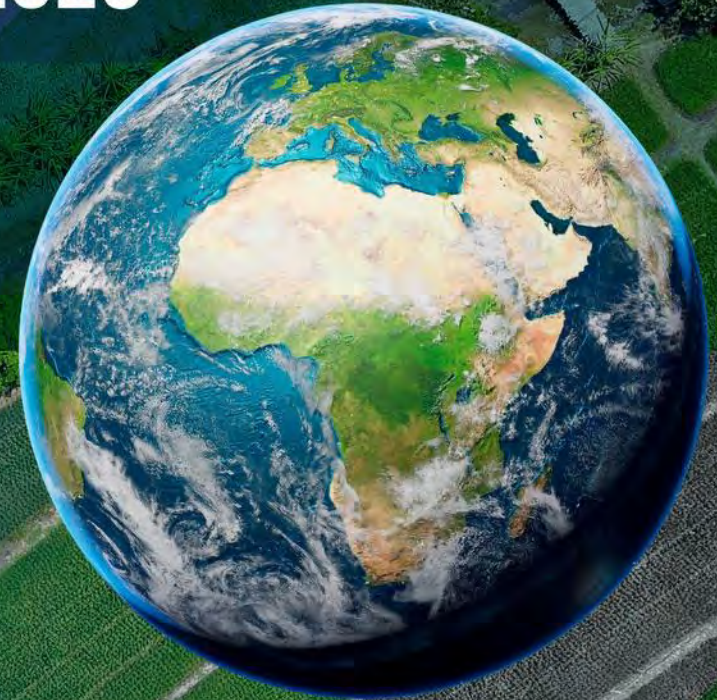


COMMUNITIES OF PRACTICE (COP)
INTEGRATED WORKSHOP AND TRAINING **2026**

Agriculture and Food Security



INTEGRATED WORKSHOP

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

Draft Strategy



CoP Co-Chairs

Dr. Yonwaba Atyosi



Dr Yonwaba Atyosi holds a PhD in Geoinformatics (University of Pretoria), an MSc and Honours in Applied Remote Sensing and GIS, and a BSc in Geology and GIS (University of Fort Hare).

Her professional journey began as an Intern in Space Science and Technology at the Department of Science, Technology and Innovation (DSTI), where she worked across both Earth Observation and Space Systems. She has since held research and technical positions at the Agricultural Research Council (Water Science Unit), where she conducted wetlands research, the Council for Geoscience in the Scientific Databases Unit, and the private sector at Total Geospatial Information Solutions.

Currently, she is a Candidate Researcher in the Precision Agriculture Group at the Council for Scientific and Industrial Research (CSIR), working at the intersection of remote sensing, digital agriculture, and food security. Her research focuses on advancing precision agriculture through innovative soil monitoring techniques, Earth Observation, and geospatial analytics to support sustainable agricultural production.

Her work advances the remote sensing of soil moisture, a critical variable for agricultural productivity, environmental sustainability, and food security, supporting more resilient farming systems in South Africa and across the African continent.

Ms Ndilisa Didiza



BSc Honours degree in Applied Remote Sensing and GIS from the University of Fort Hare and is the Founder and Managing Director of Kgothatso Innovations, a geospatial intelligence consultancy that delivers Earth Observation (EO), GIS and spatial analytics solutions to support evidence-based decision-making across the agriculture, mining, environmental, infrastructure and public sectors.

With over 20 years of experience in the geospatial industry, she has led and contributed to numerous projects that leverage Earth Observation and spatial technologies to address complex environmental, engineering and development challenges.

Ndilisa is passionate about connecting people, science and technology to solve complex real-world challenges. She works across government, academia, industry and communities to advance the adoption of Earth Observation and geospatial innovation, translating scientific knowledge into practical solutions that support sustainable development, resilient infrastructure, environmental stewardship and evidence-based decision-making.

OUTLINE

- Overall context
- Vision and strategic goals
- Where are we now
- Key objectives
- Priority intervention domains
- Expected outcomes & impact
- Work plan
- Cross-CoP collaboration
- National & international alignment



Overall Context

The Agriculture and Food Security CoP is dedicated to advancing the use of **Earth Observation (EO)** to support sustainable agriculture and strengthen food security through collaboration, innovation, and knowledge sharing.

The CoP aims to:

- **Promote the use of Earth Observation data** to support sustainable agriculture and food security.
- **Monitor environmental conditions** including weather, climate, freshwater resources, soil moisture, and other key environmental variables.
- **Share best practices** and promote the use of holistic, up-to-date EO information for agricultural decision-making.
- **Facilitate collaboration** among researchers, government, industry, and end-users to improve the uptake of EO products and services.
- **Identify existing initiatives** and promote new collaborative opportunities that address national agricultural priorities.

