From standards to strategy:

Leveraging ISO circular economy frameworks for sustainable growth

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ISO 14064- 1

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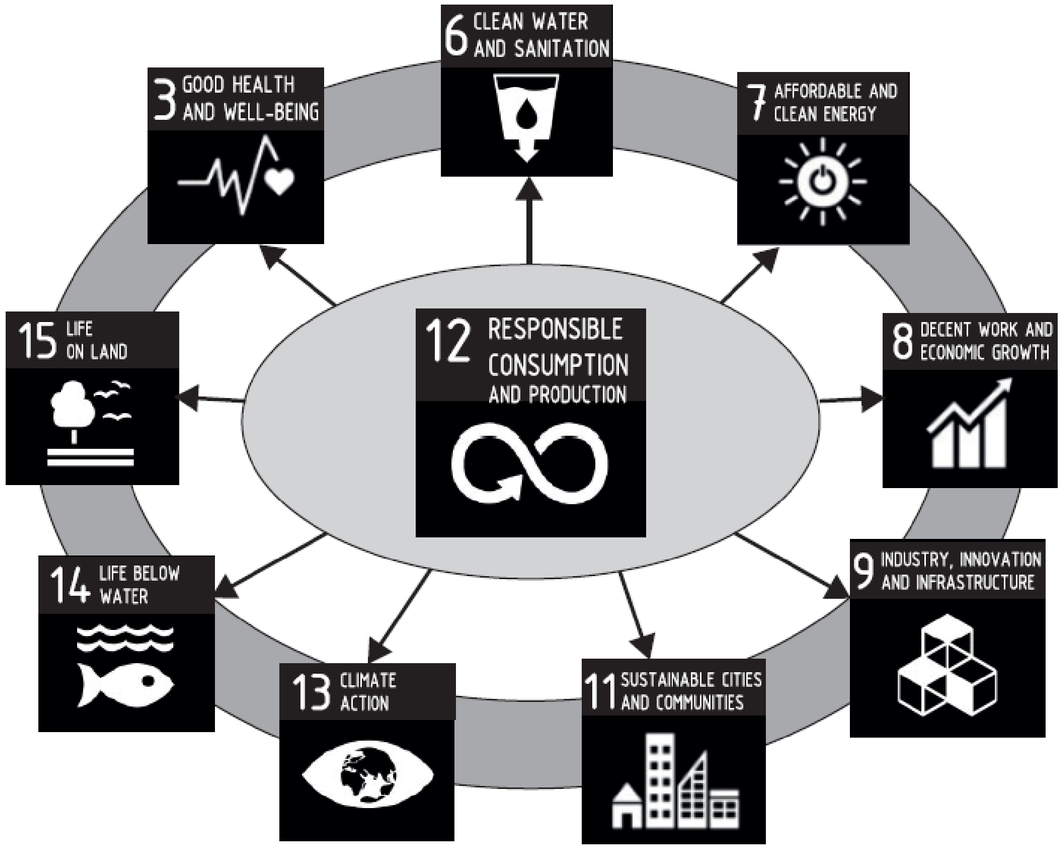
What? So what? Now what?

What?

The increased extraction and processing of materials already account for >50% of global GHG emissions and >90% of biodiversity and water stress impacts

Source: International Resource Panel (IRP)

So what?

