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CIRCULAR METRICS FOR BUSINESS

Finding opportunities in the
circular economy





WHO WE ARE

Circle Economy works to accelerate the transition to a circular economy. As an impact organisation, we identify opportunities to turn circular economy principles into practical reality. With nature as our mentor, we combine practical insights with scalable responses to humanity's greatest challenges. Through our multiple programmes, we translate our vision of economic, social and environmental prosperity into reality.



This report is published as part of the Circular Economy Indicators Alliance, a project led and affiliated by PACE. PACE is a global community of leaders from business, government and civil society. We bring leaders together to develop a collective agenda and drive ambitious action, working together to accelerate the transition to a circular economy. Our focus is on the areas that require deep cross-sector collaboration, creating a space for leaders to work in partnership and overcome challenges together. PACE was created in 2018 by the World Economic Forum and is now hosted by the World Resources Institute.

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WHY BUSINESSES NEED CIRCULARITY METRICS

The circular economy is a vision for a future economy that provides for the needs and wants of society within healthy planetary boundaries. Currently, however, this remains only a vision: our current linear economy upsets the balance between the economy and nature. Although this is unsustainable, it continues to accelerate. This report describes how businesses can measure an indication of circularity of their organisation, product or value chain, and how they can use that information to create or transform to a more sustainable—and circular—business model. Ultimately, this report provides the guidance needed for change agents to select the most suitable metric to measure, and fast-track, circularity in their organisation.

THE NEED FOR A CIRCULAR ECONOMY

Our world is only 8.6% circular. Material use and carbon emissions continue on an upward trend. In terms of sustainability and circularity, the global engine of change is stuck in reverse; we are still heading in the wrong direction. Both the Circularity Gap and the Emissions Gap remain dangerously wide.

What has got us where we are today, in every sense, is the linear, take-make-waste economy. Since the boom of the Industrial Revolution, businesses have driven the linear economy to deliver high standards of living and tremendous wealth in some parts of the world. In today's resource-constrained world of rapid population growth and urbanisation, businesses need to emulate the speed of the Industrial Revolution in their shift from a linear to a circular economy. By designing out waste and pollution, keeping products and materials in use, and regenerating

natural systems, a circular economy allows businesses to reimagine and redesign their business model to ensure that they start to contribute to an ecologically safe environment for us all.

In truth, momentum is already building towards the adoption of circular business models. Circular economy strategies are increasingly embedded within businesses—ranging from multinational corporations to disruptive startups—and adopted into government policies. Global efforts to improve collective performance on the Sustainable Development Goals and to curb climate change also highlight the growing concern for the long term sustainability of the current dominant economic system.

METRICS FOR A CIRCULAR ECONOMY

As before in history, it is the process of innovation that will 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 doesn't 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 that we developed to monitor and innovate the linear economy.

Metrics vary in their purpose, scope and audience, among other things. Businesses can apply metrics to create awareness of the opportunities the circular economy brings to innovate their products among their shareholders, customers, suppliers and employees. They can use metrics to search for and identify the solutions that will work for their line of business. They

can use metrics to assess the potential of these solutions and build business cases that ensure implementation at scale. And, eventually, they will need metrics to monitor and report upon their progress towards implementing these solutions and becoming circular. For every step of the innovation process, we will need to apply different metrics that will point us in the direction of new and sustainable products and services that are beneficial from an economic, social and environmental viewpoint.

STEPS FOR A CIRCULAR BUSINESS MODEL

To categorise metrics according to the way that they can help businesses innovate, we identify the various steps that organisations will need to take on their innovation journey.

CREATE AWARENESS AND SET A BASELINE

IDENTIFY AND TRACK OPPORTUNITIES

ASSESS & COMPARE POTENTIAL AND BUILD BUSINESS CASES

VALIDATE AND SHARE YOUR RESULTS

THE BASICS

Although the thinking behind the concept of the circular economy has a decades-old history, the concept itself, the concept itself was only popularised from 2013 onwards. As a sub-set, the field of metrics for the circular economy has become more vibrant in recent years. Current efforts and initiatives show a great deal of variety in their scope, purpose, and audience. They may, for instance, be mostly academic in nature or represent the views of a group of corporates, or focus mostly on material flow indicators or rather aim to develop a broad framework which includes many types of indicators.

