value networks from linear to circular

Reviewing business model implementation

Use ISO 59032.2** to review circular business model implementation with your organization

Measurement approaches *

There are several frameworks to measure circular KPIs. CTI and Circulytics are some of the most referenced, but businesses can select what helps them best capture and report data; approaches will vary as businesses progress their circular business models.

Circular Transition Indicators

CTI Revenue

A company can measure its circular CTI revenue for a business unit or company by leveraging the total CTI product revenue calculation which applies the circular inflow and circular outflows percentages to a products revenue (CTI)

Applicable Section	Sample Calculation Methodology
CTI revenue (company)	CTI revenue (company) = ∑ (CTI revenue A, CTI revenue B, CTI revenue C)

CIRCULYTICS™

Circular Services Revenue

The scope for circular service revenues is restricted to prescribed service categories: (i.) Consultancy and business support (ii.) Software (iii.) Services using products (iv.) Recirculation (v.) Other (vi.) None (EMF)

Applicable Section	Sample Calculation Methodology
7a. Part 1 – % service revenue from circular services 7a. Part 2 – Circular economy principles that the services highlighted in Part 1 have a positive impact on	% circular services revenue = (Revenue from circular services ($) / Total revenue ($)) x 100

Data Sources *

1. Total revenue
2. Revenue from circular products / services
3. Circular inflow
4. Circular Outflow

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Sector Supplement: Circular Revenues

Textiles

The industry relies on non-renewable resources that cause immense and growing pressure on planetary boundaries; collaborating across the value chain to decouple revenue and resources could lead to business model renewal and circular transformation, unlocking a USD $560B economic opportunity (EMF)

Sector specific considerations to accelerate achievement of target

- **Use extension:** Extending the use phase of a product through offering repair services and hosting resale platform plug-ins can enhance brand trust and unlock new service revenue channels
- **Ownership retention:** Clothing rental models are highly scalable, attract new demographics to existing customer base and offer a new financial opportunity for ongoing revenue per item

Source(s): A New Textiles Economy

Supplemental guidelines & disclosure requirements *

EU regulations:

- The EU Strategy for Sustainable and Circular Textiles EPR scheme is a regulatory measure which involves setting fees so companies pay for the costs associated with the end-of-life management of their products

EU framework:

- A framework for enabling circular business models in Europe uses the textiles industry as a case example for identifying actions that can be taken to implement circular business models effectively

Upcoming EU regulations:

- Ecodesign for Sustainable Products Regulation (ESPR) within the new Circular Economy Action Plan (CEAP) will lay the groundwork for the gradual introduction of a Digital Product Passport (DPP) to the textiles industry by 2024

Additional resources

ELLEN MACARTHUR FOUNDATION

The Ellen MacArthur Foundation is supporting business leaders in the textiles industry via their interactive learning hub and collaboration across their global network

- A new textiles economy: redesigning fashion's future;
- EMF global network

Plastics

Annually, 95% of the value of plastic packaging is lost to the economy (EMF). This represents a value opportunity of USD 80-120 bn at stake to be recovered through circular revenue channels (EMF)

Sector specific considerations to accelerate achievement of target

- **Design:** Embedding circular design principles into plastic product design can mitigate against substances of concern and lower downstream recycling costs, in turn creating safe and effective post-use channels with more commercially viable outputs
- **End-of-life:** Companies must commit to using post-consumer resin if they are to stimulate demand for recycled plastic materials and, in turn, grow associated revenue

Source(s): The New Plastics Economy

Supplemental guidelines & disclosure requirements *

Commitment / Coalition:

- The Global Commitment 2022 tracks over 500 companies' progress towards a circular economy for plastics across key progress metrics

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Products and materials
- WBCSD community

Sector Supplement: Circular Revenues

Food

Nearly a third of global food is wasted, whilst 10% people go hungry (EMF). Existing models of food production are unsustainable and highly wasteful