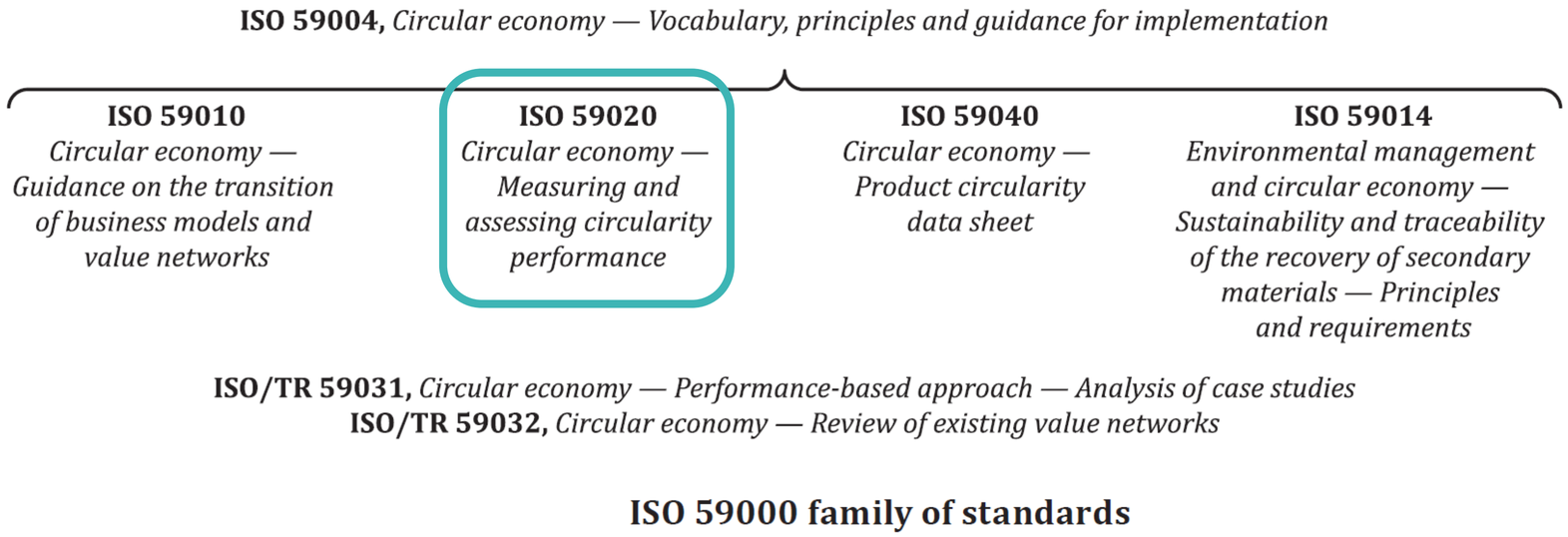


Source: ISO 59020

So what?

Ellen McArthur Foundation

ISO : 2024



ISO 59000 family of standards

The World Business Council for Sustainable Development (WBCSD) : 2026 Global Circularity Protocol (GCP) for Business

So what?

Circular economy

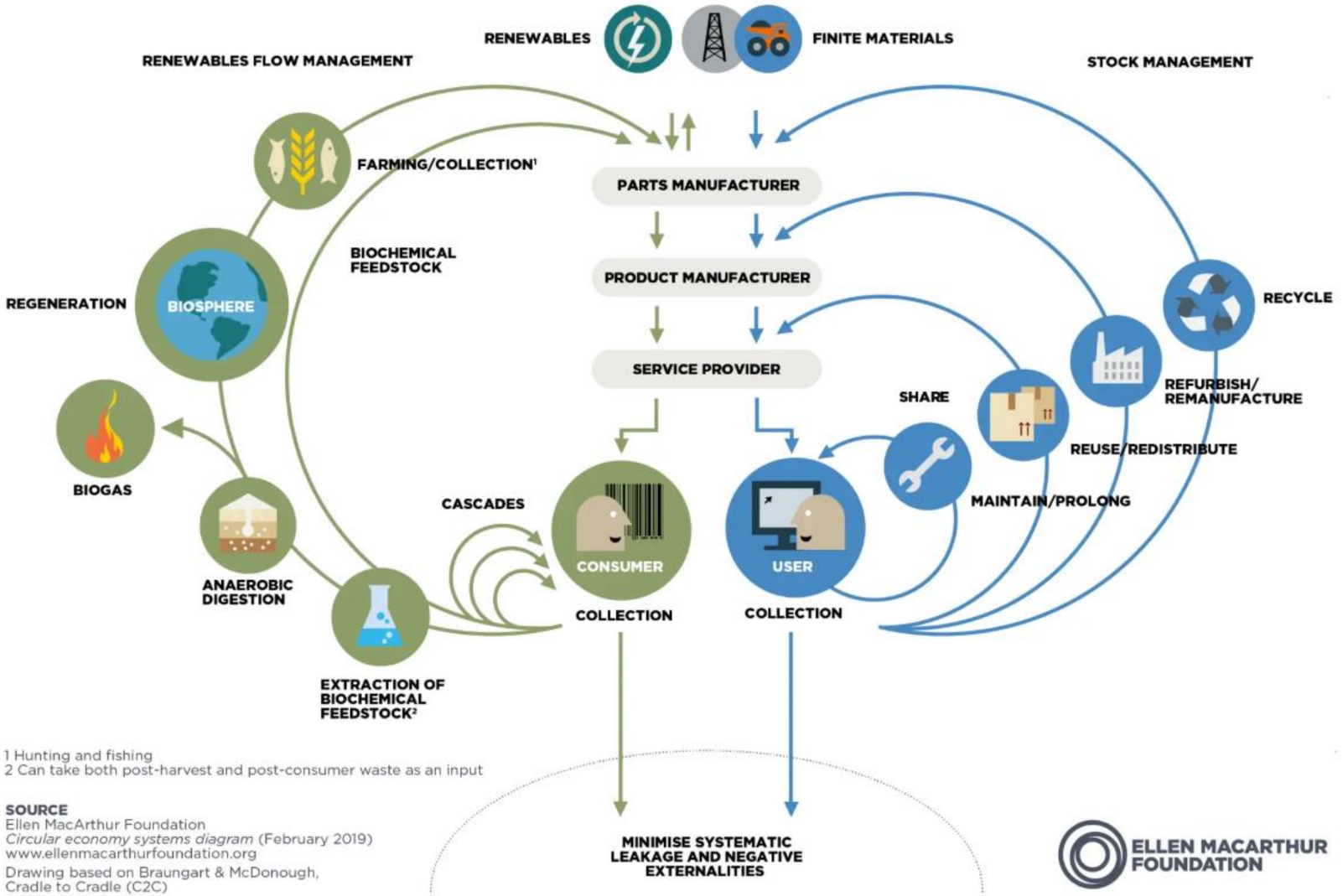
An economic system that uses a systems approach to maintain a circular flow of resources, by recovering, retaining or adding to their value, while contributing to sustainable development.

