Embedding
PROJECT

WASTE AND CIRCULARITY

Zero Waste

A GETTING STARTED GUIDE

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ABOUT THIS SERIES

This guide is part of our series of Getting Started Guides that supports your company to develop an embedded strategy. Each guide tackles a specific sustainability sub-issue and explores what your company needs to do to support the resilience of the environmental and social systems around you.

In each guide, we address relevant trends, system thresholds, key concepts, key actors, and key resources. We also offer guidance on how to address the impacts of your operational and value chain activities and develop credible goals as well as outlining key corporate actions and internal targets that can help to provide clarity on the work ahead.

We recommend you read the first guide in the series, *Getting Started Guides: An Introduction*, which explains our overall approach and clarifies the value of setting a clear strategy anchored in your company's most material issues. It also explains how you can leverage process-based interim targets to clearly outline the specific actions that your company needs to take to achieve its high-level goals.

A complete list of sustainability issues and sub-issues can be found in our guide *Scan: A Comprehensive List of Sustainability Issues for Companies*.

This guidebook addresses the sub-issue of zero waste as part of the broader issue topic of waste and circularity.

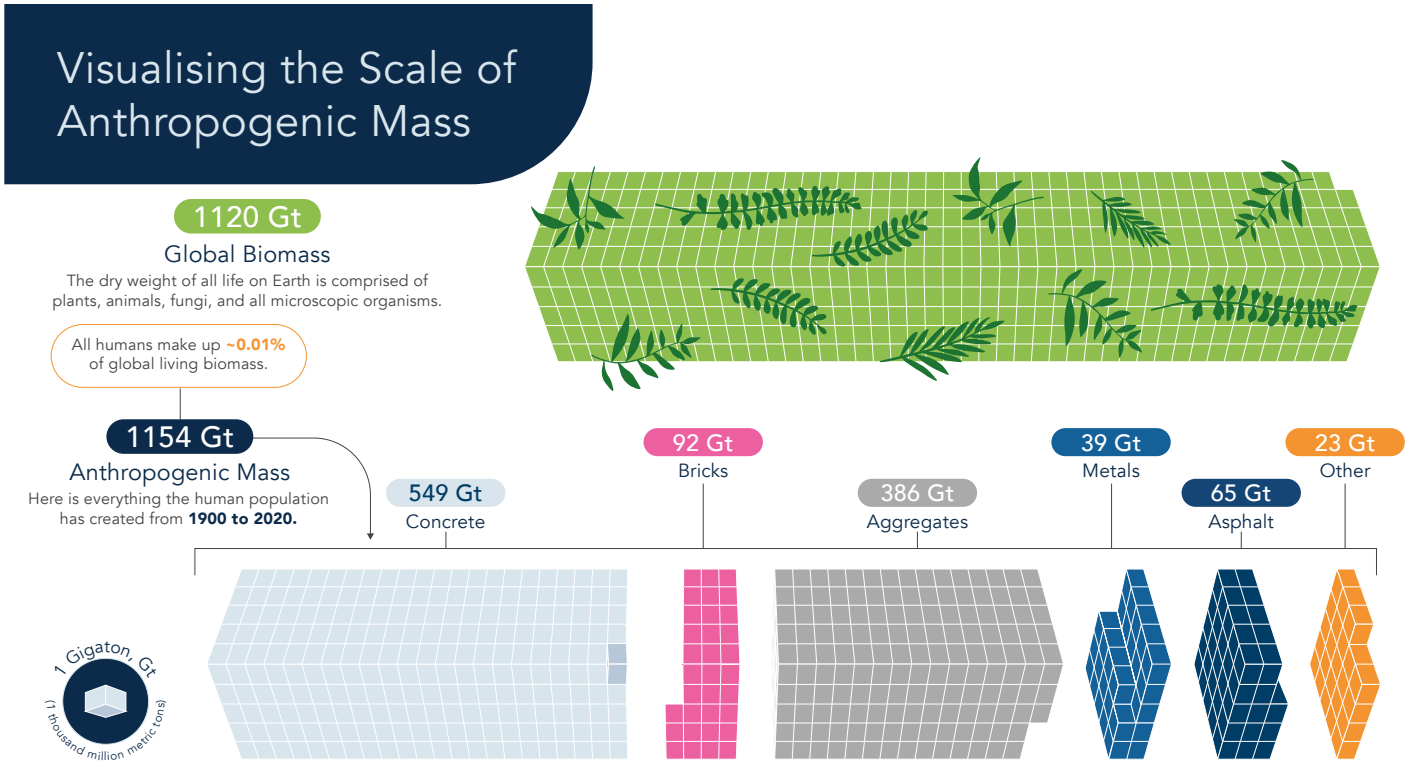
Zero waste can encompass a wide range of distinct activities, including operational waste, product stewardship, materials stewardship, and packaging waste. Often, the components of this work may sit within different functional teams in your organisation, but feature overlapping priorities.