Sector specific considerations to accelerate achievement of target

- **Regenerative methods:** Transforming the global food system to embed regenerative, circular principles can create new revenue streams through redirection of surplus food, as well as new value capture from the commercialization of previously underutilized bi-products and waste outputs

Source(s): A circular economy for food will help people and nature thrive

Supplemental guidelines & disclosure requirements *

Supplementary benchmarks

- The 2022 Nature Benchmark, which has a dominant participant contingent of food and beverage companies, recently expanded their circular transformation indicator to cover nature and biodiversity; it considers circularity a strategy for nature-positive resource use

Additional resources

wbcsd

The World Business Council for Sustainable Development is supporting sustainable development through actionable business transformation pathways and roadmaps and collaboration across their global CEO-led community

- Food and Nature
- WBCSD community

Electronics

There is an estimated USD $57 billion in material value at stake that could be captured through circular channels in the electronics sector, with the development of efficient reverse logistics infrastructure to enable circular business models (Circular Electronics Partnership)

Sector specific considerations to accelerate achievement of target

- **Design:** Designing electronic products to enable prolonged use, disassembly and repairability by increasing durability and modularity can increase product value and create new revenue streams for sales of component parts
- **Use extension:** Hosting product refurbishment and resale models can grow brand trust and create new services revenues
- **Ownership retention:** Leasing and as-a-service models, whereby the supplier retains ownership and customers pay for use / service, enables ongoing revenue generation
- **End-of-life**: Electronic components contain an array of precious metals, there is high value at stake in retrieving these materials for sale / reuse at product end of life

Source(s): Circular Electronics Partnerships: our vision of a circular electronics industry

Supplemental guidelines & disclosure requirements *

Framework

- The Circular Electronics Partnership Framework sets objectives for key areas of the electronics value chain, from design to sourcing and manufacturing through to reverse logistics and recycling, to support the industry transition to circular models and revenues

Additional resources

CEP circular electronics partnership

The Circular Electronics Partnership aims to support business leaders in reimagining the value of electronic products and materials through their blueprint for action and partner and member community

- Circular electronics system map
- CEP community

Sector Supplement: Circular Revenues

Capital Equipment

The key defining attributes of capital equipment, such as its high complexity and cost, make it highly eligible for product-as-a-service (PAAS) models and the associated new revenue streams (PACE)

Sector specific considerations to accelerate achievement of target

- **Design:** Designing capital equipment to integrate circular principles, such as modularity and durability, is critical to enabling downstream circular business models, maximizing value while minimizing material inflows thus driving down costs
- **Use extension:** Circular strategies can support the lifetime extension of capital equipment by raising utilization rates, and subsequent revenues, through remote diagnostics, predictive maintenance, upgrades and advanced repair technologies
- **Ownership retention:** Servitization of capital equipment, through 'as-a-service' and leasing models, can increase the value intensity of equipment during the use phase, extend equipment lifetime and avoid impact
- **Value chain mapping:** Map all resource flows and related impacts, with an initial focus on key equipment (e.g., most material to the business, highest volume). Ensure alignment with business strategy and engagement of suppliers / customers to leverage possible innovation in the redesign of the value chain.

Source(s): Measuring Circularity for Capital Equipment; Capital goods:

Supplemental guidelines & disclosure requirements *

The Capital Equipment Coalition released a report titled High Level Insights on Circular Economy Policy Matters, which covered several policy focus areas that could hinder circular progress, including chemical legislation, cross-border movement of capital equipment and parts, and right to repair

Cross-border movement of waste:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal covers the transfer of hazardous waste around the globe. Potential updates to the convention could impact the trade of products for circular economy-related activities such as repair.