Regional – Interorganisational – Organisational – Product

So what?

In autumn 2026, the European Commission is set to adopt the EU Circular Economy Act

More on the subject here


RENEWABLES
FINITE MATERIALS
RENEWABLES FLOW MANAGEMENT
STOCK MANAGEMENT
FARMING/COLLECTION¹
PARTS MANUFACTURER
BIOCHEMICAL FEEDSTOCK
PRODUCT MANUFACTURER
REGENERATION
BIOSPHERE
RECYCLE
SERVICE PROVIDER
REFURBISH/ REMANUFACTURE
SHARE
BIOGAS
REUSE/REDISTRIBUTE
CASCADES
MAINTAIN/PROLONG
CONSUMER
USER
ANAEROBIC DIGESTION
COLLECTION
COLLECTION
EXTRACTION OF BIOCHEMICAL FEEDSTOCK²
1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input
SOURCE
Ellen MacArthur Foundation
Circular economy systems diagram (February 2019)
www.ellenmacarthurfoundation.org
Drawing based on Braungart & McDonough, Cradle to Cradle (C2C)
MINIMISE SYSTEMATIC LEAKAGE AND NEGATIVE EXTERNALITIES
ELLEN MACARTHUR FOUNDATION

Now what? Get started

Step 0: Frame

Step 00: Prepare

Step 1: Review measurement results (Measure)

Step 2: Assess value and impact

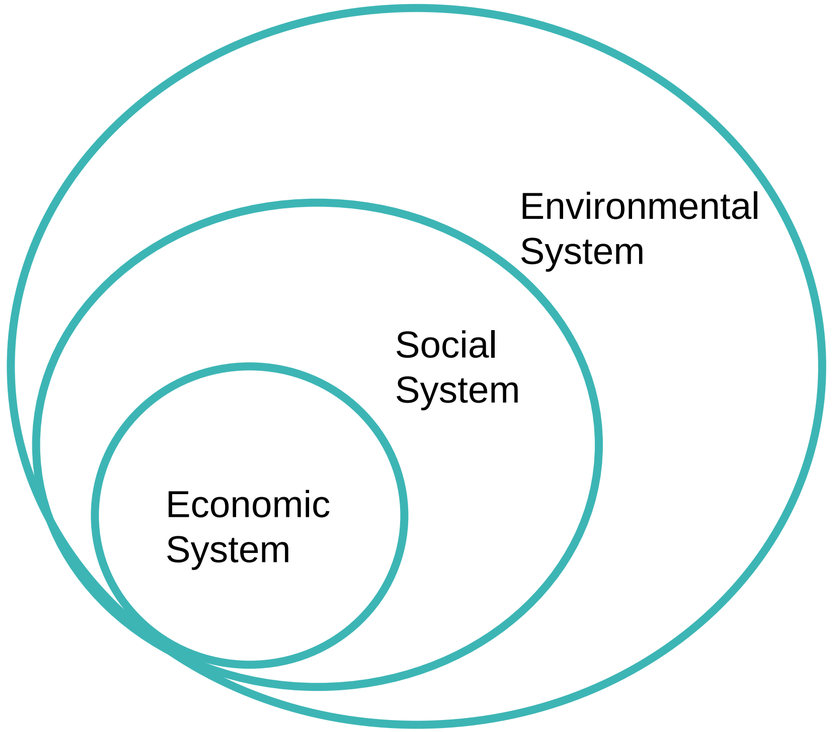
Step 000: Manage

Step 3: Consult interested parties, users and target audiences (Communicate)

