

Executive summary

- Companies need to prepare for their transition to the circular economy based on insights into their circular performance, risks, and opportunities.
- The Circular Transition Indicators (CTI) provide a universal and consistent way to measure a company's circularity.
- CTI helps companies assess their circular performance, set improvement targets, and monitor progress.
- The framework focuses on the circular and linear mass that flows through the company, with design, procurement, and recovery models being crucial factors.
- CTI provides insights into resource use optimization and the link between circular material flows and business performance.
- CTI does not evaluate absolute environmental and social impacts but shows how circularity contributes to sustainability objectives related to climate and nature.
- The value of CTI goes beyond calculation, providing guidance, analysis, and explanation of how circularity drives company performance.
- The CTI process helps companies scope and prepare assessments, understand risks and opportunities, prioritize actions, and establish SMART targets.
- CTI is inward-facing, quantitative, and based on demonstrable data.
- The CTI Online Tool, developed in partnership with Circular IQ, supports and guides companies through the assessment process.
- CTI v4.0 includes updates to the Impact of the Loop module, measuring the impact of circular strategies on sustainability targets.
- It introduces a methodology to measure the impact of using higher-value inflows and enabling the recovery of outflows on material carbon footprint.
- CTI v4.0 includes a new indicator to measure the impact on nature, starting with land use.
- The updated version of CTI invites companies worldwide to measure their circular baseline and demonstrate commitment to the circular economy.
- The changes in CTI v4.0 make it easier and more valuable for companies.

These key points highlight the importance of measuring circular performance, the role of CTI as a framework, and the updates in CTI v4.0 to incorporate greenhouse gas impact and nature-related indicators.

Circular Transition Indicators

- The world is currently only 7.2% circular, and the need to move away from a linear economic model is urgent to achieve sustainability goals.
- The Circular Transition Indicators (CTI) framework provides

- metrics for businesses to measure their circular performance.
- The wasteful trend of the take-make-waste model is unsustainable, and it hinders progress towards the Sustainable Development Goals (SDGs) and the Paris Agreement.
- Business must take action to deliver solutions for a net-zero emissions, nature-positive, and equitable world.
- Embracing circularity presents opportunities and a business case to use resources for as long as possible.
- The momentum for transitioning to a circular economy is growing, and both the private and public sectors are setting ambitious circular targets.
- The CTI framework helps guide companies in effectively transitioning to a circular economy and identifies associated opportunities.
- Transparency and alignment are crucial for establishing a common language across industries and governments to develop strategies and measure progress.
- The CTI framework, developed by 30 global companies through WBCSD's Products and Materials pathway, is objective, quantitative, and flexible.
- It identifies risks and opportunities, determines circular priorities, and sets targets for companies.
- The CTI framework does not replace existing sustainability frameworks but provides additional insights into circularity performance.
- It assesses material flows within company boundaries, measures resource efficiency and efficacy, and evaluates the value added by circular business.

These key points emphasize the urgency of transitioning to a circular economy, the role of the CTI framework in guiding businesses, and the importance of transparency and alignment in measuring circular progress.

Need for circular metrics

- Linear business models are increasingly exposing companies to market, operational, legal, and business risks due to finite resources and rising external costs.
- The business case for circularity lies in the opportunity for companies to create more value by using resources smarter through circular business models.
- The transition to a circular economy requires changes in business models, strategies, workforce skills, and government policies.
- To plan and set targets for a coordinated transformation, companies need a system of metrics that guide their decision-making in adopting circularity.
- A common approach to measuring and monitoring circular performance is crucial for industry-wide collaboration and value chains becoming value cycles.
- Existing protocols and standards for circular metrics converge on material flows as a common language for circularity across

industries and governments.

- There is a need for an inward-facing, quantitative approach and guidance to measure circularity for companies, complementing existing assessments and tools.
- The Circular Transition Indicators (CTI) framework incorporates material flows, water, renewable energy, and business value to provide a multidimensional perspective on a company's circular performance.
- The circular economy is an economic model designed to retain the value of circulating resources through innovative business models and practices like renewability, long life, reuse, refurbishment, remanufacturing, recycling, and biodegradation.
- CTI aligns with the circular economy principles of the Ellen MacArthur Foundation, including designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.

