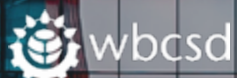


CIRCULAR METRICS FOR BUSINESS

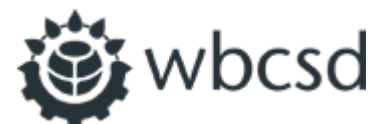
Introduction to the
Circular Transition Indicators
framework

November 2021





We work to accelerate the transition towards a circular economy. As an impact organisation, we identify opportunities to turn circular economy principles into practical reality. Our vision is economic, social and environmental prosperity, without compromising the future of our planet. Our mission is to connect and empower a global community in business, cities and governments to create the conditions for systemic transformation.



WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies. Together, we are the leading voice of business for sustainability: united by our vision of a world where more than 9 billion people are all living well and within the boundaries of our planet, by 2050.



With a worldwide presence, KPMG supports businesses around globe with the multiple services the firm offers ranging from audit services to strategy work. KPMG's Sustainability practice has longstanding experience with multiple aspects of both advisory, and assurance in sustainability related projects. As the co -author of the Circular Transition Indicators framework of the World Business Council for Sustainable Development the Circular Economy services of KPMG are able to support companies in their journey towards circular business and resilience towards the future.

ABOUT THIS DOCUMENT

With the circular economy gaining momentum, more circularity metrics of various shapes and sizes are emerging. To help businesses navigate this increasingly complex landscape, Circle Economy has published a series of white papers on [Circular Metrics for Business](#). Ranging from an overview of the metrics landscape to deep dives into some of the most promising metric frameworks, these publications hope to help businesses identify the best opportunities for moving to circularity.

This publication is such a deep dive.

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1. THE LANDSCAPE OF CIRCULAR METRICS

Our world is only 8.6% circular. As climate breakdown becomes reality, our material use and greenhouse gas (GHG) emissions continue to spiral upwards. We are still heading in the wrong direction. As history shows us, the process of innovation can provide us with the tools to change the current way of doing business. Innovation is a process of trial-and-error: piloting solutions, identifying and improving business models, assessing impacts, and adjusting plans. We need to know what works, what does not and why—and that means turning to metrics. However, it is at this point that the comparison with history stops. The innovation towards circular business models will require different measurements and metrics than the ones developed to monitor and innovate in the linear economy.

METRICS FOR EVERY STEP OF THE CIRCULAR JOURNEY

Metrics vary in purpose, scope and audience, among other things. Businesses can use metrics to show the opportunities the circular economy offers shareholders, customers, suppliers and employees. Metrics can also aid the search for and identification of circular solutions most suited to individual businesses—they can assess the potential of the solutions and build business cases to ensure implementation at scale. Eventually, metrics will be needed to measure and report upon a businesses progress in becoming more circular. For every step of the innovation process, different metrics are needed to point us in the direction of new or improved products and services that are beneficial from an economic, social and environmental viewpoint.

CIRCULAR TRANSITION INDICATORS

To accommodate the growing demand for metrics that support circular economy business model transitions, the Circular Transition Indicators (CTI) were developed by the World Business Council for Sustainable Development (WBCSD). The CTI provide relevant indicators for businesses to conduct a self-assessment to determine the circular performance of the company, business unit(s), site(s) or product(s). They focus primarily on the 'circular' and 'linear' mass flows

through the business, in which procurement (inflow), design (recovery potential) and recovery models (actual recovery) are crucial levers for circular performance. In addition to indicating and measuring the ability of a company to close material loops, CTI provide insights into overall resource use optimisation and the link between a company's circularity and its business performance. The CTI offer allows businesses to:

- Identify circular opportunities and linear risks to improve longevity and resilience,
- Set a baseline and monitor progress on the circular transition,
- Respond to customer and investor inquiries,
- Start value chain conversations on shared circular priorities.

CTI can be used once as a tool to increase awareness of and insights into circular economy opportunities. Alternatively, CTI are published with a suggested process of continuous evaluation and improvement to allow users to analyse and explain how circularity is driving company performance. The CTI process helps companies prepare the assessment and interpret its results, understand its risks and opportunities, prioritize actions and establish SMART targets to monitor progress.

