



## MICRO-CREDENTIAL

### CIRCULAR ECONOMY FOR LAND AND WASTE MANAGEMENT

#### 13.- Assessment Tools and Indicators of Circular Economy

*Data challenges*

*CELWS-W13-V04*



How do we know if the circular economy is actually working? This presentation explores the critical landscape of measurement frameworks, assessment tools, and indicators that help businesses and policymakers track, benchmark, and accelerate the transition to a circular world.

# The Imperative for Measurement

Before we can transform the economy, we must be able to see it clearly. This chapter examines why rigorous, reliable measurement is the essential first step on the road to circularity.

# The Circular Economy Promise: A World Beyond Waste



## Climate & Planetary Health

A circular economy contributes directly to climate neutrality, reduced pollution, and a healthier planet for future generations.

## Decoupling Economic Growth from Resource Consumption

Decoupling economic growth from resource consumption creates competitive advantage and shields industries from volatile raw material markets.

## Supply Chain Innovation

Circular principles foster more resilient, adaptive supply chains while driving product redesign and new business model innovation.

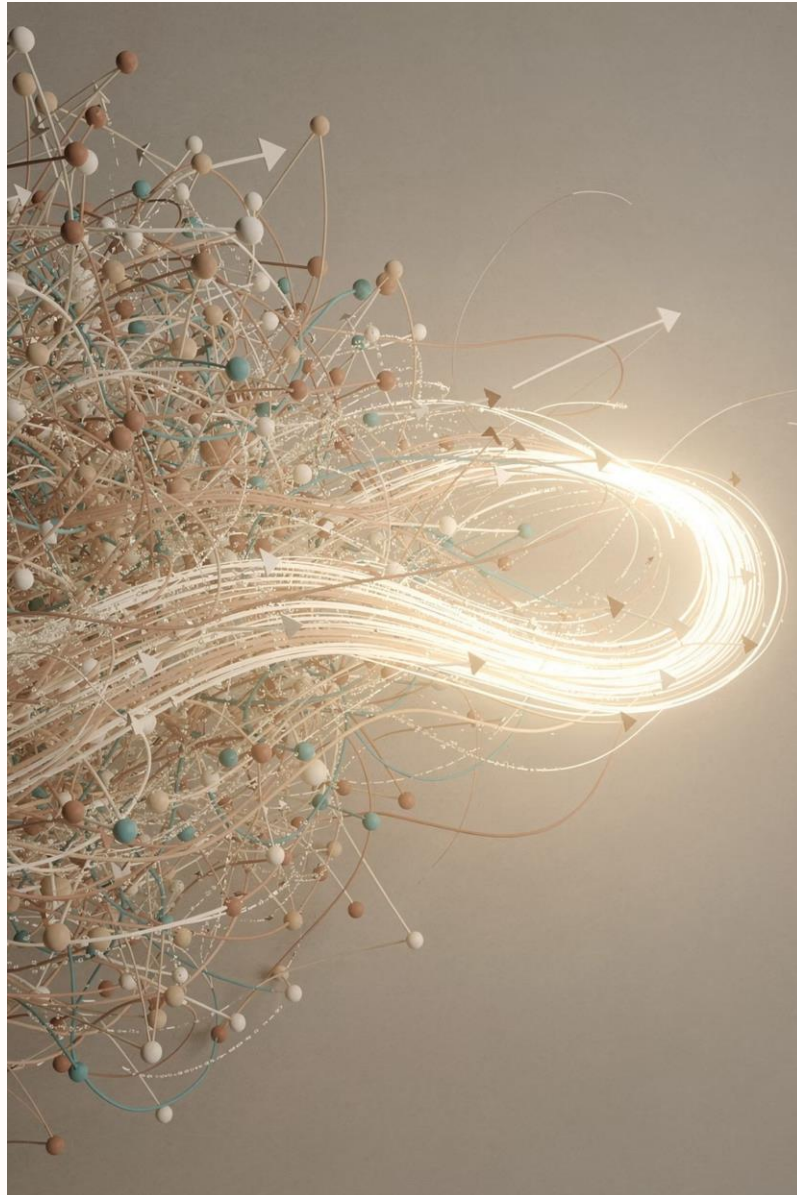
## The Core Problem

Without clear, consistent metrics, progress in the circular economy remains invisible and ultimately unmanageable. What cannot be measured cannot be improved — and the deeply entrenched "take, make, waste" linear model will persist by default.

## Why Measurement Matters

- **Businesses** need quantifiable data to guide strategy, justify investment, and communicate progress to stakeholders.
- **Policymakers** require robust indicators to assess regulatory effectiveness and set science-based targets.
- **Investors** demand transparent reporting to identify circular opportunities and manage ESG risk.