At this point, no standardised metrics yet exist to measure the performance of businesses in their circular economy transition. As a result, CSR agents, innovation and sustainability managers and other professionals looking to adopt circular economy indicators for e.g. their corporate strategy, due diligence, impact assessment, or accounting and reporting needs will have to conduct their own research and draw their own conclusions on which indicators would be the most appropriate to use. This paper, therefore, sets out to guide these change agents in their search for the right measurement tools to support organisations on their journey to a circular business model.

Metrics that can be used to measure your transition towards a circular business model are often confused with sustainability metrics. If you regard sustainability as the end goal, circular economy is a means towards achieving that goal. Therefore, it is very relevant for business to not only measure its performance in the transition to a circular economy but to also adopt sustainability metrics to measure the impact it is hoping to have by doing so. The field of sustainability science, and the metrics related to that field, is much more mature and has produced many standardized methodologies and metrics such as Life Cycle Analysis (LCA) and reporting on the SDGs,

and there are plenty of guides and textbooks to be found to guide you to the metric that is right for you. Nonetheless, it remains relevant to also measure circular economy aspects to understand not only the impact of your business model but also the underlying causes of that impact and identify opportunities for improvement.

ARE YOU LOOKING FOR A METRIC, INDICATOR, TOOL, STANDARD OR CERTIFICATE?

The field of metrics can be difficult to navigate due to the variety of terms and definitions used. What is the difference between a metric and an indicator, and is a standard or a certificate more suitable for your needs? Here's what we mean with the various terms that we use in our search for the ideal metric for your business:

METRIC

A metric is a method we employ to understand change over time across a number of dimensions. We use it as a catch-all term to describe the method used to measure something, the resulting values, as well as a calculated or combined set of indicators.

INDICATOR

The indicator is a crucial element of a metric, referring to a single value and its unit, and used to indicate (hence the name) a specific trend or performance.

TOOL

Many of the metrics considered are partly or fully automated in online or offline tools that enable easy application and reduce the risk of errors. In the context of this publication, tools can therefore be considered automated metrics.

STANDARD

Metrics that have gone a certain degree of scrutiny and testing, and are commonly accepted as a standardised way of measuring, can be regarded as standards. Technically, one can consider both 'informal' standards and standards that have officially been documented and published by standardisation organizations but in the context of this publication, we will only use the term to refer to the latter.

CERTIFICATE

A certificate is a specific type of standard that can not be applied by the organisation itself but requires a third party to assess whether the company's performance has been according to a certain standard. They usually result in a product label being issued by the third party.

TYPES OF METRICS

Metrics are there to educate, inform, ground decision making, monitor, and report. Frankly, one indicator, or even one metric, can't do all of that. A variety of metrics is needed, each with a role to play in supporting an organisation in transforming from a linear to a circular business model. Metrics can consist of one or a combination of indicators, methodologies and tools, and can be standardised or even part of a certification scheme. We will distinguish three types of metrics based on the type of indicators they primarily focus on: headline indicators, performance indicators or process indicators.



HEADLINE INDICATORS

Headline indicators are strongly linked to the question: **Why do we need to change our business?** They give a verdict on the current state of circularity: how circular is your business, your product, your sector? After you have clearly defined why you want to change your business, and what your desired end goal is, circularity metrics that focus on one or more headline indicators can be used to highlight the progress (or lack thereof) towards the desired state of circularity. They tell you how far you are from your goal and whether your business is moving in the right direction. Typical headline indicators include the circularity of a value chain expressed in percentages or the amount of resources consumed per unit of revenue generated. In the end, the headline indicator or indicators used depend on the goal or ambition that a business wants to set for itself. The only rules are: there can't be too many and they should describe a desired (and circular) end state, not the means to that end.



PERFORMANCE INDICATORS

Performance indicators are needed to inform the answer to the question: **What should be changed in our value chain?** They go a step further than headline indicators: instead of a verdict of the current state of your business, their goal is to show how you perform on the parameters that directly influence that verdict. Metrics that include mainly performance indicators often have a strong focus on the various production steps and material flows in your value chain and provide insights into where intervention is needed. Examples of performance indicators include the waste generated within each step of the value chain, the share of secondary resources used within the organisation's production processes, or the recycling rate of a product. The selection of performance indicators can vary from business to business but are always related to the headline indicator(s) that a company has set for itself.