Use of CTI

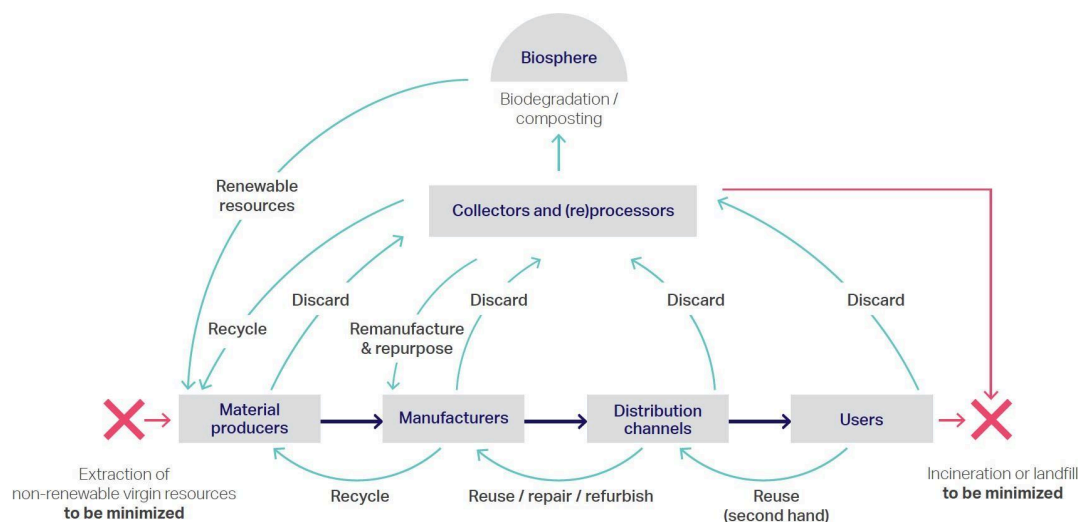
- CTI enables companies to identify circular opportunities and linear risks for improving longevity and resilience.
- Companies can set baselines and monitor progress on their circular transition using CTI.
- CTI helps companies respond to customers and external stakeholders, such as investors or civil society organizations.
- Value chain conversations on shared circular priorities can be initiated through CTI.
- CTI facilitates attracting new business by simultaneously advancing customers' circular objectives.
- Companies can prepare for disclosure to regulatory standards on circularity, such as the EU Corporate Sustainability Reporting Directive or GRI 306.
- The CTI framework is designed to be easy to implement and versatile in scope, allowing measurement of circularity at various levels within a business.
- WBCSD, the developer of CTI, aims to empower companies in their circular transition by providing insights into their circular economy potential.
- CTI is not a full-scope sustainability assessment and should not be used for benchmarking companies or industries on their overall sustainability performance.
- The company should carefully disclose the scope of the assessment and clarify that CTI results do not target non-sustainability marketing and promotional materials.
- An independent third party should assure the results of the CTI assessment.
- The CTI online tool, developed in partnership with Circular IQ, provides data structure, calculation, and support for CTI implementation.
- The online tool ensures data security and confidentiality, and it

- facilitates decision-making and progress tracking.
- The framework principles of CTI include simplicity, consistency, completeness and flexibility, complementarity, and neutrality.

A value chain effort

- Collaboration across the value chain is crucial for maximizing the value created in the circular economy.
- CTI serves as a catalyst for initiating cross-value chain conversations and pursuing shared goals.
- The distance from the red arrows in Figure 1 indicates the difficulty in obtaining information for companies in the value chain.
- The CTI online tool helps companies collect data from value chain partners while addressing privacy and confidentiality concerns.
- A Dutch telecom company engages with its suppliers through a Circularity Manifesto to ensure alignment in circular practices.
- Figure 1 provides a simplified representation of the value chain recovery system, highlighting different stages and resource flows.