EU framework:

- The EU's the Waste Framework Directive sets out a legal framework for dealing with waste and includes definitions of waste, recovery and recycling, in addition to outlining the concept of waste hierarchy and extended producer responsibility ('EPR')

Additional resources

CIRCLE ECONOMY

Circle Economy are aiding businesses, cities and nations to make tangible progress via their actionable resources and knowledge hub

- Measuring circularity for capital equipment
- Circle Economy network

Glossary and Definitions

Metrics and KPIs

Metrics: We refer to metrics in terms of general measurement of circularity, via collection, calculation and compilation of information and/or data to determine circularity.

Indicators: Qualitative, quantitative or descriptive metrics used to measure circularity.

- **Key Performance Indicators (KPIs)** refer to strategically important indicators used to set measurable benchmarks against defined targets.
- **Outcome KPIs** measure the results of circularity processes, programs, and operating models at a company level. These KPIs should be used for public target setting, and are enabled in part by circular design, waste production & transparency, product life extension & utilization, and output collection.
- **Enabler KPIs** assess a company's progress towards the establishment of circular processes, programs, and operating models.

Tools and approaches

Circular Transitions Indicators (CTI): Developed by WBCSD, CTI is a simple, objective, and quantitative framework to measure circularity that can be applied to businesses of all industries, sizes, value chain positions and geographies. CTI is designed to be comprehensive, flexible, and complementary to a company's existing sustainability efforts and agnostic as to material, sector, or technology.

Circulytics: Developed by the Ellen MacArthur Foundation, Circulytics supports a company's transition towards the circular economy, through measuring business circularity, regardless of industry, complexity, and size. Going beyond assessing products and material flows, this free company-level measuring tool reveals the extent to which a company has achieved circularity across its entire operations.

Standards and certification bodies

International Organization for Standardization (ISO): An international standard development organization that develops and publishes standardization in all technical and nontechnical fields, including sustainability and the circular economy.

Global Reporting Initiative (GRI): An international independent standards organization that helps businesses, governments and other organizations understand and communicate their impacts on issues such as climate change, human rights and corruption.

Climate Disclosure Standards Board (CDSB): A non-profit organization working to provide material information for investors and financial markets through the integration of climate change-related information into mainstream financial reporting.

Cradle to Cradle Products Innovation Institute: An entity that hosts the Cradle to Cradle Certified® Products Program and sets a global standard for products that are safe, circular and made responsibly.

Regulations and disclosures

Corporate Sustainability Reporting Directive (CSRD): Determines which companies must report, on what topics, where and when. It will include mandatory disclosure requirements around resource use and the circular economy. Companies that meet the criteria and currently report against the Non-Financial Reporting Direct (NFRD) must file their first report in 2024 on 2023 performance, all others will file a year later in 2025, on 2024 performance.

European Financial Reporting Advisory Group (EFRAG): A private association established in 2001 with the encouragement of the European Commission to serve the public interest, member organizations are European stakeholders and national organizations with an interest in the development of IFRS and how they contribute to the efficiency of capital markets.

European Sustainability Reporting Standard (ESRS): Clarifies the information to be disclosed for each sustainability issue and how this should be reported; initial draft and technical advice is being developed by EFRAG.

- The ESRS most applicable to the circular economy is E5 Resource Use and Circular Economy (Nov 2022 draft).
- ESRS E5 highlights 6 disclosures that have been highlighted throughout this guide.

International Financial Reporting Standards (IFRS): Accounting standards issued by the IFRS Foundation and the International Accounting Standards Board.

European Ecodesign Directive: A directive covering product design, reporting, and labeling requirements that will be updated to potentially include a broader set of product categories, not just energy intensive products. Studies are underway with revision expected over the next several years.

Extended Producer Responsibility: A policy approach where producers are given a significant responsibility – financial and/or physical for the treatment and disposal of post-consumer products. Adoption varies across municipalities, states, and countries; businesses will have to manage increasingly inconsistent policies on the treatment and disposal of their products.