WHO IS IT FOR

Any company, regardless of size, sector or position in the value chain, can use this framework. As such, the selection of indicators relevant for any business will vary. The CTI provide a menu of indicators, some of which are optional. The framework does not contain any sector-specific indicators.

Primary users of CTI include Corporate Social Responsibility (CSR) officers, innovation managers, and strategy consultants. The CTI are flexible enough to also be used by designers, engineers, procurement officers and value chain managers. Lastly, CTI are among the first metrics for the circular economy to include financial metrics, making the tool potentially of interest to investment managers.

CIRCULAR METRICS DIAGRAM

UNIQUE SELLING POINTS

The CTI are simple, comprehensive, applicable across most industries and value chains, complementary to a company's existing sustainability efforts and agnostic as to material, sector or technology. Companies across sectors and industries can use the CTI as the common language to express the circular performance.

Compared to other metric frameworks available, the CTI methodology is more open and transparent as it is one of the few frameworks where the methodology was co-developed with industry partners and remains publicly available. We no see that a high variety of sectors both in multinational as well as smaller family-owned companies have already applied CTI; with assessments on company, business unit, site and product level.

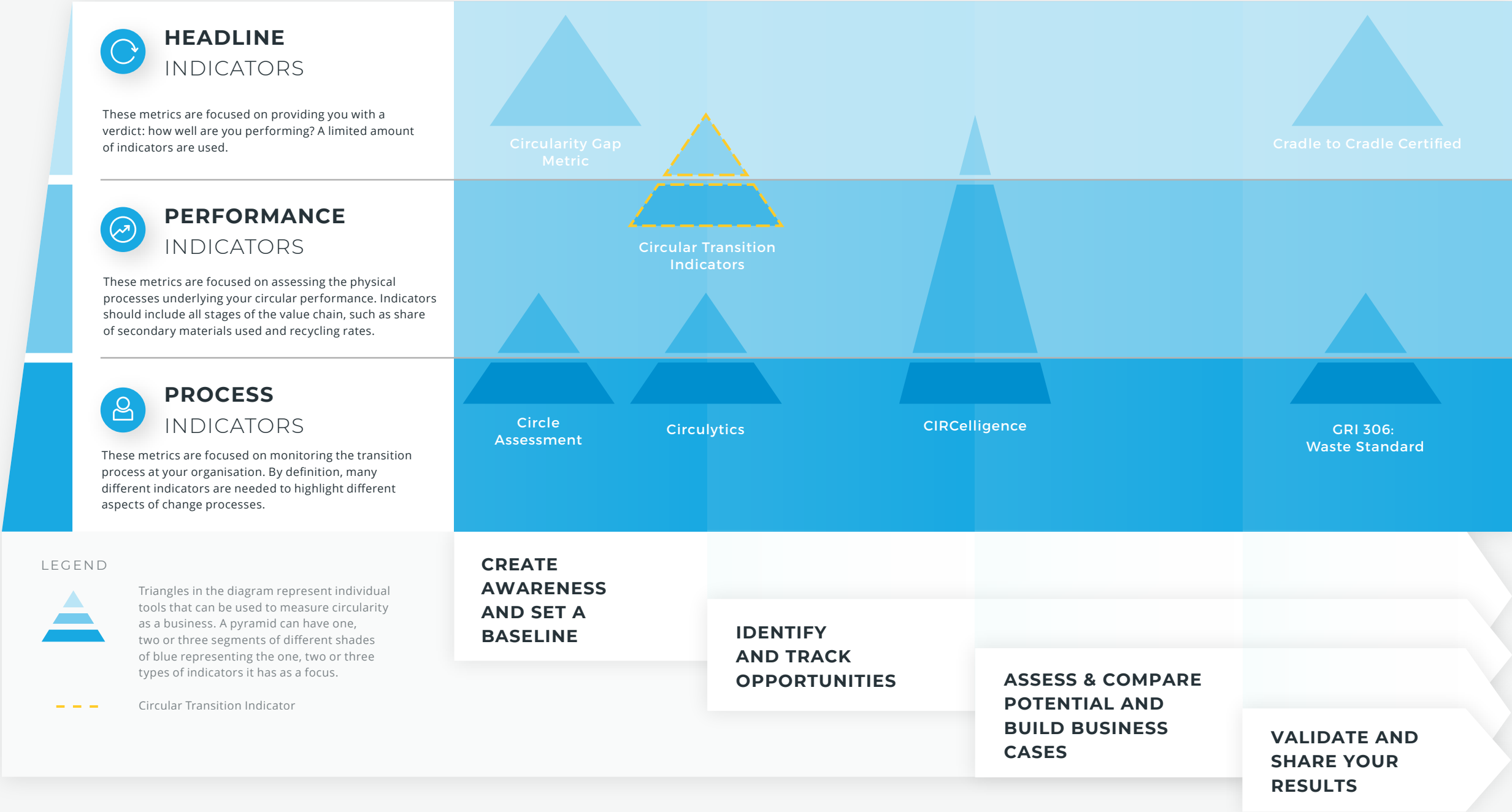


Figure one: The circular economy metrics landscape for business

2. METHODOLOGY

The circular economy is a relatively new knowledge field that is still developing its many definitions and methodologies. Therefore, when selecting circular metrics, its important to assess the methodology of the metric or indicator and whether it is appropriate for the goal you have in mind. For instance, is it be reliable enough to convince your stakeholders? Is it accurate enough to inform your decisions? Does it provide relevant insights to your type of business?

STEP BY STEP APPROACH

The CTI come accompanied by a step-by-step approach for applying them in your business. This approach outlines seven process steps that cover one assessment cycle (see Figure two). The assessment cycle is continuous and does not stop after a single assessment, but instead encourages frequent assessments to monitor progress in the circular transition. These seven process steps guide the company from determining the scope and selecting the indicators for the assessment (steps one and two) through the data collection and calculation of the results (steps three and four) towards contextualising and interpreting the results and formulate an actionable plan for improvement (steps five, six and seven).



MATURITY