This guide is focused primarily on taking action on **zero operational waste** to separate out different levels of work that will be required to reach this ambition. Efforts towards zero waste are intrinsically linked and complimentary to the work outlined in the *Product and Materials Stewardship: A Getting Started Guide* and *Packaging Waste: A Getting Started Guide.*

1 SETTING THE STAGE – OUR COLLECTIVE PROBLEM WITH WASTE

Each year, we consume more resources and, in the process, erode the environment that we all rely on. Continuing with our current 'linear' economy would require unlimited resources, unlimited ability to generate waste, and the unlimited capacity of natural systems to deal with that waste.

As depicted below, we have reached the point where human-made materials – such as concrete, glass, and plastic – exceed all global living biomass. Over time, much of this will ultimately become waste.



And, we are wasting more than ever before. Human activities generate large amounts of process residuals and waste (including tailings, slag, sludge, waste heat, fibers, shavings, fly ash); organic waste (including food waste, animal waste, human waste, paper and cardboard); textile waste; plastics; e-waste; building and construction waste; medical waste; and more. For example, nearly a third of all food produced each year is lost or wasted before it can be consumed and we currently produce more than 430 million metric tons of plastic each year, with over two-thirds attributed to short-lived single-use products. Without significant changes, waste generation will have nearly doubled by 2050. Waste is also responsible for 20% of the world's human-related methane emissions, further exacerbating environmental impacts.

How we manage (or mismanage) waste, from collection and transportation, to storage, landfilling, or dumping, risks contaminating soil, rivers, and oceans and can have lasting implications for the resilience of communities. Inadequate waste management by companies can affect the ecosystems services communities rely on, have impacts on the traditional lands that Indigenous Peoples are stewarding, undermine the liveability of communities, and generate long-term physical and mental health impacts. Waste spills and, in their extreme form, tailings incidents and hazardous waste spills, can have devastating consequences that can take decades to remediate (if remediable), and may result in environmental disasters and/or loss of life and livelihoods. The impacts of waste storage and management and related incidents can also affect human rights and the rights of Indigenous Peoples.

Improperly managed waste or waste-related incidents can cause harm and even compel community members to relocate, or lead to company-led or government-mandated resettlement in cases where the impacts are severe. Often, communities are not consulted or engaged in the design of waste management facilities, their planned lifespan and closure approach, or in emergency response planning in the event of incidents.

Additionally, the burden of our waste problem is not shared equally. Minority and low-income neighbourhoods and communities are often more likely to be sites for landfills and other waste sites, disproportionately impacting neighbourhoods or communities that may already face additional challenges. As a result, these communities are significantly more likely to suffer from exposure to heavy metals, persistent and volatile organic pollutants, infectious agents, and other toxic compounds that contribute to acute and chronic health implications.

Furthermore, practices such as exporting waste, legally and illegally, from high-income, high consuming countries to middle- or lower-income countries that often lack effective waste management infrastructure, systems, and regulations, can have devastating impacts. This waste trade often uses the pretext of further treatment, recycling or reuse, but as the UN's Global Waste Management Report 2024 states, "the global waste trade is vulnerable to corruption." For example, up to 90% of the worlds e-waste is illegally traded or dumped, and assessments of textile second-hand trade in Kenya suggest that 1 in 3 pieces of used clothing exported to the country are actually textile waste – a similar story of rising textile waste that is replicated by other investigations across nations in Africa, Asia, and South America. Externalising waste problems by disposing of waste in middle- or lower-income countries further exacerbates the stress on already fragile systems, and can have severe impacts on human health and the environment by polluting oceans, waterways, soils, air quality and degrading ecosystems.

2 THE NEED FOR A ZERO WASTE APPROACH

Our linear economy is simply not sustainable. There are growing calls for our societies and companies to find ways to preserve Earth's finite resources and eliminate waste.