Vision and Strategic Goals

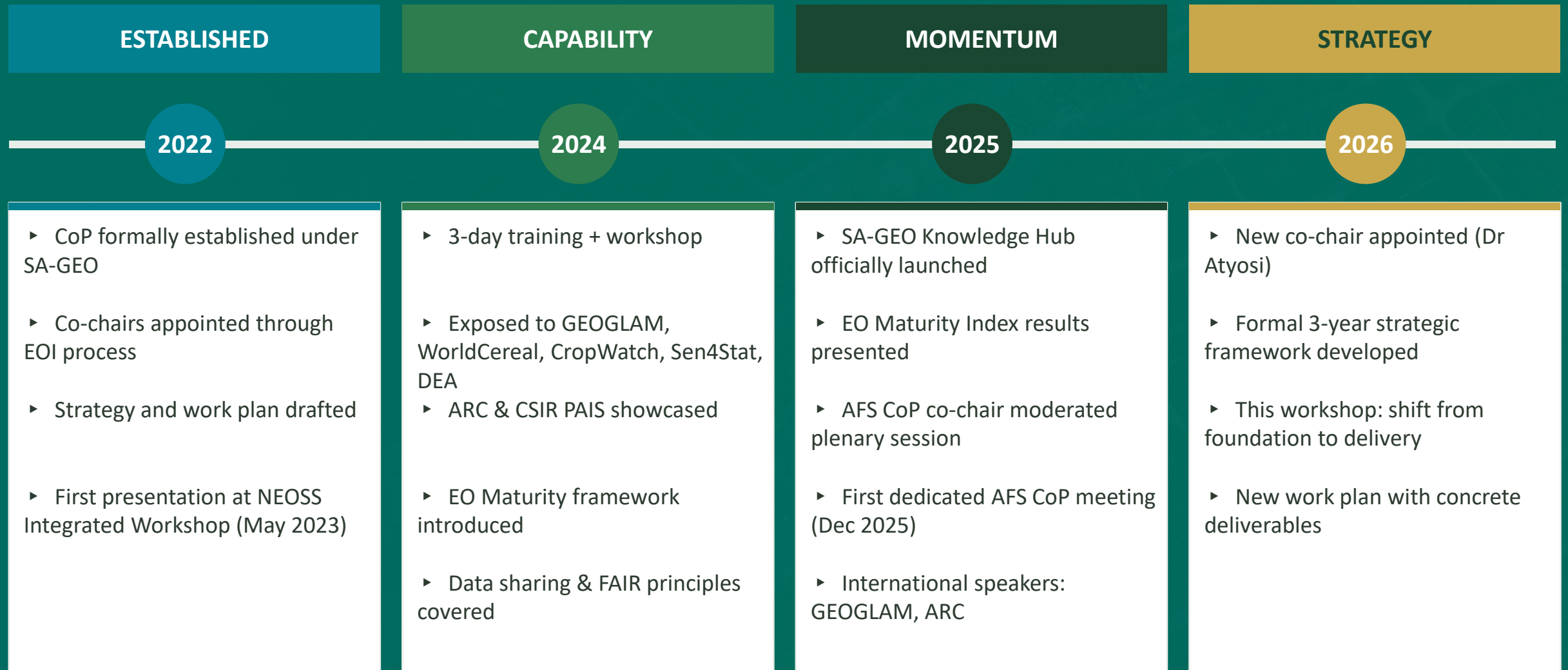
Vision

To become South Africa's leading collaborative platform that advances the use of Earth Observation for sustainable agriculture, resilient food systems, and evidence-based decision-making.

Strategic Goals

- Promote the use of Earth Observation for agriculture and food security.
- Strengthen collaboration between EO data providers and users.
- Improve access to EO data, tools, and services.
- Support innovation in digital agriculture.
- Strengthen national and international partnerships.
- Enhance the uptake of EO information for operational decision-making.

Where are we now?



Key Objectives

Strengthen National EO Capacity

- Identify existing capabilities, expertise, and collaborative initiatives in agriculture and food security.
- Identify gaps in current Earth Observation (EO) user requirements.

Advance EO Applications

- Improve EO-based mapping for land suitability, crop types, disease monitoring, and other agricultural applications.
- Promote the sharing and uptake of EO data, tools, and services.

Foster Collaboration & Partnerships

- Strengthen collaboration with key institutions (e.g., **ARC**, **CSIR** and **SANSA**) to transition EO data and products into operational service delivery.
- Collaborate with the **Data Governance CoP** to develop data-sharing guidelines and best practices.

