

Measuring and improving your circularity

A how-to guide for Africa-based businesses

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Who is this guide for?

As a circular business, do you want to:

- Improve your operational effectiveness and lower risks?
- Improve your understanding of your social and environmental impact on your value chains, customers, and community?
- Pursue sustainable growth for your business and transition to a thriving low-carbon economy?
- Get hard data that will help you distinguish your business from greenwashed competitors?

If your answer to any of these questions is 'yes', then read on.

What is measurement and how is it valuable?

Measurement is crucial for every business to make informed decisions. If you are a circular business you want to demonstrate environmental, social, and economic effects.

From our [work with pioneering circular businesses](#) we know measurement results to be useful in many situations, including:

1. **Strategic decision-making:** hard data helps your business make decisions for long-term goals. It clarifies your mission, your options, values, resources, stakeholders, and market position. Assessing environmental and social impact can tell you where you need to improve to reach your sustainability goals.
2. **Customer messaging:** to effectively communicate the benefits of your circular practice to your customers and peers, you'll need to tailor your message to the right audiences and back it up with evidence. This increases the credibility of your communication, leading to improved reputation, customer loyalty, and access to new markets with increasing demand for lower-impact products.
3. **Fundraising:** increasingly funders are looking to back projects that will have a positive impact on the environment and society. So it is important to clearly articulate the impact of your project in your funding proposals, and have the numbers ready to provide evidence to support your claims, satisfy investors' environmental, social and governance (ESG) criteria and attract more sustainable investment.
4. **Carbon Credits Incentives:** it is crucial to obtain [certified emission reduction](#) credits in order to demonstrate the impact of your carbon footprint and prove any additional reductions in emissions. This process is a key part of the financial incentives for reducing emissions under the United Nations' Clean Development Mechanism and is being driven by the [Africa Carbon Markets Initiative \(ACMI\)](#). As [African carbon credit production increases](#), accurate carbon calculations will become even more important.
5. **Legal compliance:** The legal and regulatory landscape is increasingly hard to navigate. Measurement can help ensure your activities are in line with environmental regulations or corporate social responsibility disclosure.

As you may already know, your business may face the tension that you want to collect high quality data but the cost or complexity makes it unrealistic. This guide is intended to help you with exactly this challenge.

What this guide will help you do

Assessing business impact on environment, society, and economy is crucial yet challenging. This guide gives you a step-by-step approach to design and execute measurements by:

1. Understanding benefits
2. Visualising the process
3. Knowing what tools are out there
4. Helping you understand what's right for you at your stage of development.

Our goal is to help you to get started and understand where to make improvements, regardless of your level of experience.

Measurement basics in four steps

Measurement consists of these 4 steps. For more detail on each of them, please refer to page 5 of our latest measurement report [here](#).

Step 1: Setting objectives

What are you hoping to achieve?

Before you start measurement, you need to ask what you are hoping to achieve. We already described some goals for measurement to help you. This is a starting point. The metrics and methods you will select depend on your context and starting point.

After defining your measurement goals, assess your current measurement capabilities by checking if you have previous experience and if data is easily accessible. Table 3 provides guidance. It's best to start with a limited number of metrics if you are just starting out; measurement is a journey.

Step 2: Scoping and data collection

Scoping

Next you need to define what you want to include and to exclude in your scope. This step is crucial because it sets clear boundaries for what is included, identifies the necessary data, makes it easier to

compare results, and ensures transparency in the assessment. This will require making choices about:

- The elements that will be included in the scope. Is it a single product or all of your business' activities? And is the focus on environmental or social impacts, or both?
- The techniques and tools you want to use that best fit your measurement goal.
- Restrictions or limitations that might impact the full analysis of the area you select.

Data collection

After determining your scope, data collection comes next. Before starting with this, ask yourself: what is data, and where do you need to find it? For example, when measuring the circular economy's environmental impacts, we are mainly interested in resource-, energy-, and transport flows. This means thinking about things such as:

- How many and what kind of resources (materials, water, etc.) your business consumes in the production process
- What happens to your products after their use
- How much energy is needed in the different manufacturing steps
- What transport is used to get the product to your customers.

These questions will change depending on your business' activities and measurement goals. Collecting data for social impacts - another kind of measurement - is more complex, involving employees, local community, value chain actors, customers and so on - but scientific methods can simplify the process.

How you can structure your data gathering process

The methods [Material Flow Analysis](#) (MFA) and the [Circular Transition Indicators](#) (CTI) can help to structure the data collection process. You can either collect fresh data or complement what you have with new information. Your procurement and operational staff may also have valuable insights on where to locate data on resource and energy flows.