PROCESS INDICATORS

Process indicators are useful to help you answer the question: **How can we bring about the required change?** If performance indicators are used to identify where change is needed, process indicators are used to identify how that change can be brought about. Metrics that have a focus on these types of indicators aim to inform you on your progress in the transition process. Process indicators can be linked to culture, market failures, human behaviour, operational activities and institutional reform and, in contrast to performance indicators, only indirectly influence your headline indicators. There is a wide variety of transition indicators to choose from, ranging from simple descriptive indicators that communicate whether or not the company has implemented a certain waste management policy, to more complex indicators that provide you insights into the customer's opinion of green alternatives to your company's products.



HEADLINE INDICATORS

Examples:

- % circularity
- Share of scarce resource



PERFORMANCE INDICATORS

Examples:

- Recycling rate
- Share of secondary resources
- Share of renewable energy



PROCESS INDICATORS

Examples:

- Share of sustainable products in portfolio
- # departments with KPIs
- Customer attitude towards green products
- Awareness among employees

THE LANDSCAPE OF CIRCULAR METRICS

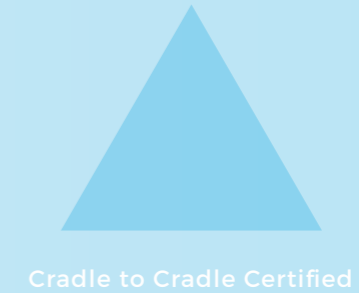
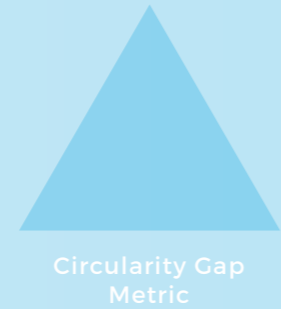
The field of circular metrics is growing. From the many metrics currently available or in development, we have selected seven metrics to represent the variety of options for businesses to start measuring their current state, help identify their opportunities and report on their progress. By plotting these

tools based on the type of indicators they focus on and on their contribution to a business' innovation process, we attempt to guide change agents to select the right metric, or combination of metrics, to ignite, steer and monitor change towards a circular business model.



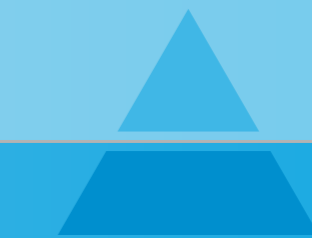
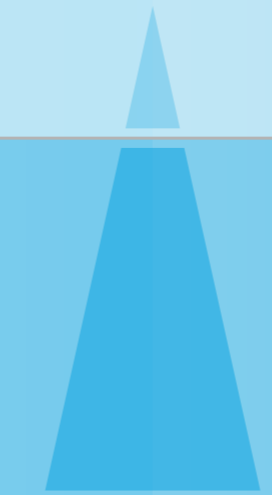
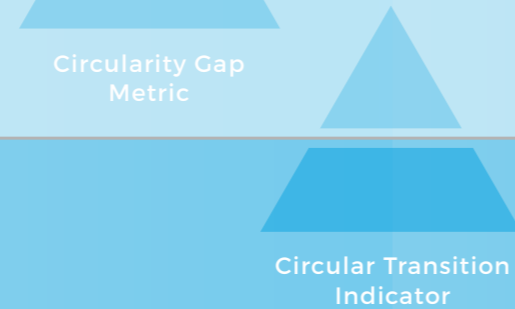
HEADLINE INDICATORS

These metrics are focused on providing you with a verdict: how well are you performing? A limited amount of indicators are used.



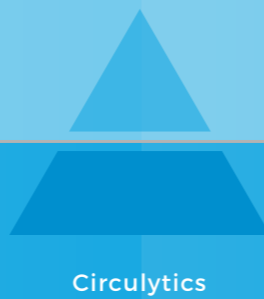
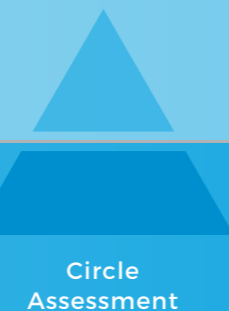
PERFORMANCE INDICATORS

These metrics are focused on assessing the physical processes underlying your circular performance. Indicators should include all stages of the value chain, such as share of secondary materials used and recycling rates.



