

TOWARDS A SOUTH AFRICAN CIRCULAR ECONOMY MONITORING SYSTEM (SACEMS): DRAFT INDICATORS FOR DISCUSSION

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SUMMARY

The CSIR is developing a framework for monitoring South Africa's transition to a circular economy; as a first step towards the development of a South African Circular Economy Monitoring System (SACEMS). The framework and a draft set of indicators have been developed, for further consultation with stakeholders.

INTRODUCTION

The circular economy (CE) has emerged as an opportunity for reframing economic development and unlocking new opportunities for growth and employment; while achieving global commitments relating to climate change and sustainable development. By keeping resources circulating productively within the economy, the CE is key to ensuring sustainable management of our resources, and managing future development risks.

The DSI's Science, Technology and Innovation (STI) White Paper (2019), as well as the Decadal Plan (2022), identify the CE as a key new source of economic recovery and growth, and as a priority area for STI. The need to transition towards a CE is therefore embedded in South African policy.

However, there is currently no agreed upon approach to monitor the implementation of the CE in SA, and a lack of indicators to track SA's progress towards achieving a circular economy.

AIMS AND APPROACH

The aim of this project is to identify a balanced suite of indicators for monitoring South Africa's transition to a circular economy; and to develop guidance for populating each indicator (data sources, data custodians, monitoring frequency etc.). The intention is to lay the groundwork for the development of a South African Circular Economy

Monitoring System (SACEMS). A phased approach is being applied, as follows:

- Phase 1: Compile draft set of indicators
- Phase 2: Stakeholder validation and finalization of indicators.

The project is currently in Phase 1; with further funding required for Phase 2.

A Principles-Criteria-Indicators (PCI) framework was used to identify the draft set of indicators:

- Principles (fundamental laws or rules, serving as a basis for reasoning and action)
- Criteria (desired states of the system, aligned with the high-level principles), and
- Indicators (qualitative or quantitative variables that can be assessed to check compliance with the criteria).

A framework has been developed and a preliminary set of indicators has been identified; through consultation with experts and extensive reviews of existing initiatives. As far as possible, we have tried to align with existing and future reporting requirements (such as the Sustainable Development Goals (SDGs), Global Biodiversity Framework (GBF), AU Continental CE Action Plan, and STI4CE Strategy) to ensure harmonisation of data collection efforts.

A **preliminary set of indicators for discussion** is provided overleaf. Please contact Anton Nahman anahman@csir.co.za with any comments.

PRELIMINARY SET OF INDICATORS PROPOSED FOR THE SACEMS, FOR FURTHER DISCUSSION

Headline indicator: Total Cycling Rate (as per Economy-Wide Material Flow Analysis, EW-MFA (Von Blottnitz et al. 2022))			
Principles	Criteria	Indicators	Source
P1: Eliminate waste and pollution	C1.1: Decoupling economic activity from material use	Indicator 1.1.1: Material footprint, material footprint per capita, and material footprint per GDP	SDG indicator 12.2.1
		Indicator 1.1.2: Domestic material consumption, DMC per capita, and DMC per GDP	SDG 12.2.2
	C1.2: Reducing waste generation	Indicator 1.2.1: Total waste generated per year (tonnes)	State of Waste reporting
	C1.3: Reducing emissions to the environment	Indicator 1.3.1: Total greenhouse gas emissions per year (MtCO ₂ e)	SDG 13.2.2
		Indicator 1.3.2: National Air Quality Indicator (NAQI)	SDG 11.6.2A
Indicator 1.3.3: Proportion of bodies of water that comply to South African water quality objectives		SDG 6.3.2D	
P2: Circulate products & materials (at their highest value)	C2.1: Rethinking the business model	Indicator 2.1.1 (to be confirmed): No. of circular MSMEs / GVA of circular businesses / Value of investment into new business models / No. of repair, reuse & refurbishment initiatives / No. of materials-as-a-service / product-as-a-service systems implemented	AU CE Action Plan / To be developed
	C2.2: Extending the product lifetime	Indicator 2.2.1 (TBC): Reuse rate / Number of repair, reuse & refurbishment initiatives / Sales of 2nd hand goods / Proportion of short-lived and single use consumption relative to durable consumption (or total consumption)	EPR Regs / AU CE Action Plan / To be developed
	C2.3: Keeping materials in use	Indicator 2.3.1: Percentage of municipal waste generated that is recycled	SDG 12.5.1D
Indicator 2.3.2: Socio-economic cycling rate (as per EW-MFA)		Von Blottnitz et al	
P3: Regenerate nature	C3.1: Using resources sustainably	Indicator 3.1.1: Renewable energy share in total final energy consumption	SDG 7.2.1
		Indicator 3.1.2: Energy intensity measured i.t.o primary energy and GDP	SDG 7.3.1
		Indicator 3.1.3: Change in water use efficiency over time (USD/m ³)	SDG 6.4.1
		To be developed: Indicator for reuse, reclamation and recycling of water	To be developed
	C3.2: Emulating natural systems	Indicator 3.2.1: Ecological cycling rate (as per EW-MFA)	Von Blottnitz et al
		Indicator 3.2.2: Share of organic waste diverted from landfills	AU CE Action Plan
C3.3: Rebuilding natural capital	Indicator 3.3.1: Red List Index of ecosystems (RLIe)	GBF	
	Indicator 3.3.2: Red List Index (RLI) (species)	SDG 15.5.1 / GBF	
P4: Leave no one behind	C4.1: Creating new opportunities	Indicator 4.1.1 (TBC): Number of circular MSMEs / GVA of circular businesses / Number of CE jobs created / Number of circular jobs	AU CE Action Plan
	C4.2: Building economic resilience	Indicator 4.2.1: Trade balance (goods) (R billions, year)	Reserve Bank
		Indicator 4.2.2: Primary sector % contribution to GDP	StatsSA
		Indicator 4.2.3: Rate of domestic stock building (% of domestic extraction)	Von Blottnitz et al
	C4.3: Ensuring a just transition	Indicator 4.3.1: Unemployment rate, by sex, age & persons with disabilities	SDG 8.5.2
		Indicator 4.3.2 (to be confirmed): Decent work indicator	To be confirmed
		Indicator 4.3.3: Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	SDG 1.2.2
Indicator 4.3.4: Gini coefficient (income inequality)		StatsSA	
Indicators for the enabling environment	Policy and legislation	TBC: Publication of National CE roadmap / Amendment of policy and/or promulgation of new policy / Circular public procurement regulation / Number of [design for circularity] standards developed and implemented	STI4CE Strategy / AU CE Action Plan / NWMS 2020
	Financing and investment	TBC: Value of financial contribution to CE initiatives / Average interest rates proposed to CE businesses / Share of public budget spent on CE projects / Introduction of tax breaks for CE businesses / No of SMMEs supported	STI4CE Strategy / AU CE Action Plan
	STI, pilots and demonstrations	TBC: Number of multi-institution publications around STI4CE / Number of new patents per year / Establishment and record of 'living labs'	DSI STI4CE Strategy (draft)
	Collaboration and transparency	TBC: Establishment of an online platform and number of actors participating / MOUs/MOAs/NDAs between entrepreneurs & relevant stakeholders	DSI STI4CE Strategy (draft)
	Education and training	TBC: No. of CE courses relevant to SA context / No. of course completions / No of local government officials with accredited CE-related qualifications	DSI STI4CE Strategy (draft)

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