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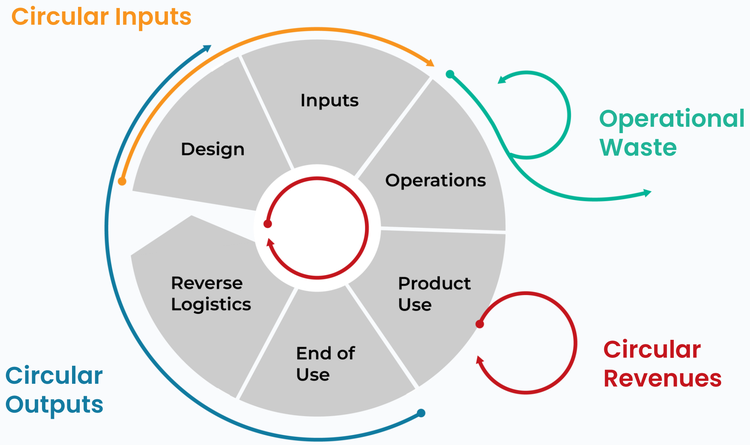
* Non-exhaustive

Enabler KPI Overview: Circular Design

Products and packaging designed with circular design criteria (%)

Description

Designing products and packaging in line with circular economy principles e.g., through compliance with an internal 'Design Guide' – this will be better defined and more prescriptive when taking a sector-specific view



Outcome KPIs

- Circular Inputs
- Operational Waste
- Circular Outputs
- Circular Revenues

Supporting standards *

What:
International guidelines / definitions on what constitutes a circular product

Example standards:

Cradle to Cradle Certified®

GRI 306-2a

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Recovery potential (%)

CIRCULYTICS — 6d. Part 2. Design principles

Measured in: %

Leadership examples

Cisco:
All new products and packaging to incorporate circular design principles by 2025

H&M:
Use the 'circulator' tool to design all products by 2025

CNH Industrial:
All new products developed using sustainability / recyclability design criteria by 2024

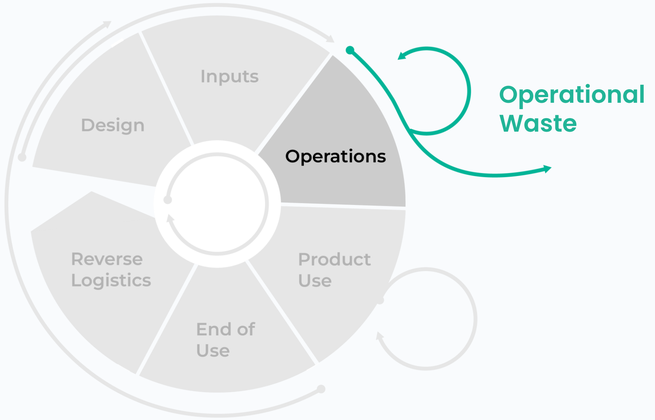
* Non-exhaustive

Enabler KPI Overview: Waste Production & Transparency

Reduction in waste produced across operations
(total weight & %)

Description

Rather than focusing on waste destinations, this KPI targets a reduction in the generation of operational waste from the outset, focusing on greater material efficiency and transparency



Outcome KPIs

- Operational Waste

Supporting standards *

What:
International guidelines / definitions on waste management

Example standards:

CDSB REQ-04

GRI GRI 306-3

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Circular outflow (%)

CIRCULYTICS — 6b. 6c. 0t. Total outflows

Measured in: Metric tons, kg, %

Leadership examples

Aramark:
Reduce food loss and waste by 50% by 2030 across operations

Mondelēz:
15% food waste reduction in internal manufacturing sites by 2025 (vs. 2018)