PROCESS INDICATORS

These metrics are focused on monitoring the transition process at your organisation. By definition, many different indicators are needed to highlight different aspects of change processes.



LEGEND



Triangles in the diagram represent individual tools that can be used to measure circularity as a business.

A pyramid can have one, two or three segments of different shades of blue representing the one, two or three types of indicators it has as a focus.

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TODAY'S MENU OF METRICS

We've created a menu of metrics, tools and standards to give you an overview of the various options currently available to anyone interested in measuring an organization's progress towards a circular economy business model. The menu is not exhaustive nor comprehensive, but it does list some of the more well-known or widely available solutions currently available.

CIRCLE ASSESSMENT

By: Circle Economy

Launched: 2017

Focus: Performance and process indicators

Goal: Raise awareness

Arguably the most easy-to-use metric in this list, Circle Assessment is designed to give organisations a simple way to diagnose how their current practices match up to circular objectives. Circle Assessment is an online self-assessment tool to help businesses understand the different operational and organisational aspects of the circular economy, from implementing recycling schemes to the use of digital platforms or developing novel business models.

The tool scores companies on their current circular thinking, as well as educates employees on potential circular opportunities to explore further. Assessments can be completed for the organization as a whole or completed across multiple business divisions.

CIRCULAR TRANSITION INDICATORS (CTI)

By: WBCSD supported by KPMG

Launched: 2020

Focus: Headline and performance indicators

Goal: Raise awareness, set a baseline and identify opportunities

CTI is a self-assessment framework for companies to help them understand to what degree they are closing loops, optimizing material flows and creating value from their resources. It looks at the use of critical materials and circular material productivity. It is arguably the most transparent tool in this list, both in the collaborative approach of its development and in the algorithms it uses.

The CTI is inward-facing, quantitative and based on demonstrable data. CTI provides insights into overall resource use optimisation and the link between the company's circular material flows and its business performance. Its main application is to create awareness and set a baseline for what should be changed by prioritising certain actions and establishing SMART targets to monitor progress.

A seven step approach is available to guide companies in the selection of indicators, data collection and performing the calculations as well to interpret and contextualize the results to generate insights for business decision making to prioritize actions and targets for improvement.

CIRCULYTICS

By: Ellen MacArthur Foundation

Launched: 2020

Focus: Performance and process indicators

Goal: Raise awareness, set a baseline and identify opportunities

Going beyond assessing products and material flows, this company-level measuring tool reveals the extent to which a company has achieved circularity across its entire operations via a scorecard. This tool, therefore, has a broader scope than the CTI, which focuses on the circularity of specific products and materials rather than the entire organisation. It categorises enabling and outcome indicators.

The enablers include strategy and planning, innovation, people and skills, systems, process and infrastructure and external engagement.

The outcome indicators provide a snapshot of an organisations circular economy performance. Outcome questions are tailored to the sector the company is in, and results are benchmarked on an industry level. The indicators cover sector relevant outcomes in material flows, services design, physical assets, water flows, energy, and finance. The tool is designed to show companies what it means to be circular, identifying blindspots as well as opportunities for innovation. How can the organisation affect change?

CIRCELLIGENCE

By: Boston Consulting Group

Launched: 2020

Focus: Performance and process indicators

Goal: Create awareness, set a baseline, identify opportunities and assess their potential

CIRCelligence is a proprietary metric and tool of BCG that allows a company to really deep-dive into the topic of circularity. It requires far more input than the CTI or Circulytics and as a result gives a more thorough and detailed overview of your organisation's performance in terms of circularity.

The scope is also broad: it focuses on various steps along the value chain, on quantitative and qualitative aspects, and on performance and process indicators.

The tool is meant to be a first step in the development of a circular strategy, is partly automated, and BCG supplies its clients with a self-assessment tool that allows them to repeat the assessment themselves in following years to monitor progress.