That is why achieving 'zero waste' is becoming the new standard for business. Companies need to take action to understand and reduce their operational waste by diverting waste from landfills, rethink processes to avoid waste at the source where possible, and repurpose by-products. They also have an opportunity to streamline supply chains, embed materials stewardship into processes, enable circular approaches to production and consumption, and support reliable waste collection and recycling services in vulnerable or currently unequipped regions through engagement and targeted projects.

Note: *In these guides, a system threshold is defined as the point at which the resilience of an environmental, social, or economic system becomes compromised. This occurs when the total impacts imposed on the system exceed its capacity to assimilate those impacts.*

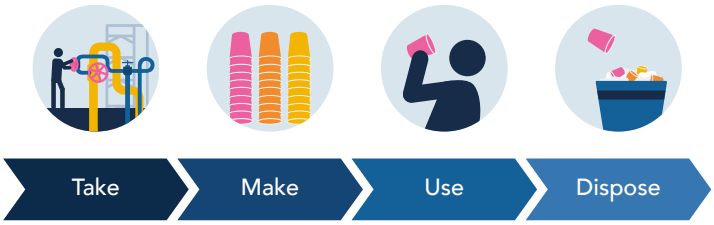
SYSTEM THRESHOLD: Excessive waste generation places stress on human health and biosphere integrity through landfill leachate, waste combustion, the accumulation of waste in natural systems, and other far reaching impacts – many of which will have long-lasting implications. Companies cannot continue to rely on Earth's or society's capacity to assimilate the waste that they produce. This means that they need to transition to operational processes that design out waste from the beginning, divert waste streams from landfills, limit the use of virgin and non-renewable resources, and ultimately achieve zero waste. Beyond understanding the waste they produce, companies also need to understand where the waste ends up, and ultimately, take steps to ensure that it is properly disposed in ways that do not harm communities and livelihoods around the world.

KEY TOPICS IN ZERO WASTE:

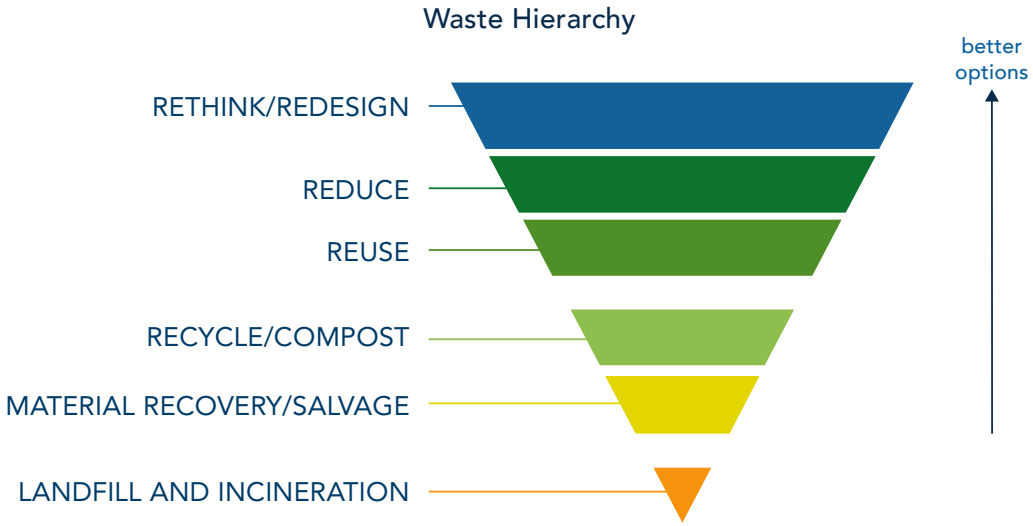
- Resource efficiency in your processes and your value chain
- Waste diversion
- Zero waste
- Minimising and addressing process residuals and waste (including tailings; slag; sludge; waste heat; fibres; shavings; fly ash)
- Organic waste (including food waste; animal waste; human waste; paper and cardboard); textile waste; plastics; e-waste; building and construction waste; medical waste; and other process residuals and waste
- The social implications of waste on people and communities

3 KEY CONCEPTS IN ZERO WASTE

Take-make-waste: Raw materials are collected and transformed into products that are consumed and then discarded as waste. This is often known as the take-make-waste model of our current linear economy.