Types of data

There are two main categories of several data that can be used.

Table 1. Types of data

Type	Description	Examples
Primary data	Raw data that is collected directly from your business and its value chain. This includes data from suppliers, customers, and communities. This can be collected through surveys, on-site measurements, and other direct methods.	Resource flows, energy flows, transport, data from the use phase, waste, various social metrics
Secondary data	Average environmental and social background data on value chains. This data is often collected from databases, reports, and other sources and can be used to	Environmental and social data sourced from a third-party life-cycle-inventory database, such as ecoinvent or the Social Hotspots Database .

	supplement primary data.	
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Primary data is more time-intensive to collect, but gives a more reliable and objective result. Secondary data may be cheaper but may not accurately reflect the specific context of your business. Usually, in practice, a combination of primary and secondary data is used.

Pyramid: Identifying hotspots in plastic recycling

Pyramid Upcycling, a Ghanaian enterprise that transforms discarded plastic into novel goods, leveraged metrics to quantify its ecological footprint with a particular emphasis on carbon emissions. The scoping process established the functional unit¹ as Pyramid's operations spanning November 2021 to February of 2022. Within this timeframe, data was gathered on the variety and amount of plastic recycled, products sold, energy consumption during fabrication, packaging, and transportation to vendors. This information facilitated the identification of environmental hotspots within the company's operations.

Step 3: Analysis

To accurately measure environmental and social impacts, it is not sufficient to just collect data. Analysing the data is essential to gain insights and make sense of the information. Although tools like MFA or CTI can help gather data for measurements, such as waste production per year, they are not the only methods available for understanding the data. Examining associated [carbon emissions](#), for example, can also provide valuable insights into the environmental impact of a business activity.

At Footprints Africa we have developed a measurement framework that uses life cycle assessment (LCA), life cycle costing (LCC), and social life cycle assessment (S-LCA) to measure environmental, economic, and social impacts. To simplify doing LCAs and S-LCAs, we recommend keeping things simple. Select a few indicators (say carbon emissions or fair pay) and find a balance between data availability and completeness. As we have suggested earlier, you should focus on the impact areas that are most relevant to your goals, your business and stakeholders.

Free software tools and databases can help your analysis, including [secondary](#) data on carbon emissions, water quality, land use, [biodiversity](#), etc. Additional data on your electricity mix (for example, if you are using renewables) can also be added. You can analyse social impacts using primary data or general social impact databases. This analysis can be done qualitatively or quantitatively.

What resources are there?

Table 2. Five key measurement software tools and databases

Software/Data base	Description	Where it can be used	Free/Paid-for
openLCA	Freely available, open-source. OpenLCA allows users to adjust	This is a budget-friendly, open-source LCA tool that is	Free

¹ In life cycle analyses, the functional unit precisely defines what is studied, quantifies the service of a system or process, provides a reference for relating inputs and outputs, and enables comparison of alternative goods or services.

	LCI datasets to match their product's production process and inputs, as well as analyse the environmental impact of the product. It also provides access to databases through its Nexus platform , some of which are not free.	suitable for beginners in the LCA field. However, it is also commonly used by experienced LCA practitioners, experts, and sustainability consultants, similar to SimaPro and GaBi .	
Global LCA Data Access Network (GLAD)	This is an online directory of LCA datasets from independent providers around the world. Its search engine can find, access, and convert datasets into their desired format, as well as a platform for LCA dataset providers to share those with the LCA community.	Provides policy makers and industries with the information they need to make sound sustainable decisions. GLAD supports access to this data, which will help to make LCA more mainstream.	Most datasets are paid-for
Ecochain Mobius / Ecochain Helix	Ecochain develops product footprint and LCA tools. Their Mobius tool is designed to help users measure the environmental footprint of their product(s), while the Helix tool helps manufacturing companies measure and improve the environmental footprint of various production processes side-by-side.	Ecochain Mobius can be used by companies looking to incorporate sustainable product design into their operations. It enables testing and analysing the effects of using different materials, and allows users to make improvements to their product designs with a simple scenario feature. Ecochain Helix can be used for data collection and creating LCAs. It is suitable for experienced LCA practitioners, and support is available to help get started.	14-day free trial
The ecoinvent Database	This is a comprehensive and reliable source of LCAs for products and processes. It provides detailed information on the environmental impacts of various products, such as resource use, emissions, and waste generation. Maintained by the Swiss Centre for Life Cycle Inventories (SCL).	The ecoinvent Database is a comprehensive LCA database used to inform decisions about sustainability and environmental protection. It is one of the most reliable and comprehensive LCA databases available. It is widely used by researchers, policymakers, and industry experts to make informed decisions about sustainability.	Multiple paid licence options are available (commercial, academic, developers and enterprises)
Footprint Data ²	This provides information and data about the global ecological footprint and biocapacity. Users can access reports, data sets, and interactive maps to analyse the environmental impact of human activities. It is an initiative of the	Users, including policymakers, researchers, educators, and individuals, can access resources to understand their impact on the environment and inform decisions about resource use, environmental management, and	Overview of free to use databases