CIRCULARITY GAP METRIC

By: Circle Economy

Launched: 2019

Focus: Headline indicator

Goal: Raise awareness and set a baseline

The Circularity Gap Reporting Initiative focuses on a single metric rather than a scorecard or framework of metrics. The metric depicts the share (%) of circular materials in a single value chain and is the only science-based method currently available, building upon a growing body of scientific literature describing the state-of-the-art of circularity measurement.

The inverse of a value chain's circularity is called its Circularity Gap, which refers to the share of materials that are still being wasted rather than circulated within the value chain.

The primary use for the metric is awareness raising by highlighting the urgent need to transition to a circular economy. It is also useful in the monitoring and reporting of an organisation's progress and successes in moving towards a circular business model. Being a single headline metric, it should be complemented by the Circulytics tool or the CTI to gain more insights into the interventions required to improve the performance of the company or its products.

GRI 306: WASTE STANDARD

By: Global Reporting Initiative

Launched: 2020 (update from earlier standard)

Focus: Performance indicators

Goal: Monitor and report upon progress

The Global Reporting Initiative (GRI) provides standards for sustainability reporting on a range of economic, environmental and social impacts.

Organisations that adopt the GRI Standards select standards and metrics they would like to report upon based on their material topics. Or in other words, topics that reflect their most significant sustainability impacts. As part of the GRI Standards, GRI updated its Waste reporting standard 306 in May of 2020 to include circular economy principles. By doing so, it introduced the first global industry standard for circular economy metrics.

The standard requires organizations to report on waste generated throughout the value chain, and report information on its composition and how it is managed—whether diverted from disposal through reuse, recycling or other recovery operations, or disposed. The standard doesn't prescribe a scorecard or headline indicator, as its primary focus is on reporting rather than assessment, but because of the similarity in data used can easily be combined with the Circulytics tool, the Circularity Gap Metric, or the CTI to account for this.

CRADLE TO CRADLE CERTIFIED

By: Cradle to Cradle Products Innovation Institute

Launched: 2010

Focus: Performance indicators

Goal: Report upon progress

Cradle to Cradle Certified is a globally recognised certificate of safer, more sustainable products. Introduced well before the popularisation of the term circular economy, and in many ways an important inspiration for the development of the concept, it is in many cases the best option for companies looking to certify its circular products.

Being a certificate and therefore more focused on communication towards customers, it neatly complements the self-assessment tools, science-based methodologies and reporting standards listed above. Products are assessed for environmental and social performance across five categories: material health, material reuse, renewable energy and carbon management, water stewardship, and social fairness.

A product is assigned an achievement level (Basic, Bronze, Silver, Gold, Platinum) for each category. A product's lowest category achievement also represents its overall certification level. The standard set out to encourage continuous improvement over time by awarding certification on the basis of ascending levels of achievement and requiring certification renewal every two years.

OPPORTUNITIES AND CHALLENGES

Many of the metrics we have included in our landscape overview are relatively new. Others have been around for longer but have yet to see adoption at scale due to lack of available and accessible data. At the same time, the digital transition and an increasing call for value chain transparency present opportunities to improve the uptake and use of these metrics. Selecting the right metric will, therefore, also depend on assessing the methodology, data availability and available tooling to implement it in your organisation.

METHODOLOGY

The circular economy is a relatively new knowledge field that is still in a phase where most definitions and methodologies are in development. As a result, various metrics and indicators can sometimes provide different answers to the same question. However, this does not have to prevent you from applying them. The best metric currently available, even though not perfect, might still give your business a very good starting point for the next step in your innovation journey. It does mean, however, that you should assess the maturity of the metric or indicator and whether it is appropriate for the goal you have in mind. For instance, will it be sufficiently reliable to convince your stakeholders? Will it be accurate enough to inform your decisions? In some cases, this might even lead you to implement not one but multiple metrics, thereby ensuring that you have complementing insights to guide you in tracking and steering progress.

To support this process, we will apply a framework that allows you to evaluate and communicate the maturity of a metric: the Methodology Readiness Level. The levels in this framework don't provide a step-by-step

description of the development curve of a 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. They do, however, describe the relative distance between the current maturity of the metric or indicator compared to the ideal situation in which the methodology is fully tested, adopted, made available and standardized. The lower the level, the further the current situation is from that ideal state.