# From Complexity to Clarity



The challenge of measuring circularity is not simply a technical one — it is a systemic one. Circular value chains span industries, geographies, and time horizons. The goal of good measurement is to cut through that complexity and reveal the clear path forward.

# Foundations of Circularity Measurement

Understanding the historical development and current architecture of circularity measurement frameworks — from early material-flow indicators to today's comprehensive monitoring systems.

## First Generation Indicators

The first generation of circularity indicators focused primarily on material flows, waste reduction, and resource efficiency — tracking the most visible and quantifiable aspects of the linear-to-circular shift.

## Common Examples

Key metrics included waste generation rates, recycling rates, and material productivity ratios. These provided an accessible starting point for national and corporate reporting.

## Critical Limitations

Despite their utility, early indicators were often too narrow in scope. They measured outputs rather than system dynamics, failing to capture the full depth of the required systemic transition.

The European Commission's revised framework represents a major leap forward in how circularity is tracked at the policy level. By explicitly linking circular economy performance to climate neutrality and zero-pollution ambitions, it ensures measurement is aligned with the EU's broader sustainability agenda.

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## Circular Economy Framework

Incorporates new indicators across the entire value chain, from production and consumption to waste management and secondary materials markets.

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## Global Dimension

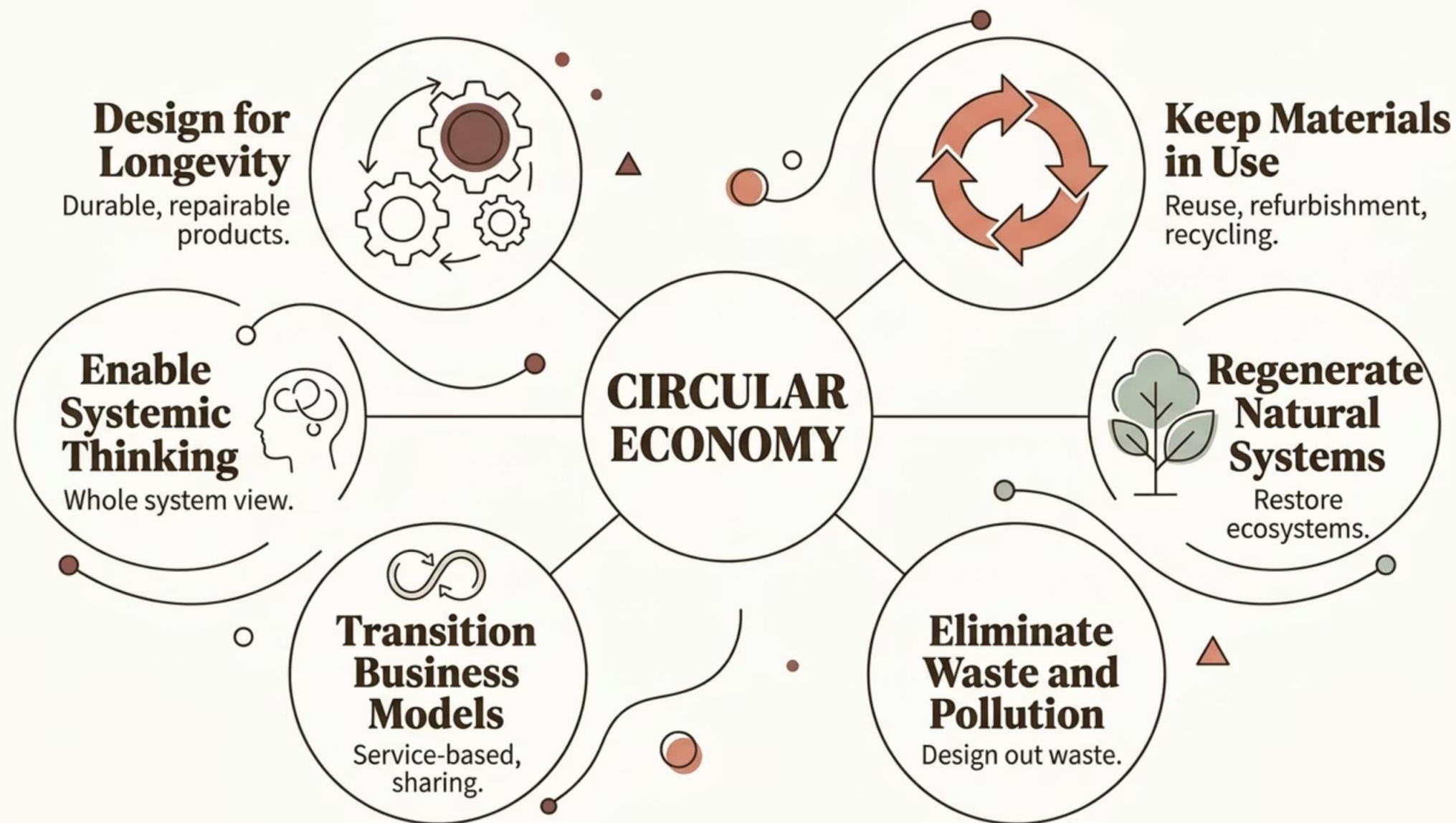
Adds a new dimension on global sustainability and resilience, acknowledging that circular transitions have international supply chain implications.