The CTI were developed for business, by business. 26 multinational companies were involved during the initial development. Part of the development was encouraging public commenting, open for everyone to comment and provide feedback. A huge amount of feedback from large and small companies, academia, governmental and non-governmental organisations was used to further shape and optimise the methodology. A range of companies in different industries tested the CTI and afterwards provided feedback that was incorporated to improve it. During the CTI development process, an advisory group was consulted on a regular basis, including organisations like Circle Economy, CIRAG, Cradle2Cradle Product Innovation Institute, Ellen McArthur Foundation, GRI, MVO Nederland, PACE and Sitra. This thorough and transparent process of iteration has led to a broadly accepted framework.

Launched in January 2020, a growing number of users are subscribed to the online CTI tool and are currently applying the framework. Companies without a subscription are also able to use the framework as the methodology is publicly available and the CTI manual contains extensive explanation. The framework and related guidance is updated on an annual basis by WBCSD to respond to feedback and recommendations for further development.

METHODOLOGY READINESS LEVEL

To support the process of selecting the right metric for your business, Circle Economy has developed a framework that allows you to evaluate and communicate the maturity of a metric: the Methodology Readiness Level (MRL).

The levels in this framework do not provide a step-by-step description of the development curve of a certain metric. Such a development can occur in loops, skip steps, or even take a few steps back due to the launch of a new edition of a tool. This framework does, however, describe the relative distance between the current maturity of a metric or indicator compared to the ideal situation in which the methodology is fully tested, adopted, made available and standardised. The higher the MRL, the closer it is to the ideal state (see table below). In its current state, the CTI has a maturity readiness level of five out of six.

MRL	DESCRIPTION
1	Theoretical test
2	Tested within a limited set of applications Circularity Gap Metric CIRCelligence
3	Tested by a wider community of practitioners Circle Assessment
4	Metric published and widely applicable GRI 306: Waste Standard
5	Metric widely used and easily accessible Circular Transition Indicators Circulytics
6	Metric standardised Cradle to Cradle Certified

3. DATA

We have become increasingly adept in monitoring the production chains of the linear economy. However, relevant information for an analysis of the circular economy is not monitored to the same extent, such as emissions, waste flows, or the value of products and infrastructure currently in use. An important step in the selection of a metric to assess circularity is to assess the data need and the availability of that data. With data being scarce, some metrics might prove difficult, and therefore costly, to apply. Others will require the data to be publicly available or verified by third parties to allow for full transparency, which might not always be a feasible or desirable option for a business.