Step 4: Document and report the circularity performance assessment outcome

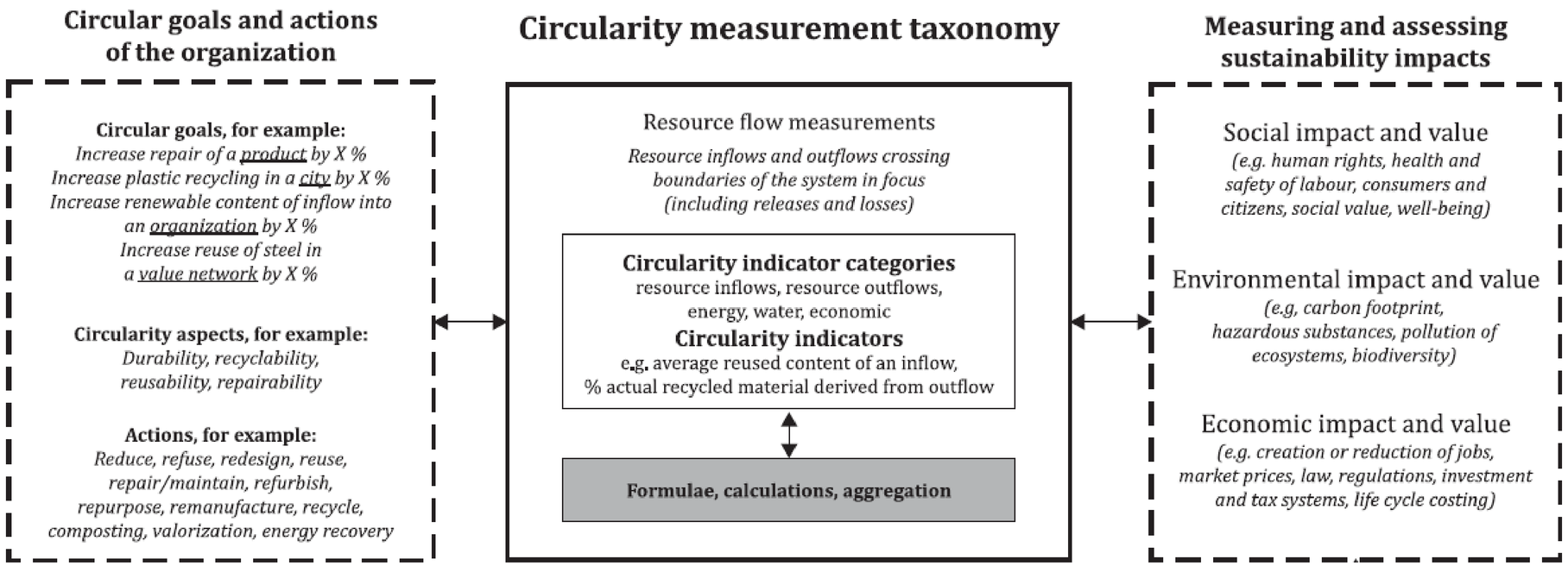
Now what? Assessing value and impact

Economic (profit, supply chains, etc.)
Social (labour, migration, etc.)
Environmental (climate, nature, etc.)