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 GRI 306: Waste Standard
5	Metric widely available and easily accessible CTI Circulytics
6	Metric standardised Cradle to Cradle Certified

DATA

Since the Industrial Revolution, and especially with the use of GDP becoming popular in the 1930s and 1940s, we have become increasingly adept in monitoring the production chains of the linear economy. However, much of the information that is relevant for an analysis of the circular economy is not monitored to the same extent, such as emissions, waste flows, or the value of urban stocks.

At the level of single companies, the issue remains: most larger corporations report on their gross annual turnover or annual profit, but information on emissions, waste production, product composition or depletion of natural stocks throughout the value chain is less available. This is either because the information is simply not recorded or available or, more often, companies are not willing nor obliged to share such information. Obviously, this can introduce a serious obstacle for anyone trying to assess the circularity of a product, organisation, or value chain, creating a significant obstacle for organizations wanting to improve their performance.

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.

The availability of data can be described in terms of closed or open, public or private. Public data, described as data owned by the public or made widely available for a greater good, isn't 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 'openness' of data: data can be accessible to all, available 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.

	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	Yes	No	No
CTI	No	Yes	No
CIRCelligence	No	Yes	No
Circulytics	No	Yes	No
Circularity Gap Metric	No	Yes	No
GRI 306: Waste Standard	No	No	Yes
Cradle to Cradle Certified	No	No	Yes

In reality, however, only a small share of the required data comes in such a format (for example, public data on waste treatment and recycling rates). More often, you will have to resort to other types of data: closed, in-company data (such as spreadsheets on annual sales that require explanation from your sales representative) or data shared in a semi-open or open format among value chain partners (such as information on certification schemes or information shared as part of production processes).

RESOURCES

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

Every metric that is publicly accessible usually has at least basic resources available to help you 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 offering to guide you, albeit sometimes at a cost. 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	CTI	Cradle to Cradle Certified
	Circulytics	GRI 306: Waste Standard	

*CIRCelligence can be re-used after the first application without third party support

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. Also, the transition to a circular economy is not without urgency. Worldwide, customers and policy-makers are increasingly aware that we need to look differently at our economy and the businesses that keep it running.

We have seen a rise in the sales of "green" products, new policy frameworks that change the corporate playing field, and increasing operational risks such as price volatility, supply chain disruptions, and legal liabilities. Tackling these challenges, and doing so ahead of your peers, can result in competitive advantages: from access to new markets, increased customer loyalty, to a renewed sense of purpose of your employees. Here is how you can start today:



1 SCOPE NEEDS

Assess what your business needs are: where are you in your innovation journey, what questions need answering, what stakeholders do you need to engage with or convince, and what resources do you have available?

2 SELECT SOLUTION

Select one or more metrics that fit your needs. Evaluate the maturity of the underlying methodology, assess the availability of accessibility of the required data, collect the resources available, contact third parties that should be involved, and plan its implementation.

3 COLLECT DATA

From a single day to many months of work, you will need to reserve some time to collect all the required data. You will probably need to reach out to your partners, suppliers and customers, and you will have to assess the quality of the input you're receiving. It is probably not the most enjoyable part of your work but hang on in there, the fun part will soon follow.

4 COMPUTE AND ANALYSE

Process your data, compute the indicators, and apply the tool you have selected—or instruct a third party to do so. Interpret the results and share your conclusions with your stakeholders.

5 TRANSLATE INTO ACTION

Metrics are there to guide your actions. Decide what you have learned from your analysis and translate it in a way forward.

6 EVALUATE AND MONITOR

Turn measuring into monitoring, so you continue to learn and evaluate your progress and you remain firm in the driving seat. Plan regular moments to decide whether it is time for a next step in your innovation journey, and if so, start again at Step one.

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

www.circle-economy.com/metrics

This report has been made possible by the input of: Renilde Becqué (on behalf of PACE), Timothée Pasqualini (World Benchmarking Alliance), Suzanne Kuiper (KPMG), Anna Krotova (GRI), Carolien van Brunschot (World Business Council for Sustainable Development), Jarkko Havas (Ellen MacArthur Foundation), Ke Wang (PACE) and many others.

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