DATA NEEDS

The CTI framework is developed, among other things, to facilitate the engagement of cross-value chain partners, since collaboration is key for the circular transition. No company can drive the circular transition on its own. In order to measure circularity using the CTI framework, such cross-value chain collaboration can facilitate the exchange of data on the inflow (through procurement), potential recovery (through design teams), and actual recovery (through end-of use). Examples of such collaboration could be stakeholder, such as supplier engagement to obtain data on recycled content levels, or on end-of-life treatment.

Depending on the indicators selected, data needs can range from weights and characteristics of resource flows and materials, product parts, (by)products and waste streams, to financial data (revenues) and criticality of the materials used.

DATA AVAILABILITY

Most midsize and large companies will have most of the required data readily available within the organisation. One might find that some of the data is there, but has not been collected for this particular purpose (i.e. previously collected for procurement, reporting or life-cycle assessment purposes). In other instances, additional data requests will need to be made to suppliers or other value chain partners. Suppliers might not have all the data on virgin material

use readily available and might have to reach out even further in the value chain to search for the data. Alternatively, the company might have insights into their product end-markets but not sufficient information on the actual recovery of its products at their end-of-life. In these cases, the CTI framework allows for a practical approach. For instance, a user is allowed to fall back on the use of generic data, such as sector averages, to estimate recycled content or national/regional data to estimate the actual recovery of specific types of products.

Compared to other options, the CTI framework requires a sizeable, but reasonable, effort to assess circularity. Besides the performance score, it also provides insights into where generic data is used, thereby indicating where further value chain engagement is needed to generate more specific data. As it is a self-assessment method, all data used for the assessment remains in company ownership and there is no need to share the data with third parties to be able to use the tool.

VALUE CHAIN TRANSPARENCY

The degree to which data is widely available and easily accessible can be described in terms of closed or open data, and in terms of public or private data. Public data, described as data owned by the public or made widely available for a greater good, is not always open data. The level of 'openness' of a dataset describes the way it is designed to be shared, and understood, by third parties. Is it structured in a way that is standardised and easy to read, or mined, by others? There are various levels of availability of data: data can be accessible to all, available or understandable for a few selected partners, or shared within a group of organisations depending on the need. In an ideal world, all the data you need is available in an open format, either within your organisation or across your business' ecosystem.

The CTI framework does require, or at least benefits from, shared data across supply partners much like many of the alternatives. value chain collaboration is a prerequisite for the success of circular economy initiatives and therefore stimulate users of CTI to engage with their value chain partners. As CTI are deliberately developed as a self-assessment tool, there is no need to share the results externally.

	Only in-company data needed	Need for shared data across supply chain partners	Need for shared data and outcomes are intended to be shared
Circle Assessment			
Circular Transition Indicators			
CIRCelligence			
Circulytics			
Circularity Gap Metric			
GRI 306: Waste Standard			
Cradle to Cradle Certified			

4. TOOLING

While the methodology or data availability can present challenges to businesses measuring circularity, tooling can help overcome such challenges. When selecting the ideal metric, it is wise to assess the resources available to help in its application, the level of expertise or support of third parties needed, and tools available to ease the workload.

AVAILABLE RESOURCES

The most extensive source available is the CTI report which includes a detailed user manual with clear instructions on what indicators to use, how to find data, interpret outcomes and convert insights into action. Version 1.0 of this report was launched in January 2020 and version 2.0 in February 2021. The developers intend to publish annual updates of this report with further guidance and/or additional indicators.

Next to the user manual, users can also turn to the CTI Academy for further support. The CTI Academy provides resources to train companies on the CTI indicators, which consists of recorded webinars, live webinars, training materials and instruction videos. In addition, case studies are collected to provide inspiration for companies to apply CTI. An overview of the resources can be found on the [website of the WBCSD](#).

SKILLS NEEDED

Anyone with basic knowledge of circular economy principles can use the CTI framework, albeit with some training and self-education. We recommend starting by reading the user manual or joining a webinar to get acquainted with the methodology before starting your free, online assessment. Alternatively, a company can build its own datasheet or tool based on the available methodology.