Regional – Interorganisational – Organisational – Product

Step 00: Prepare - Taxonomy



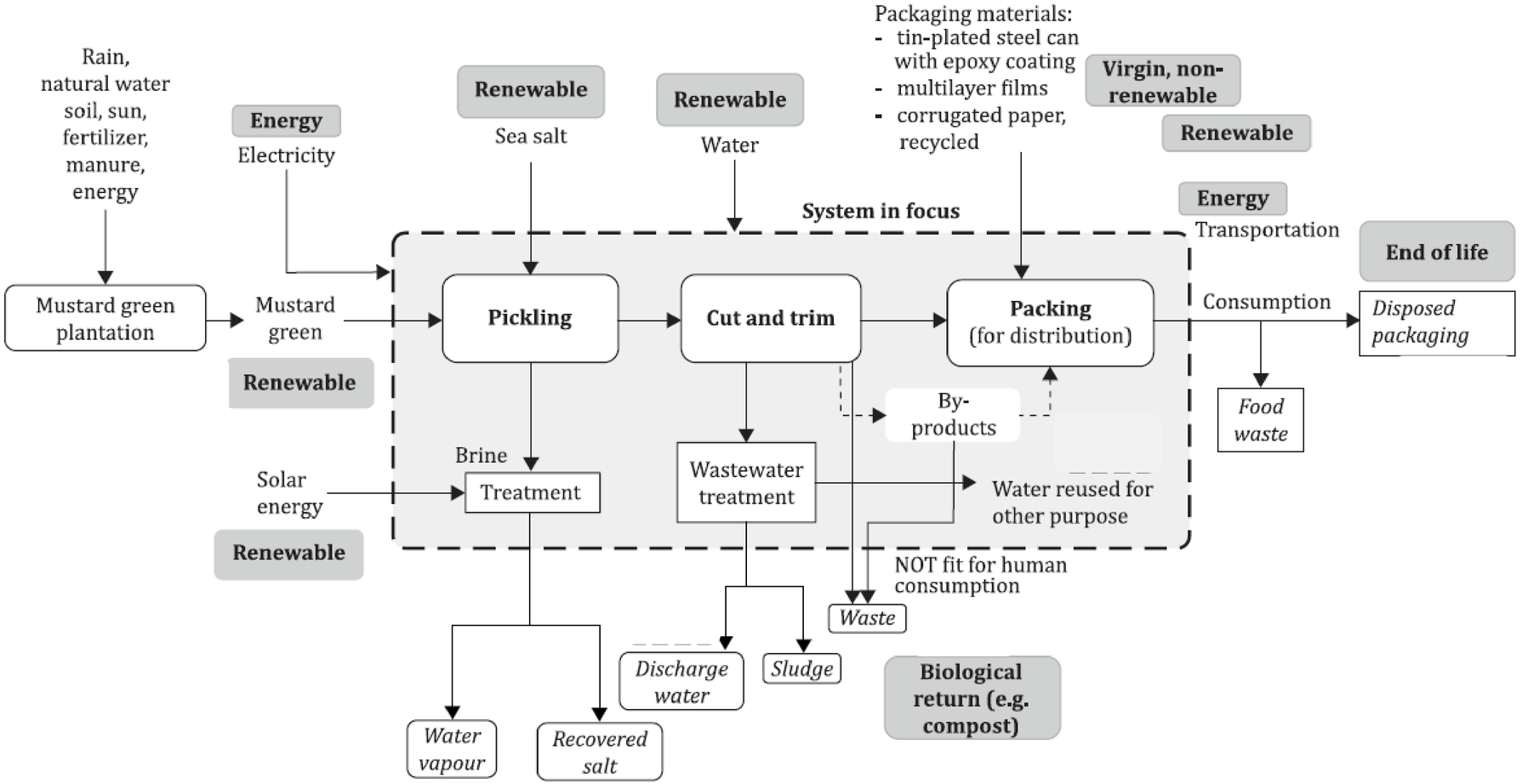
Source: Adaptation from ISO 59020

Step 1: Measure

Key Indicators

- Resource inflows
- Resource outflows
- Energy
- Water
- Economic

Step 1: Measure - System



Source: Adaptation from ISO 59020

Resource inflows indicators

Mandatory/optional	Circularity indicator	A summary description
Mandatory	Average reused content of an inflow (X)	Fraction of input material resources that are reused components and products
Mandatory	Average recycled content of an inflow (X)	Fraction of input material resources that is recycled material
Mandatory	Average renewable content of an inflow (X)	Fraction of material resources inflow (X) that is sustainably produced renewable material

Source: Adaptation from ISO 59020

Resource outflows indicators

Indicator category	Mandatory/ optional	Circularity indicator	A summary description
Core resource outflows	Optional	Average lifetime of product or material relative to industry average	Indicator of time that an output resource (e.g., product) will remain in use compared to an industry average for the resource
	Mandatory	Per cent actual reused products and components derived from outflow (X)	Fraction of outflow that is reused
	Mandatory	Per cent actual recycled material derived from outflow (X)	Fraction of outflow that becomes recycled material
	Mandatory	Per cent actual recirculation of outflow in the biological cycle	Fraction of outflow content that is recirculated at end of life for safe return to the biosphere and meets the qualifying conditions for recirculation
Additional resource outflow indicator		Per cent designed reusability rate of the outflow	Reusability based on design
		Per cent designed recyclability rate of the outflow	Recyclability based on design

