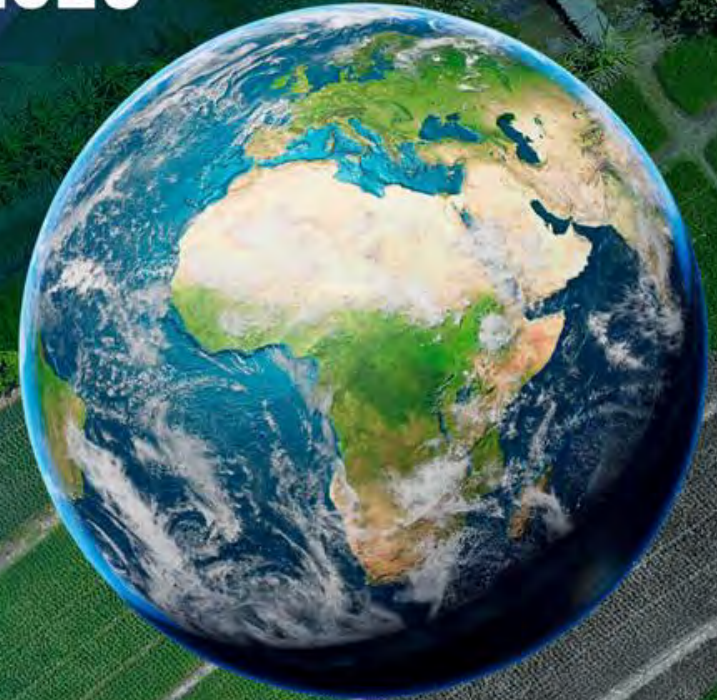


COMMUNITIES OF PRACTICE (COP)
INTEGRATED WORKSHOP AND TRAINING **2026**

Circular Economy and Natural Resources Management

NEOSS Community of Practice

Draft Strategy | July 2026



INTEGRATED WORKSHOP

*An initiative of the DSTI that is hosted and
managed by the CSIR*

Draft Strategy

Circular Economy and Natural Resources Management CoP

Co-Chairs

Circular Economy and Natural Resources Management CoP Co-Chairs



Ms Kershani Tinisha Chetty

Ms Chetty is a seasoned hydrologist, academic programme co-ordinator, and research leader based at the Centre for Water Resources Research, University of KwaZulu-Natal (UKZN). With over 25 years of experience in academia and industry, she has made significant contributions to teaching, research, capacity development, national hydrological modelling and design hydrology and, institutional management within the fields of hydrology, water resources and Earth Observation for Natural Resources Management.



Dr Cecilia Masemola

Dr. Cecilia R. Masemola holds a PhD in Environmental Sciences from UNISA and is a Principal Scientist at the South African National Space Agency. She is a geospatial scientist specializing in Earth observation, remote sensing, AI, and geospatial analytics for agriculture, natural resources, and disaster risk management. With more than a decade of research and leadership experience in academia and industry, she has led the development of national geospatial decision support systems, contributed to international research collaborations, is well published and supervises PG students.

Context and Overall Goal

Why this Community of Practice exists

OVERALL GOAL

- Create knowledge and understanding of circular economy models and research
- Use EO data and technologies to support efficient management and monitoring of natural resources i.e. water, soil and atmosphere
- Propose circular economy research themes, solutions and initiatives for progress in sustainable development
- Identify barriers to circularity and develop approaches to mitigate them

PROBLEM STATEMENT

- Many natural resources are poorly managed because they do not follow the circular economy model
- Space technologies provide solutions that aid the management and monitoring of natural resources
- Adoption of space technologies for managing and monitoring natural resources remains slow

Objectives: Users, Data and EO Systems

Understanding needs and getting the right data and tools to users

- 1 Identify existing and other potential initiatives for collaboration.
- 2 Assess user requirements for new EO systems for natural resources management.
- 3 Define user requirements for EO systems for circular economy and natural resources management applications.
- 4 Identify EO data and tools for circular economy and natural resources management applications.
- 5 Provide analysis-ready data and on-demand information tailored for specific end-users.
- 6 Promote dialogue between EO data and information generators, users of EO data, and policymakers.
- 7 Identify organisations involved in circular economy and natural resources management to enhance EO capabilities.

Objectives: Policy, Capacity and Circularity

Turning the space value chain circular and closing the skills gap

1

Develop policy recommendations that promote circularity within the space industry.

2

Develop policy recommendations that promote open access to ground-based data.

3

Adopt best practices for circular economy within the space industry.

4

Define guidelines for the reuse and recycling of space infrastructure.

5

Identify and develop processes for circular economy in the space value chain.

6

Capacity building and knowledge sharing.

7

Collaborate with academic and research institutes to close the skills gap.