THIRD-PARTY INVOLVEMENT

In principle, the CTI is a self-assessment and, therefore, third-party support is not required. For those looking for support, a selection of CTI implementation partners can support companies with executing the assessment and implementing the CTI methodology in existing company processes. To ensure quality, these implementation partners have been trained in

applying the CTI framework. An overview of the trained implementation partners can be found [online](#).

AUTOMATED TOOLS

To support the adoption of the framework and methodology, a free online tool is available that guides companies through the assessment (see Figure three). The tool not only structures data and computes outcomes, it also supports users to reach out to internal stakeholders and value chain partners for data requests that avoid confidentiality issues. Leveraging the power of digitisation and smart software solutions, the CTI Tool enables companies to accelerate the CTI assessment. It can be accessed after registration on [CTItool.com](#) and has two options: an essential account which is free and allows you to do a limited amount of assessments with a limited amount of users, and a professional account, which has a yearly fee for unlimited amount assessments and users.

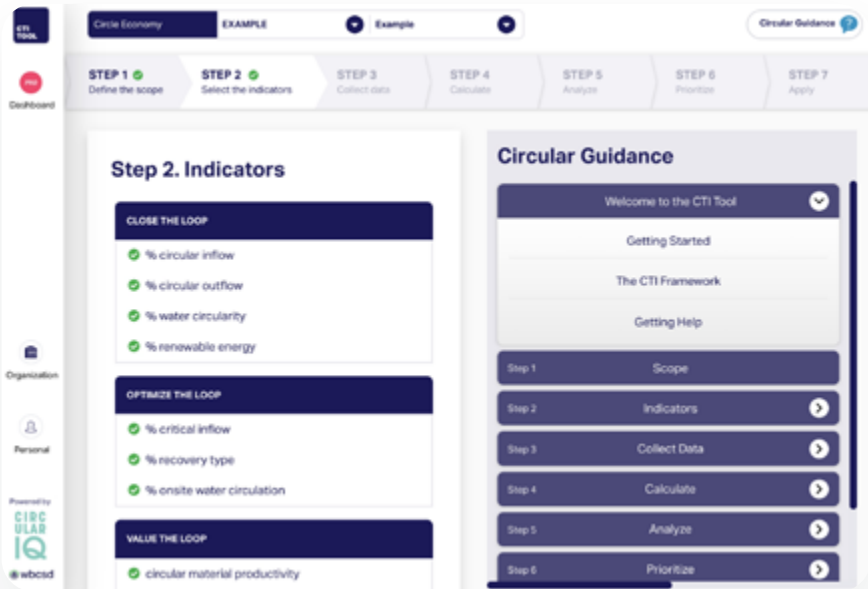


Figure A: Example of the user interface of the online CTI Tool dashboard

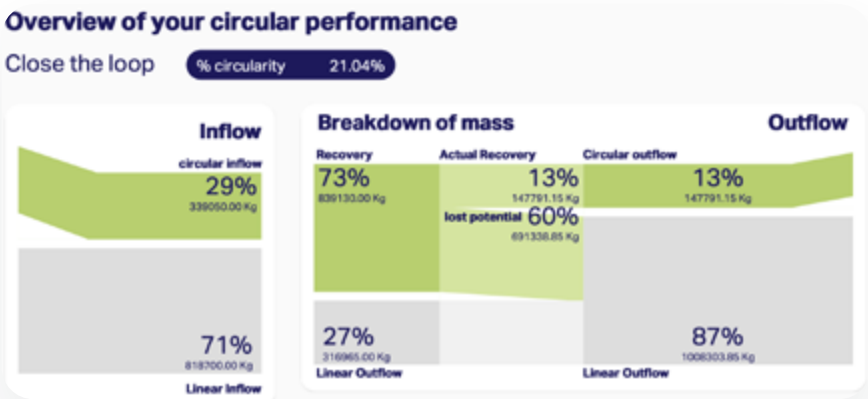


Figure B: Example of a CTI Tool report displaying the % circularity, and overall mass flow of one product-line