LyondellBasell:
Zero plastic pellet loss to the environment from our facilities

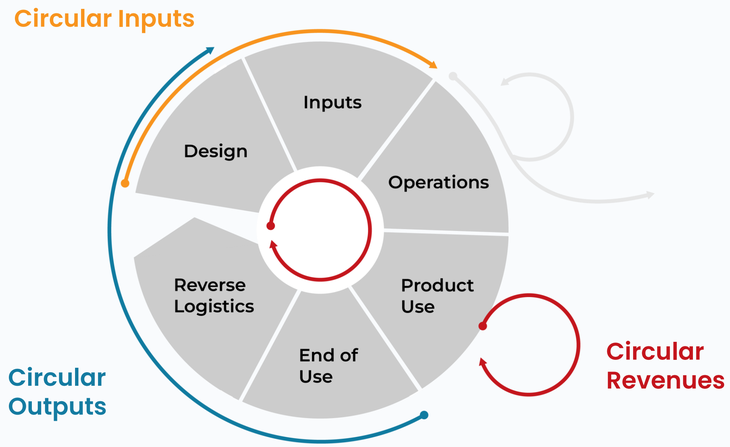
* Non-exhaustive

Enabler KPI Overview: Output Collection

Post-use waste collected (total weight & %)

Description

Targeting an increase in the share of post-use waste, and/or percentage of total volume of products sent to market, that is collected for recovery and thus enable re-circulation of material flows



Outcome KPIs

- Circular Inputs
- Circular Outputs
- Circular Revenues

Supporting standards *

What:
International guidelines / definitions for waste collection

Example standards:

ISO 24161

GRI 306-2

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Circular outflow (%)

CIRCULYTICS — 6f. Part 1 Outflows recirculated

Measured in: Metric tons, kg, %

Leadership examples

H&M Group:
Collect at least 25k metric tons of used clothing per year

Nike:
10x finished product waste collected and recycled or donated by 2025

Samsung:
Cumulative amount of end-of-life products recovered (5.0m metric tons in 2021)

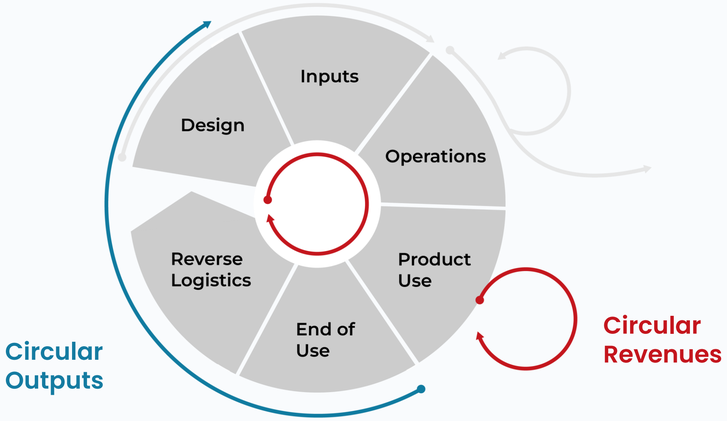
* Non-exhaustive

→ Enabler KPI Overview: Product Life Extension & Utilization

Improvement in average product use life and utilization rates (total number of uses or total time period or %)

Description

Targeting % increases in the lifetime and usage of product(s) (taken as average across portfolio), through circular business models (e.g., repair, refurbishment, remanufacture, reuse) and greater durability / reliability



Outcome KPIs

- Circular Outputs
- Circular Revenues

Supporting standards *

What:
International guidelines / definitions for claims relating to extended life products

Example standards:

ISO 14021

Measurement approaches *

What:
CTI and Circulytics are two of the most referenced frameworks for measuring circular KPIs, but businesses can select the method that helps them best capture and report data.

CTI Circular Transition Indicators — Actual lifetime

CIRCULYTICS — 6d. Product Outflows; 6f. Recirculation

Measured in: Uses, Time, %

Leadership examples

Zalando:
Apply the principles of circularity and extend the life of at least 50m fashion products by 2023

Ralph Lauren:
Connect consumers with options to rent, repair & recirculate products in select cities by 2025

* Non-exhaustive