Waste hierarchy: When tackling the issue of waste, the waste hierarchy is a helpful framework to identify and prioritise opportunities to reduce and eliminate waste.



Circular economy: A circular economy, as described by the Ellen MacArthur Foundation, is "a [proposed economic] system where materials never become waste and nature is regenerated. In a circular economy, products and materials are kept in circulation through processes like maintenance, reuse, refurbishment, remanufacture, recycling, and composting."

Additional terms and definitions:

Linear economy: "A system where resources are extracted to make products that eventually end up as waste and are thrown away. Products and materials are generally not used to their full potential in a linear economy and, as the name suggests, always move in one direction – from raw material to waste." Ellen MacArthur Foundation

Zero waste: "The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health." ZWIA

4 KEY PLAYERS IN ZERO WASTE

ZERO WASTE INERNATIONAL ALLIANCE

The Zero Waste International Alliance was formed in 2003 to promote positive alternatives to landfills and incineration and to raise community awareness of the social and economic benefits to be gained when wasted materials are regarded as resources, which can create both employment and business opportunities. It initiates and facilitates research and information sharing for the promotion of zero waste, builds capacity to effectively implement zero waste, and sets standards for evaluating the achievement of zero waste.

INTERNATIONAL SOLID WASTE ASSOCIATION

The International Solid Waste Association is an international network of waste professionals and experts from around the world whose mission is "to promote and develop sustainable and professional waste management worldwide and the transition to a circular economy."

CHAMPIONS 12.3

Champions 12.3 is a coalition of executives from governments, businesses, international organisations, research institutions, farmer groups, and civil society dedicated to inspiring ambition, mobilising action, and accelerating progress toward achieving Sustainable Development Goal Target 12.3 to halve food waste at the retail and consumer level and reduce food losses along production and supply chains (including post-harvest losses) by 2030.

THE INTERNATIONAL ALLIANCE OF WASTE PICKERS

The International Alliance of Waste Pickers (IAWP) is an international union committed to advancing the rights and strengthening organizing of waste pickers. It represents over 460,000 workers across 34 countries.

5 COMMITTING TO TAKE ACTION – MID- AND LONG-TERM GOALS

Committing to take action on zero waste can include addressing many of the key topics listed above. The mid- and long-term commitments that your organisation elects to make will be based on your identified priorities, areas of greatest impact, and your capacity to undertake the work required. It is important to note that this section does not provide all possible mid- and long-term goals related to this issue. Below, we share our understanding of current corporate action and goals by offering a sample of the goals that were most frequently adopted by organisations in our research.

Common mid- and long-term goals and/or commitments on **zero waste** include variations of the following:

Long-term goal: Zero waste to landfill by 20[XX]

- Achieve a waste diversion rate of [XX]% in direct operations by 20[XX].
- Reduce process residuals and waste by [X]% by 20[XX].

Long-term goal: Become a fully circular business by 20[XX]

- Design end-to-end circularity for operations by 20[XX].

Are you setting new goals or interested in benchmarking your goals against leading practice? To help advance progress in credible corporate sustainability goals, we maintain a public goals database containing leading sustainability goals and commitments set by large companies globally. Explore our Sustainability Goals Database for more mid- and long-term goals on zero waste.

6 HOW TO GET THERE – PROCESS-BASED INTERIM TARGETS

Note: *The following proposed timelines are only for guidance and are based on the pace outlined by other companies. The timeframe for actions and work for each step needs to be embedded in your organisational context, which may require different time allocations.*

YEAR 1: UNDERSTAND THE SOCIAL DIMENSIONS OF WASTE

Waste management can have significant impacts on the health, wellbeing, resilience, and livelihoods of communities. Your company will need to understand how your current waste management practices may be creating challenges for communities – from day-to-day impacts such as noise or odours, to possible long-term impacts such as resettlement – if waste is mismanaged. Explore how the current waste systems that your organisation is a part of may be exacerbating any of these social issues, grounding your understanding of the collective waste problem in your local context. Also aim to understand the crucial role of the informal waste sector in waste and recycling value chains, the challenges workers face, and how these may interact with your company's broader zero waste strategies. For instance, disrupting waste channels may have negative impacts on the livelihoods of informal waste pickers.