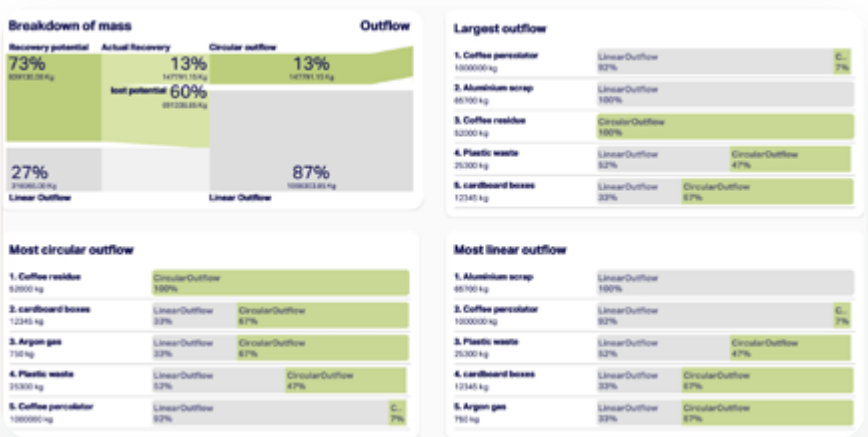


Figure C: Example Breakdown of outflow and % circularity

WIDE VARIETY OF AVAILABLE RESOURCES PER METRIC

Every metric that is publicly accessible usually has at least basic resources available to help in its application, such as a manual, how-to guide or FAQs. Going a few steps further, some solution providers provide webinars, personal guidance or an extended consultancy, although sometimes this comes with a price tag. In specific cases, third party guidance is obligatory to ensure impartiality, such as in certification schemes, or a necessity, because the level of expertise required is not readily available within other organisations. Sometimes a tool or method is specifically designed to be a part of a consultancy offer. Such third party support often requires a more

significant budget. As these examples show, assessing the available resources for the application of metric is as much a question of your personal needs and skill sets available in your organisation, as of available budget. Acknowledging that budget and in-house expertise are often limited, many solution providers have automated part of their metric, sometimes to a level of offering self-assessment tools with little or no need for external involvement or significant budget.

	No third party support needed	Third party support available, not required	Third party support required
Only basic resources publicly available		Circularity Gap Metric	CIRCelligence*
Extensive resources or tooling available	Circle Assessment	Circular Transition Indicators	Cradle to Cradle Certified
	Circulytics	GRI 306: Waste Standard	

5. RESULTS

Metrics are there to guide your actions. Once you have selected the metric or metrics for your business, onboarded all the internal and external stakeholders needed, collected the required data and pressed 'calculate' on your metric tool, it is time to disseminate the learnings from your analysis and translate it into a way forward. It is even better if you can turn measuring into monitoring, so you continue to learn and evaluate your progress in transitioning to full circularity.

OUTPUT OF THE METRIC

The Close the Loop module is recommended for each company. The headline indicator, the % circularity is the average of the % circular inflow (which is the sum of % non-virgin content and % renewable content which compose of bio-based sources that are sustainably grown) and the % circular outflow (which is the product of % design-focused recovery potential and the % actual recovery). In the same module the % renewable energy and % water circularity are included, to demonstrate the circularity of the company's operations in terms of water and energy usage.

The Optimize the Loop module supports companies with insights in the use of critical materials and share of different recovery strategies (for example, recycling, refurbishment, reuse or composting).

The Value the Loop module links circularity with financial information. Circular material productivity demonstrates decoupling of revenue generation from linear material usage. The main relevance of this indicator is to track this performance over time. It could even be used to compare to national or regional decoupling indicators. Finally, the CTI Revenue provides insights in the share of circularity in the portfolio connected to the revenues generated.

INTERPRETING AND COMMUNICATING THE OUTCOMES

The desired effect of the use of the indicators is to provide the insight needed to steer towards a more circular business. That is why the CTI process does not stop after calculating the performance. Its seven-step continuous improvement model encourages interpretation and contextualisation of the results in order to assess circular opportunities and linear risks, and formulate an action plan and clear targets.