Priority Application Areas and Intervention Domains

Community-wide challenges the CoP will work on

- 1 Formulating policies that promote the circular economy.
- 2 Identifying best practices from other industries regarding circular economy.
- 3 Policy reviews to promote access to ground-based data.
- 4 Identifying best-practice systems and processing chains within the space industry that could be turned circular.
- 5 Migrating from linear models to circular economy systems.
- 6 Access to analysis-ready data and on-demand information.
- 7 Skills shortage in circular economy technologies and EO: building capacity in this field.
- 8 Merging with current decision-support models for environmental management, e.g. water resources and hydrological models.

Expected Outcomes

What the CoP will deliver over the strategy period

- 1 Open data policy established on open access to government-funded data
- 2 Users' requirements identified and documented
- 3 Inventory of key institutions that use EO for natural resources management established
- 4 Guidelines for the use of EO for disaster management established
- 5 Guidelines for the reuse and recycling of space infrastructure crafted
- 6 List of Essential Biodiversity Variables (EBVs) for South Africa established, and the EO needs for mapping EBVs identified
- 7 CoP awareness of best practices in circular economy
- 8 Increased participation of the South African community in GEO initiatives, e.g. GEOBON

Collaboration with Other CoPs

Where this CoP connects with the wider NEOSS community

1 Data Governance

Collaborating on developing policies that promote open access to data.

2 Agriculture and Food Security

Collaborating on identifying sectors in agriculture that can be turned circular.

3 Climate Action

Collaborating on the impact of climate change on the management and monitoring of natural resources.

4 Satellite Communications and Navigation

Collaborating on identifying circular economy best practices for engineering.

Alignment to National Institutions and Programmes

Mandates and plans the CoP supports

DFFE

- 1** Environmental management, conservation, protection and rehabilitation of depleted natural resources, forestry productivity, and climate change adaptation and mitigation

DSTI Decadal Plan (2021–2031)

- 2** A wider digital agenda advancing new digital technology fields such as remote sensing and 4IR innovations

DALRRD

- 3** Equitable access to land, integrated rural development, sustainable agriculture and food security for all

SANBI and the National Disaster

- 4** **Management Centre** Biodiversity and disaster management mandates supported by EO

Human capital development

- 5** Collaboration with institutions running existing space sector programmes (SANSA; SAASTA)

Academic and research institutes

- 6** Universities, ARC-ISCW, CSIR, CGS and other research partners

Synergies with GEO and International Initiatives

Where the CoP plugs into global Earth observation frameworks

GEO BON

Biodiversity Observation Network

South Africa contributes to GEO BON's biodiversity synthesis for the post 2020 Global Biodiversity Framework, including Essential Biodiversity Variables and the EO needed to map them.

SDG 15

Life on Land

Human activity has altered almost 75% of the Earth's surface. The CoP helps build EO methods for rapid assessment and inventorying of resources and change processes.

UNCCD LDN

Land Degradation Neutrality (SDG 15.3)

As a UNCCD Party, South Africa reports SDG 15.3.1 from land cover, productivity and soil carbon: tracking progress toward a land-degradation-neutral 2030.

Enabling and Collaboration Resources

Partners, skills, networks and frameworks for implementation

National partners and programmes

- SANSA - national mandate for EO data and products
- SANSA Natural Resource Management Programme - municipal study sites
- CSIR, CGS, ARC-ISCW, SAEON, SANBI (EBVs, land cover), SAWS

Skills and capacity building

- Universities and research institutes
- SANSA; SAASTA science advancement and training
- DE Africa learning platform and notebooks; Esri training

Regional and global networks

- GEO / GEOSSSA -founding member and Exec Co-Chair
- AfriGEO - African EO caucus (SA founding leader)
- CEOS (ARD standards); GEOBON; Copernicus / ESA

Policy and standards frameworks

- SAEOS and National Space Strategy; DSTI Decadal Plan
- Open-data policy; CEOS CARD4L interoperability
- AU Agenda 2063; UN SDGs; Sendai and Paris; global GBF

Thematic Networks and Specialist Resources

Domain-specific bodies, tools and frameworks the CoP can draw on

Biological invasions

- SANBI Biological Invasions: National Status Report (NEM:BA)
- DSI-NRF Centre for Invasion Biology (C·I·B), Stellenbosch
- Working for Water; SAPIA plant invaders atlas

Land degradation and restoration

- Trends.Earth (QGIS): SDG 15.3.1 sub-indicators
- GEO-LDN Initiative; ESA SEN4LDN 10 m products
- DFFE restoration programmes (Working for Ecosystems)

Water and wetlands

- Ramsar Convention; Working for Wetlands
- FAO WaPOR- water productivity for Africa
- DE Africa water services; GEOGloWS streamflow

Biodiversity and ecosystems

- SANBI National Biodiversity Assessment and BGIS
- IPBES assessments; GBF Target 6 (invasives -50% by 2030)
- Global Forest Watch; Copernicus Global Land

THANK YOU

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