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## Policy Effectiveness

Designed to assess the real-world impact of circular economy policies and identify best practices across EU member states.

# Key Elements of Circular Economy Frameworks



# Holistic View: Beyond Linear Thinking

Effective circular economy assessment demands moving beyond linear input-output metrics. True circularity is a systems property — it emerges from the interaction of design choices, business models, material flows, and enabling infrastructure working together in concert.

# Tools for Business Transformation

A deep look at the most widely used corporate-level assessment tools — who developed them, what they measure, and how companies are putting them to work to drive circularity performance.

## Developed by Ellen MacArthur Foundation

Circulytics was purpose-built to give companies a rigorous, holistic view of their circular economy performance — going well beyond product-level assessments to evaluate the entire organization.

## COMPİŃPCEHP É ÖMÖP

- Measures circularity across **entire operations**, not just individual products or processes
- Uses a dual set of **enabler indicators** (strategy, culture, processes) and **outcome indicators** (material flows, revenues)
- Enables **benchmarking** against industry peers to contextualize performance
- Identifies concrete **innovation opportunities** and areas for strategic investment

# Circular Transition Indicators (CTI) v4.0



## Designed by Business, for Business

Developed by the WBCSD, CTI v4.0 is a universal, quantitative framework built to speak the language of corporate decision-makers — practical, comparable, and action-oriented.



## Unlock Value & Drive Goals

Empowers companies to identify financial value in circular initiatives, advance sustainability commitments, and strengthen both internal and external reporting credibility.

The proliferation of business-focused circularity tools marks a pivotal shift: circularity is no longer a conceptual aspiration but a measurable, manageable operational reality. Companies that invest in robust assessment today are building the strategic intelligence to lead tomorrow's resource-efficient economy.

# Deeper Dives & Specialized Tools

Beyond general-purpose frameworks, a new generation of specialized tools addresses specific measurement needs — from product-level circularity scoring to comprehensive indicator libraries for researchers and policymakers.

## What It Measures

The CPI Tool (currently in Beta) is designed to evaluate the circularity potential of **industrial products** at the design and development stage — enabling circularity to be engineered in from the start, rather than retrofitted later.

It produces a "**Circularity Score**" out of 100, giving product teams a clear, comparable metric to track design evolution over time.

## How It Works

- Based on the Ellen MacArthur Foundation's **four building blocks** of the circular economy
- Uses a structured questionnaire covering **20 product attributes** across those building blocks
- Guides teams through **(re-)design, development, and benchmarking** phases
- Enables comparison across product variants and competitor offerings