YEAR 1: ESTABLISH A WASTE BASELINE

Conduct waste and process audits to better understand waste profiles and sources. Build internal processes, tools, and skills to track and measure operational waste within your operations and establish a baseline. Identify the circular infrastructure available in the areas where you operate, the types of waste you produce, and where that waste ultimately ends up.

CASE STUDY: CHEP benchmarks circular flows of pallets

The pallet and container rental company, CHEP, developed a model to measure and track the circular flows of materials. This included KPIs such as asset return rates and reverse logistics efficiency. Using this data CHEP benchmarks its circular performance and identifies opportunities to optimise circular flows.

Example of process-based targets for Year 1:

By 20[XX], we will understand the social dimensions of waste within our local context, including risks of negative impacts from mismanaged wastes or potential impacts on the informal waste sector.

By 20[XX], we will establish accurate measurement and reporting processes for waste in our direct operations, to be able to quantify an operational baseline.

YEAR 2: IDENTIFY KEY AREAS OF IMPROVEMENT REGARDING OPERATIONAL WASTE

Identify key areas of improvement within your operations. Consider if operational processes can be redesigned or adapted with repurposing in mind, and mechanisms should be available to facilitate this repurposing. Identify opportunities for improvement, such as increasing efficiency, adapting operating processes, and introducing new technologies that help reduce operational waste from the beginning.

Example of process-based targets for Year 2:

By 20[XX], we will identify and prioritise key areas for improvement within our operations (incl. factories, offices, distribution centres, and warehouses) to reduce waste.

YEAR 3: SET INTERIM TARGETS AND DEVELOP AN ACTION PLAN

To begin, target your efforts at activities and sites that generate the most waste and consider which options for improvement are easiest to implement to jumpstart the process. Develop an action plan that outlines how you will reduce and eliminate avoidable waste. Site level and site managed waste management plans should cover all relevant waste types, such as raw material waste, manufacturing waste, warehouse waste, sales waste, and hazardous waste. Train employees in waste management best practices and engage them during the waste management planning process to support its uptake at sites. For many companies, implementing or enhancing stock monitoring, forecasting, and managing processes are helpful in reducing overproduction.

Set measurable long-term and interim targets that can be evaluated for accountability. These can be localised to each region of operation as each site may face different issues and have a varying access to waste collection infrastructure. Establish processes to track and analyse waste trends across your operations to evaluate your progress.

CASE STUDY: Lush's commitment to circularity

Lush has a long-term commitment to "becom[ing] a fully circular business, producing nothing that cannot be circled back through biological or available (not imaginary) technical cycles." Their zero-waste approach begins by designing out unneeded materials and maximising resource efficiency for materials still in use by making full use of all parts and by-products. The company has also established its own recycling centre in Poole, Dorset that directly handles waste from manufacturing and head offices and participates in various initiatives and collaborations that support waste reduction across different waste streams. The company also has commitments to ensure that none of their UK manufacturing waste is exported out to illegal dumps in other countries.

Examples of process-based targets for Year 3:

- By 20[XX], we will develop an action plan to reduce or eliminate operational waste.
- By 20[XX], we will have site level and site managed waste management plans covering all waste types: raw material waste, manufacturing waste, warehouse waste, sales waste, and hazardous waste.
- By 20[XX], we will train employees involved in waste management to come up with detailed action plans for reuse, recycling or recovery.
- By 20[XX], we will setup stock monitoring, forecasting, and managing processes to reduce overproduction.
- By 20[XX], we will establish collection and storage points at our sites to make waste segregation easier.
- By 20[XX], we will set goals addressing waste.
- By 20[XX], we will localise waste reduction efforts by setting goals for each region of operations.
- By 20[XX], we will have processes in place to track and analyse waste trends across all processes and geographies.

YEAR 4: BUILD ACCOUNTABILITY MECHANISMS

It is crucial to understand where the waste your organisation produces ends up. Create accountability measures and follow-ups to ensure that, beyond collection, waste is ultimately ending up in recycling or reuse systems as intended. This may include audits or other processes that clarify the processes of waste collection, sorting and other associated companies and services.