² This has no affiliation with Footprints Africa

	Global Footprint Network, a non-profit organisation promoting sustainability and ecological resource management.	sustainability.	
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You may find that these sources can be complemented by other sources such as:

- **Industry databases:** Industry associations and organisations maintain databases with information on products' and procedures' environmental impact. This information can be used to compare the impact of different options and inform decision-making.
- **Government agencies:** Environmental or statistical agencies collect and distribute data on environmental impacts. This data can help to identify areas of concern and inform policy decisions. This data can help companies to identify areas for improvement and set targets for reducing their impact.
- **Company data:** It is possible that your organisation is presently collecting and disseminating data regarding the environmental impact of its products and operations.
- **Other stakeholders:** Various stakeholders, such as communities, consumers, suppliers, and employees have direct knowledge of an activity's impact and can provide valuable insights. This information can help to identify potential risks and opportunities for improvement.

In our experience in African contexts these sources are harder to come by at the moment. But we foresee they will become more available and comprehensive over time.

QuadLoop: Quantifying emissions reductions in recycled solar lamps

QuadLoop, a Nigerian company dedicated to developing solar lanterns using e-waste, sought to quantify the environmental impact of their innovative product line. Through the use of the [Idemat 2023 database](#) and other online resources, as well as internal data, QuadLoop was able to determine that manufacturing each lantern emitted approximately 80 kg of carbon emissions. However, through their ingenious use of recycled materials such as screws and wires, plexiglass, and li-ion batteries, QuadLoop reduces emissions by approximately 19 kg per lantern. Furthermore, the lanterns themselves produce zero emissions during use, which is a testament to their eco-friendliness.

Step 4: Using the results and developing solutions

Now you will start the process of interpreting the results of the analysis and finding solutions to your impact hotspots.

You will need to think about:

- What are the areas where you make the biggest impact, and how much can you control them? Can you switch to using materials and methods that are more efficient and have less impact on the environment?
- How can you balance environmental and social impacts?

- How can you involve the people who are interested or affected by your actions to come up with solutions to the areas where you have the biggest impact?
- (Advanced) How does the demand for your product or service compare to similar offerings, and how might this impact your ability to reduce emissions and environmental impacts? Can you compare it with your competitors?

As you answer these questions you will build a deeper understanding of your product or service and take informed, strategic steps to improve your environmental and social performance.

Naturally, all through the analysis you will be making interpretations and drawing conclusions. Final decisions are based on all the relevant data, allowing informed recommendations. You will need to exercise caution when interpreting results, though, considering context and implications for a complete understanding. A lower number or score does not automatically mean a better choice; the full context must be considered for conclusions and recommendations.

Hinckley Recycling: Valorising spent Li-ion batteries

Hinckley, a Nigerian company specialising in e-waste management, utilised measurement to determine the potential avoided impact of processing Li-ion batteries. With this data, the company identified four practical use cases: securing grant funding for recycling research, driving policy creation, supporting investor pitches, and improving internal auditing and performance reporting. The measurement results proved instrumental in showcasing the urgency and priority areas for creating policy frameworks and identifying potential grant opportunities. Hinckley's focus on using measurement results to develop solutions highlights the importance of data-driven decision-making in achieving environmental sustainability goals.

Seven more tools you can use

Table 4. Tools available for your use

Tool	What it is
B Impact Assessments	B impact assessments , by B-Lab, evaluate companies' social and environmental performance, accountability, and transparency for B-Corp certification. They inform stakeholders and aim to improve impact as part of the B Corporation movement.
Carbon metrics	Carbon metrics track carbon emissions from activities, helping businesses understand their contribution to the climate crisis and reducing greenhouse gas emissions. The GHG Protocol is a widely used accounting standard for businesses' greenhouse gas emissions.
Circular Transition Indicators	The Circular Transition Indicators framework that we mentioned earlier is a seven-step process for companies to measure and monitor their circular economy progress. It aids businesses in setting circular targets and objectives, identifying risks and opportunities, and taking ownership of their circular transition.
Life cycle assessment	Life cycle assessment (LCA) evaluates environmental impact of a product from raw material to disposal, identifying reduction areas. It considers both direct and indirect production impacts.