Source: Adaptation from ISO 59020

Energy indicators

Indicator category	Mandatory/optional	Circularity indicator	A summary description
Energy	Optional	Average per cent of energy consumed that is renewable energy	Fraction of net consumed energy that qualifies as renewable energy, taking into account both energy inflows and energy outflows
Additional energy indicator		Per cent energy recovered from residual, non-renewable and non-recoverable resource outflows	Per cent energy recovered from residual, non-renewable and non-recoverable resource outflows
		Energy intensity	The amount of energy used to produce a given level of output or activity

Source: Adaptation from ISO 59020

Water indicators

Indicator category	Mandatory/ optional	Circularity indicator	A summary description
Water	Optional	Per cent water withdrawal from inflow circular sources	Per cent of annual water demand that is derived from circular sources
	Optional	Per cent water discharged in accordance with quality requirements	Per cent (by volume) of total water withdrawn that is discharged in accordance with circularity principles
	Optional	Ratio (on-site or internal) water reuse or recirculation	Reuse cycles of on-site water
Additional energy indicator		Per cent energy recovered from residual, non-renewable and non-recoverable resource outflows	Per cent energy recovered from residual, non-renewable and non-recoverable resource outflows
		Energy intensity	The amount of energy used to produce a given level of output or activity

Source: Adaptation from ISO 59020

Economic indicators

Indicator category	Mandatory/ optional	Circularity indicator	A summary description
Economic	Optional	Per cent water withdrawal from inflow circular sources	Per cent of annual water demand that is derived from circular sources
	Optional	Resource intensity index	Quantitative measure of economic growth versus total resource use
Additional economic indicator		Net value added	Value of a product minus negative economic factor costs
		Value per mass	Value per unit mass of resource
		Resource productivity	Ratio of GDP and DMC or RMC (Alternately, for the regional system level, domestic material consumption (DMC) to raw material consumption (RMC) can be used.)
		Genuine process indicator	Measures GDP after removing negative impact costs

Source: Adaptation from ISO 59020

Now what? Step 2: Assessing value and impact

Social
Economic
Environmental

Regional – Interorganisational – Organisational – Product

Now what? Set goals

Examples

- Increase the average lifetime of a product or component relative to the industry average by X %,
- Reduce the non-renewable content of the resources used by an organization to X %,
- Increase the per cent actual recycled material derived from outflow of the organization to X %,
- Increase the recycling of plastic in a city to X %,
- Increase the amount of reused components in a product by X %.

Now what? Strategies you already know

Circular cashflow strategies

Pattern	Description
Crowdfunding	A group of individual investors, motivated to support a particular idea - often through online platforms - provides funding for a product, project, or startup. Given the strong intrinsic drive to promote circular economy solutions, crowdfunding is an effective method for financing the creation of new sustainable products or services, especially as public awareness continues to grow.
Dynamic pricing	Dynamic pricing refers to a pricing strategy that adjusts the costs of products or services in response to demand fluctuations or competitive pressures. This approach helps manage inventory levels and minimize waste. Implementing dynamic pricing requires a deep understanding of the products and effective data management. It also facilitates better capacity utilization and reduces inefficiencies.
Experience-based customer credit (variation: employee credit)	Offering access to credit as a non-bank entity based on previous interactions with the customer, rather than through formal bank applications. This lending approach relies on a customer's past transactions instead of their credit history. Often social loans are available without credit history revision.
Fractionalised ownership	Fractionalized ownership is ideal for expensive products or services that might discourage customers from buying them outright. This model enables customers to buy a share of the product and share its use with others, often through a cooperative arrangement where each participant has designated access. This approach makes it easier for customers to access sustainable products and services while helping to alleviate any biases, as multiple customers can jointly acquire or utilize the products.
Revenue sharing	Revenue sharing is a practice where a company distributes a portion of its revenues with stakeholders, including complementors and even competitors. In the context of a circular economy, this approach facilitates the distribution of additional profits among partners, fostering commitment to long-term circular collaborations.

Now what?

Homework

- Create a resource and cashflow at any of the circularity levels
- Analyse how the flows would look if any of the circular strategies is applied

Now what?

Email your findings, questions
and enquires about 6 principles of circular economy (ISO 59004)
to me:

natalie.tatarchuk@toitu.co.nz

Thank you!

Q&A