YEAR 4: WORK WITH SUPPLIERS TO REDUCE OPERATIONAL WASTE WITHIN YOUR VALUE CHAIN

Collaborate with suppliers to gain an understanding of the drivers of operational waste in their context and how procurement practices can support waste reduction throughout the value chain. Consider if interventions at lower tiers of the value chain can help prevent operational waste and possible ways your organisation can encourage and support suppliers to create waste reduction plans that align with your zero waste goals. Share insights from your journey, learn from the experiences of suppliers, and collaborate to co-develop solutions or offer training opportunities to transition to practices that reduce waste at production stages. Ensure that efforts to transition value chains to zero waste account for possible social impacts on communities and informal waste sectors.

Examples of process-based targets for Year 4:

- By 20[XX], we will build an accountability mechanism to ensure waste is going **where it needs to go.**
- By 20[XX], we will empower and train suppliers on practices to reduce waste in the production stage.
- By 20[XX], we will understand and learn from supplier experiences on waste reduction.
- By 20[XX], we will work with our suppliers to co-develop solutions on waste reduction across our value chain.

RESOURCES

GUIDANCE

UNDERSTANDING THE ZERO WASTE CRISIS

The What a Waste report by the World Bank outlines key trends of global waste generation and management, which can provide a good foundation to understand the waste crisis.

A joint effort between the United Nations Environment Programme and the International Waste Management Association, the Global Waste Management Outlook (GWMO) is an impartial, in-depth assessment of global waste management.

GUIDANCE ON ZERO WASTE IN OPERATIONS AND VALUE CHAINS

The Zero Waste Business Principles by the Zero Waste International Alliance (ZWIA) was established to guide and evaluate company commitments to zero waste and materials stewardship. Understanding and aligning with these principles can be a helpful first step to get started on organisational zero waste journeys.

Towards Zero Waste: A Guide to Creating a Zero-Waste Facility by ThermoFisher Scientific offers step-by-step guidance on practical and effective actions to promote zero waste on a site-level. It builds on the learnings from ThermoFisher's own zero waste journey to share insights and guide best practice in facilities management.

Buyers of recycled plastic generally do not understand the origin of the material, or the conditions under which it is collected and processed. Harmonized Responsible Sourcing Framework for Recycled Plastics, developed by the Circulate Initiative – with contributions from more than 40 organisations representing waste pickers, companies, and civil society – can help you extend your supply chain due diligence to the source of recycled plastic.

Principles for Corporate Engagement with the Informal Waste Sector by the Fair Circularity Initiative offers guidance on respecting and supporting the human rights of informal waste sector workers.

MEASURING PROGRESS AND DISCLOSURE

The momentum to step away from the linear take-make-waste economic model is growing, and transparency and alignment are crucial to establishing a common language across industries and governments. The Circular Transition Indicators (CTI) was created to address this gap. This resource introduces an objective and quantitative framework that can support businesses of all industries, sizes, value chain positions, and geographies to measure and communicate their circularity in a consistent way.

The GRI Standards enable organisations of all sizes to better understand and report on their impacts on the economy, the environment, and peoples, and in comparable and credible ways. GRI 306 can help you to disclose information on how your organisation prevents waste generation and how it manages waste that cannot be prevented, both within your operations and across your value chain.

TOOLS

E-waste is one of the fastest growing waste streams. This E-Waste Monitor from the United Nations Institute for Training and Research (UNITAR) can help you understand the scale and flows of e-waste around the world. It features global monitoring reports that provide an overview of e-waste statistics, relevant legislation, potential solutions, and health impacts. It also hosts a selection of regional- and national-level reports, future e-waste scenarios, and additional statistics.

The OECD Sustainable Manufacturing Toolkit is a good starting point for small- and medium-sized enterprises that want to improve the sustainability of their manufacturing operations. The toolkit has two parts: a guide, which introduces a seven-step framework that can help you to understand, measure, and improve your environmental performance, and a web portal that offers technical guidance on measurement and other relevant resources.

Launched by the Environmental Defence Fund, the Supply Chain Solutions Center is a "crowdsourced" knowledge resource hub. The library's current focus is on agriculture, energy, chemicals, waste, forests, and freight, and provides sustainability resources, best practices, case studies, reports, executive interviews, strategy templates, webcasts, and news that will support you in learning about these issues, assessing risk, setting goals, measuring, and reporting.

The Association for Supply Chain Management's SCOR model highlights key supply chain processes and offers optimisation guidance. The latest version reflects the shift from a linear supply chain to a more synchronic network, making it a valuable tool for understanding how a circular supply chain impacts specific teams and processes.

Explore more resources on zero waste here.

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