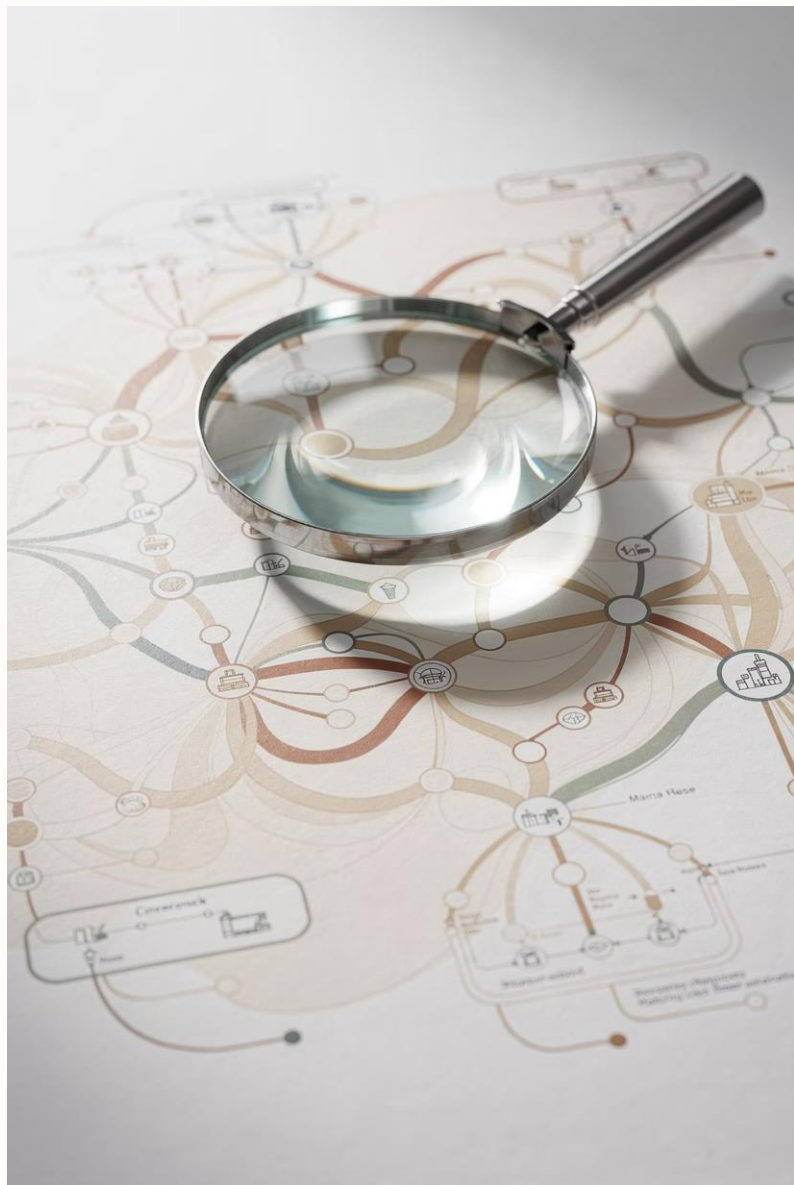
# RMIS: Raw Materials Information System

## What RMIS Provides

The Raw Materials Information System offers a comprehensive database of data profiles on critical and strategic raw materials, covering supply risk, import dependency, trade flows, and emerging substitutes.

## Circular Economy Relevance

- Tracks **secondary material flows** and recycled content availability
- Supports analysis of **security of supply** and the role of circularity in reducing dependence on primary extraction
- Monitors **technological advancements** in material efficiency and substitution



# Raw material data reveals something profound: the circular economy's greatest opportunities often lie hidden within existing material flows.

Raw material data reveals something profound: the circular economy's greatest opportunities often lie hidden within existing material flows. By mapping where materials go, where they are lost, and where they could be recovered, RMIS-type tools help unlock value that the linear economy routinely discards.

# The Road Ahead

The tools exist. The frameworks are maturing. But significant challenges remain — and exciting innovations are emerging. This final chapter looks honestly at where the measurement ecosystem stands today, and where it must go next.

## Data Availability & Quality

Reliable, granular data on material flows, secondary markets, and end-of-life treatment remains patchy across sectors and geographies — a fundamental barrier to credible assessment.

## Complexity of Supply Chains

Modern supply chains span dozens of tiers and jurisdictions. Comprehensively measuring circularity across these networks requires unprecedented coordination and data-sharing between actors.

## SME Accessibility

Many assessment tools are designed with large corporations in mind. Making them accessible, affordable, and actionable for small and medium enterprises is a critical equity and uptake challenge.

## Indicator Fragmentation

The proliferation of frameworks has created a fragmented landscape. Without harmonization, comparability across companies, industries, and borders remains elusive and reporting burdens multiply.



## Scope 3 & Supply Chain Circularity

Growing regulatory and investor pressure is driving increased focus on Scope 3 emissions and the circularity performance of upstream and downstream supply chain partners — expanding measurement far beyond company boundaries.



## AI & Real-Time Monitoring

Artificial intelligence and IoT-enabled sensing are enabling real-time tracking of material flows, product lifecycles, and circular performance — transforming static annual reports into dynamic, live dashboards.



## Regulatory Harmonization

Regulatory bodies and standard-setters are converging on harmonized circularity disclosure frameworks, providing investors and regulators with the comparable, auditable data they need to drive capital allocation.

# Collaboration is the Key



No single tool, company, or government can solve the measurement challenge alone. The most powerful advances in circularity assessment have come from multi-stakeholder collaboration — between industry, academia, civil society, and policymakers working together to build shared data infrastructure and agreed-upon standards.

## Measurement as an Enabler

Robust data and effective assessment tools are not administrative burdens — they are critical strategic enablers. They make the invisible visible and turn ambition into accountable action.

## Enabling Opportunities

Companies that embrace circularity measurement today will unlock new revenue streams, reduce material costs, and build the resilience needed to thrive in a resource-constrained world.

## Policy Impact

Policymakers equipped with credible, harmonized indicators can set ambitious, evidence-based targets and design interventions that drive systemic change rather than incremental improvement.