Life cycle costing	Life Cycle Costing (LCC) determines the total cost of a product or asset, including upfront, recurring, and future expenses, minus any recoverable value. It helps businesses make cost-effective decisions, like choosing durable assets and low-maintenance products, leading to higher profitability.
Material flow analysis	Material Flow Analysis (MFA) analyses resource and energy flows in production. It creates an inventory and flow diagram. It's not standardised like the LCA, but can be used as a basis for further analysis.
Social life cycle assessment	Social Life Cycle Assessment (S-LCA) helps businesses be socially responsible by assessing impacts of products on people. Data collection is stakeholder-intensive and site-specific, but limited indicators may be necessary due to practical challenges of its extensive scope.

Helping you understand your level of preparedness

We made this guide to be accessible to everyone regardless of their stage in the measurement journey. This is an overview of where your business might fit and what your options are for measurement. We've grouped businesses into 'beginner', 'intermediate' and 'advanced' categories for simplicity.

Table 3. Assessing your level of readiness

Experience level	What you are doing currently	What your focus should be
Beginner	You haven't used any of the impact measurement methods mentioned yet. Your resource flows have not been quantified.	Set your scope. What do you want to measure? Make a simple overview of the most important resource flows and energy flows within the measurement scope. In the analysis phase, select the impact most relevant to your business and its stakeholders. Often, this will be your climate impact expressed in sequestered CO₂ emissions (CO_{2eq}).
Intermediate	You have some quantified information on your resource flows, and understand some of their impacts – for example expressing the result in CO _{2eq} .	Measure your business' baseline environmental impact. What are your impact hotspots? Expand environmental impacts in other impact categories, such as land use, using more advanced methods such as LCA.
	You use the results of these measurements to improve your business' activities, albeit in a limited, informal or ad hoc way.	Go beyond environmental impacts: include a (limited) social impact assessment, selecting the impact categories most relevant to your business.
	Your measurements are still focused mainly on environmental indicators.	Use the CTI tool or MFA to build a more complete overview of your resource flows.

		Use the impact measurement results to set your strategic goals.
Advanced	Your business has worked extensively with – or outsourced – sustainability measurement methods.	From your baseline impact insights, you can now expand into the future. For example, you might want to use scenario analysis to determine the impacts of your improvement strategies.
	You are using life cycle management tools such as LCA systematically and strategically to lower your business' impact.	You can include a much wider set of impact metrics, both in the environmental and social impact categories. Reach out to your stakeholders in the value chain and beyond to understand their needs.
	You apply sustainability measurement holistically, including social measurement.	Determine how circular strategies that you might adopt could influence impact, and select the best one.

Let us know what you think!

We are keen to know how useful this guide is to you. Which parts have been most helpful? Where do you need more information or guidance? Please reach out to us at Footprints Africa via changemakers@footprintsafrica.co.

About Footprints Africa's work

At [Footprints Africa](#) we focus on empowering SMEs in Africa to be part of the circular economy. We map what is happening. We help circular businesses measure their impact. And we give direct support through tools and training to derisk their circular journey.

We started mapping Africa's circular economy to aid circular businesses, as we believe it is crucial for the continent's future. After finding a lack of examples and fragmented information, we created a [database with over 600 case studies](#), to showcase the potential and impact of circular businesses.



A screenshot of our geolocated map which plots over **500** case studies and over 200 examples of policies, laws and regulations.

To highlight what is happening we publish reports on the practices that we are learning. Our first report showcasing circular economy businesses across Africa, is [here](#), our second report on Regenerative Agriculture, Roots of the Future, is [here](#) and our latest report on Architecture and the Built Environment. Is also [here](#).



As referenced to earlier, we published a report setting out the early-stage work we are doing to help measure African businesses' circularity and impact. We believe that circular businesses need to have proof of concept to grow sustainably and for the transition to gain momentum. That needs evidence, gained through a rigorous approach. You can find the full report, Building Africa's first circular business measurement framework [here](#).



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Front cover image courtesy of Pyramid Upcycling, WEEE Centre and MagProtein.

See www.footprintsafrica.co for more information on the programmes Footprints Africa runs to support businesses to develop purpose-driven cultures and so empower their employees to improve their social and environmental impact.