Figure 1: Simplified representation of the value chain recovery system



The CTI methodology logic

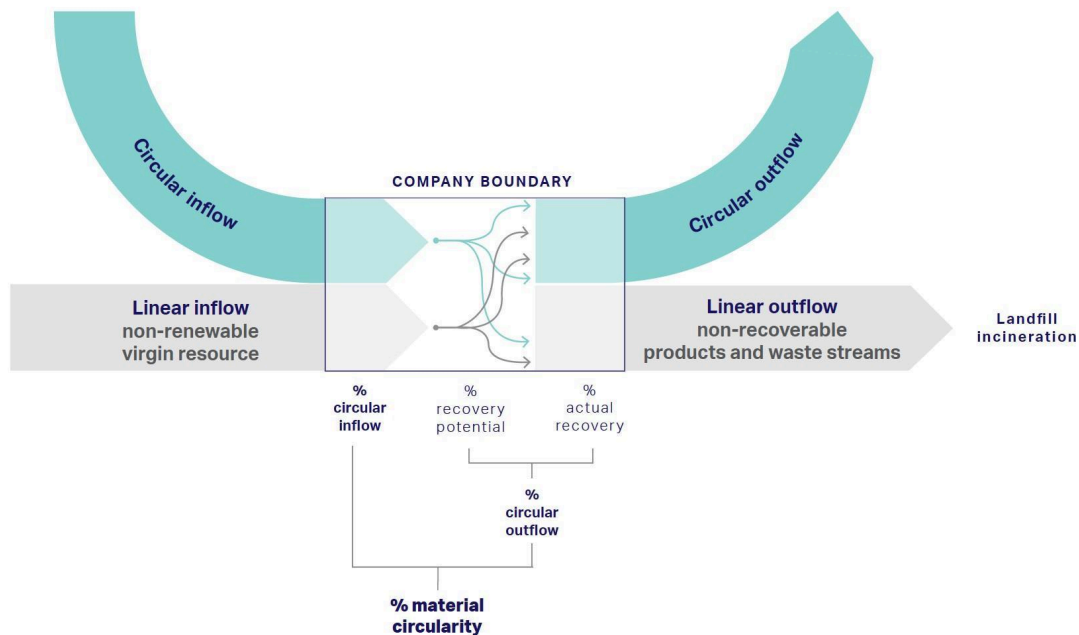
- CTI methodology is based on analyzing material flows within the company to minimize resource extraction and waste material.
- Three key intervention points are assessed: inflow, outflow-recovery potential, and outflow-actual recovery.
 - Inflow: Evaluating the circularity of the resources, materials, products, and parts sourced by the company.
 - Outflow - Recovery Potential: Examining how the company

designs its products to ensure the technical recovery of components and materials, such as through disassembly, repairability, recyclability, or biodegradability.

3. Outflow - Actual Recovery: Measuring the extent to which the company actually recovers products, by-products, and waste streams through various circular processes like reuse, repair, refurbishment, repurposing, remanufacturing, recycling, or biodegradation (including composting).

- Material flows encompass nutrients, compounds, materials, parts, components, and products.
- The company's product design influences the technical recovery of components and materials.
- Recovery refers to the technically and economically feasible recovery of materials through various processes.
- The assessment measures how effectively the company closes the loop and the circularity of sourced resources, materials, products, and parts.
- The company's actual recovery rate indicates the extent to which it recovers the outflow.
- Figure 2 provides an illustration of material flows and highlights the percentages of circular inflow, recovery potential, actual recovery, circular outflow, and material circularity.

Figure 2: Illustration of material flows



The indicators

- The CTI framework offers a **menu of indicators** that can be customized based on the specific needs and characteristics of any company, regardless of its size, sector, or position in the value chain.
- The indicators provided in CTI are designed **to assess various aspects of circularity within a company.**
- The Close the Loop module is a fundamental part of the assessment, and it includes indicators such as **% material circularity, % water circularity, and % renewable energy.**
- In addition to the Close the Loop module, companies can calculate indicators from **the Optimize the Loop module, which covers metrics like % critical material, % recovery type, actual lifetime, and onsite water circulation.**
- The Value the Loop module offers indicators such as **circular material productivity and CTI revenue** to provide further insights into the company's circular performance.
- **The Impact of the Loop module is a new addition to CTI, enabling companies to measure the impact of their circular strategies on sustainability indicators like GHG emissions and nature impact.**

1. CLOSE THE LOOP

- The Close the Loop module is used to assess the company's effectiveness in closing the loop on its material flows. It can be evaluated at different levels, including the company, business unit, facility, or product (group) level.
- The performance in closing the loop is expressed as **% material circularity**, which is a weighted average of **% circular inflow** and **% circular outflow**. **% Circular inflow** is determined by the **% non-virgin**

content and % renewable content, while % circular outflow is determined by the % recovery potential and the actual recovery. CTI provides specific guidance for assessing materials in both technical and biological cycles.

- The outcomes from the Close the Loop module include % material circularity, % water circularity, and % renewable energy.
- Water circularity is assessed at a local level for a water catchment area or local watershed, and it focuses on lowering freshwater demand and ensuring water resource availability. It is determined by % circular water inflow and % circular water outflow, which depend on local water conditions.
- The % renewable energy indicator measures the transition to renewable energy and is calculated based on the ratio of renewable energy consumption to total energy consumption.