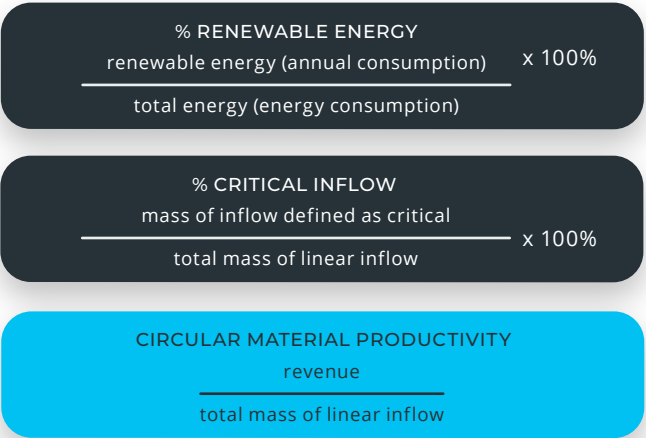


Figure three: CTI indicators described in more detail



HEADLINE INDICATORS

% Circularity, which is the average between:

- % Circular inflow
- % Circular outflow



PERFORMANCE INDICATORS

% Circular inflow which is the sum of:

- % non-virgin inflow
- % renewable inflow

% Circular outflow which is the combination of:

- Potential recovery
- % Actual recovery
- % Renewable energy
- % Water circularity
- Critical Materials in inflow
- Share per recovery type



PROCESS INDICATORS

- Circular material productivity (expressing decoupling of financial growth from (linear) resource)
- CTI revenues (Sales adjusted by the circular performance of its product portfolio)

6. WHAT'S NEXT

The further development of metrics to measure the circularity of an organisation, value chain or product is set to continue for some time. At the same time, many businesses have already embarked on their innovation journeys and have successfully innovated their product and business models. Rightfully so, as the transition to a circular economy is not without urgency. Worldwide, customers and policymakers are increasingly aware that we need to look differently at our economy and the businesses that keep it running.

FURTHER DEVELOPMENT

The CTI framework is updated annually based on insights from application, and work by the WBCSD. The first CTI framework, CTI v1.0, was launched in January 2020. In February 2021 CTI v2.0 was launched with additional indicators on water and CTI revenue and more extensive guidance on how to interpret CTI for the bioeconomy. Further development of the CTI framework might lead to further expansion of the framework with additional indicators and/or guidance on how to interpret the methodology for specific user groups. To enable the latter, the WBCSD organizes guided user groups for companies to implement the CTI framework in an organized setting. Furthermore, WBCSD is constantly updating and expanding the supporting resources, amongst training, webinars and the CTI Tool, as well as keeping a constant eye out on the emergence of additional needs for insights that companies might have, to ensure the CTI framework will keep continuing enabling the circular transition.

NEED FOR STANDARDISATION

Metrics are a crucial element of developing a common language to the circular economy transition. It helps to communicate goals, collectively prioritise opportunities and actions and discuss our progress. Currently, we see not one, but multiple languages developing in parallel. Different metrics sometimes have different definitions for the same terms and calculation methods for similar metrics, or different system boundaries. It is likely that efforts will increase over the coming years to standardise terminology, approaches, and methods across the industry to align the outcomes and make them comparable. As the CTI are updated regularly, standardisation efforts may lead to updates to the methodology or the introduction

of new (standardised) indicators. Its developers are keen to maintain consistency across CTI versions and will ensure as much as possible that outcomes of the metric will remain comparable and reliable in the future.

YOU CAN START TODAY

Are the CTI the right metric for your company? Here is how you can start today:

1. Download the Circular Transition Indicators [report](#) from WBCSD. We recommend first reading the report or [joining a webinar](#) to get acquainted with the methodology and thinking before starting your assessment in the free online tool.
2. Once familiar with the framework, one can subscribe to the [CTI tool](#) and become part of an active user group using the tool to obtain insights into circular performance, and improving performance.

Figure 4: indicators included in the CTI Framework



STILL NOT SURE WHICH
METRIC IS RIGHT FOR
YOU, OR HOW TO GET
STARTED?

Please find more information at:

[WBSCD](#)

[KPMG](#)

[Landscape of Circular Metrics
for Business](#)

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