2. OPTIMIZE THE LOOP

- The "Optimize the Loop" module provides insights on material criticality, resource-use efficiency, and higher value recovery strategies.
- The module includes indicators for assessing the percentage of critical inflow and the percentage of recovery types.
- The percentage of critical inflow measures the share of inflow considered critical, allowing companies to assess risk levels and prioritize accordingly.
- The recovery type indicator focuses on how companies recover outflow and recirculate it into the value chain, providing a breakdown of shares reused/repared, refurbished, remanufactured, recycled, or biodegraded.
- Lifetime extension strategies such as reuse, refurbish, or remanufacture retain higher value, slow down resource flows, and reduce waste and negative environmental impacts.
- Recycling is a circular strategy but does not lead to lifetime extension, so lifetime extension strategies should be preferred whenever possible.
- Designing durable products, implementing strategies for lifetime extension, and longer product lifetimes contribute to slowing down resource flows, reducing environmental impacts, and preserving economic value.
- The product's lifetime is the duration from release for use until becoming obsolete, influenced by durability, technical lifetime, and functional lifetime.
- CTI emphasizes designing for longevity and lifetime extension as circular practices.
- Companies should ensure that product lifetime extension strategies do not significantly harm efforts to mitigate climate change, protect water and marine resources, control pollution, and preserve biodiversity and ecosystems.
- The actual lifetime indicator in CTI measures how long a product stays in use compared to the industry average, promoting longer product lifetimes.
- Conditions such as repairability, upgradability, and reusability

facilitate extending the useful life of products.

3. VALUE THE LOOP

- The "Value the Loop" module focuses on illustrating the added business value of a company's circular material flows.
- It goes beyond material flows to highlight how circularity creates maximum value with minimum resources.
- Circular material productivity is an indicator that measures a company's effectiveness in decoupling financial performance from linear resource consumption.
- Circular material productivity is calculated by dividing revenues generated by the mass of linear inflow considered in the Close the Loop module.
- Higher circular material productivity indicates a better ability to decouple financial performance from linear resource consumption.
- CTI revenue is a measure of the value created through circular investments.
- CTI revenue is calculated by multiplying the weighted average of the percentage of circular inflow and percentage of circular outflow by the revenue generated by a product, product group, or business unit.
- CTI revenue reflects the revenue adjusted for the material circularity of a company's product portfolio.
- Higher CTI revenue indicates a better ability to generate revenues from circular products/business and reflects decoupling as revenues increase from circular flows.
- The current methodology for CTI revenue is based on material circularity and does not include revenue measurement for services and digital solutions.

4. IMPACT OF THE LOOP

- Transitioning to a circular economy is crucial for addressing major global challenges such as the climate emergency, nature loss, and growing inequality.
- Shifting to a circular economy offers multiple benefits for both people and the planet, including reducing greenhouse gas emissions, minimizing pressure on nature, creating new jobs, increasing resource access, and promoting affordable and sustainable products.
- Circular approaches may involve trade-offs, and companies should be aware of them to maximize benefits and minimize negative impacts. By considering the impacts on greenhouse gas emissions and land use, companies can assess the trade-offs of switching from oil-based to bio-based inputs.
- The Impact of the Loop module in Circular Transition Indicators (CTI) helps companies understand how circular strategies contribute to achieving sustainability goals related to climate, nature, and equity. It measures the difference between a company's current material circularity performance and improved circularity performance, aiming for 100% material circularity.

- CTI v4.0 provides methodologies to measure the impact of circular strategies on climate and nature. It helps companies evaluate the greenhouse gas emissions savings achieved through circular strategies and understand how their circular performance affects nature, particularly land use.
- The "Allocation, Cut-off by classification" system model adopted by CTI assigns responsibility for greenhouse gas emissions to the producer of a material or product. Non- virgin materials or products become available without burden emissions for the next user, encouraging product and material recovery and reducing landfill and incineration emissions.
- The CTI v4.0 metrics also address the impact of circular strategies on biodiversity and nature. Land use, including occupation, change, degradation, and deforestation, is a significant driver of nature loss. CTI measures the land-use impacts of a company's material inflow, allowing companies to understand the impact of their circular performance on nature.
- Estimating the impact of land-use change on nature involves considering the extent of land use, the condition of the land used, and the significance of the land in terms of biodiversity present.
- Land-use change is identified as the biggest and most direct driver of nature loss globally. CTI aims to address this driver by providing insights into land-use impacts and supporting the vision of achieving a nature-positive world by 2030.
- The CTI v4.0 metrics also consider the GHG impact of circular flows, focusing on the circular inflow (reused, refurbished, remanufactured, and recycled materials) and circular outflow (higher value retention recovery and recycling compared to linear disposal methods).