Bridge Science and Practice

- Connect EO data and information providers with agricultural producers, agribusinesses, and other end users.
- Raise awareness and promote active participation in the Agriculture and Food Security CoP.

Support National & Global Initiatives

- Contribute to initiatives such as **GEOGLAM**, **JECAM**, the **Crop Estimates Liaison Committee**, and other national and international agricultural EO programmes.

Priority Intervention Domains

The CoP will focus on the following priority application areas:



Crop Production

Food crops, cereals, horticulture



Livestock & Rangeland

Livestock monitoring, grazing management



Forestry

Forest cover, degradation, carbon



Freshwater & Inland Water

Water availability, irrigation



Soil Moisture

Key variable for agricultural productivity



Weather, Climate & Drought

Seasonal forecasts, extreme events



Coastal Ecosystems

Aquaculture, marine food systems



Fisheries

Ocean colour, fishing grounds

These domains recognise the interconnected nature of agricultural production, natural resource management, environmental sustainability and climate resilience.

Expected Outcomes & Impact

01

National EO Capability Inventory

A published inventory of existing EO initiatives, capabilities, and stakeholders active in agriculture and food security across South Africa.

02

Agri EO Tools Repository

A curated Agriculture & Food Security Knowledge Package Collection on the SA-GEO Knowledge Hub, mapping available EO tools, datasets, platforms, and access pathways.

03

EO Adoption Barrier Report

A structured investigation into why EO uptake by users remains low, with practical recommendations for closing the gap between data providers and agricultural users.

04

User Requirements Database

A documented and accessible one-stop shop for EO user requirements from across the agricultural value chain, informing product development and national EO strategy.

05

Industry Engagement Record

Demonstrated CoP presence at flagship agricultural events (NAMPO, Grain SA forums) with documented stakeholder engagements, use case demonstrations, and new CoP members recruited.

06

Strengthened Partnerships

Formalised working relationships with ARC, CSIR, SANSA, DALRRD, and GEOGLAM, with at least one collaborative project or joint initiative initiated.

WORK PLAN

Objective	Strategy	Resources	2026/27	2027/28	2028/29
Identify current capacity and capability in agriculture and food security, including potential initiatives for collaboration	Conduct a desktop exercise/survey to map existing capacity, capabilities and collaborative initiatives, and utilise results from the socio-economic case.	• SurveyMonkey (or similar survey tools) • Publish study findings • Database of experts • Database of initiatives	●	●	●
Identify gaps in the currently developed user requirements for EO systems for agriculture and food security applications	Request access to existing user requirement documents (e.g., SANSA) Compile user requirement documents from the past 3–5 years Review outcomes Participate in relevant user symposiums	• SANSA documentation • Secretariat support • CoP expert database • NEOSS calendar of events	●	●	●
Improve existing mapping capability for land suitability, crop types and disease spread	Conduct a feasibility study/business plan to identify suitable models, methods, processes and systems for improved mapping capability.	• Call for Proposals • Technical expertise • Feasibility study	●	●	●
Collaborate with SANSA to ensure EO data and products are brought to service delivery level	Identify priority applications and recommend collaborative projects through the Integrated Earth Observations and Space (IEOS) Programme and NEO Frontiers.	• Terms of Reference (ToRs) • SANSA & partner institutions	●	●	●

WORK PLAN

Objective	Strategy	Required Resources	2026/27	2027/28	2028/29
Share EO data and tools to support agriculture applications	Create and maintain an Agriculture & Food Security page on the NEOSS Platform for sharing ideas, EO tools and initiatives.	• NEOSS Platform • Secretariat support			
Bridge dialogue between EO data/information generators and users in agricultural production and agribusiness	Organise CoP workshops and stakeholder meetings.	• Secretariat support • CoP members • Meeting platforms			
Create awareness and promote the CoP	Develop social media content, articles and communication campaigns to encourage participation. Leverage CoP outputs as knowledge products on SA-GHK and LinkedIn	• Secretariat • Communication platforms • CoP members			
Contribute to GEOGLAM, JECAM, AMIS, Crop Estimates Liaison Committee and related initiatives	Participate in national and international initiatives, provide technical inputs, nominate representatives, and share outcomes with the CoP.	• Participation guidelines • Travel funding • CoP Co-Chairs & Members			

Cross – CoP Collaboration



Climate Action CoP

- Assess and monitor impacts of climate change and extreme weather events on agriculture
- Strengthen climate resilience through EO-based early warning systems



Circular Economy & Natural Resources

- Assess and monitor invasive species and bush encroachment in agricultural landscapes
- Promote sustainable natural resource management linked to food production



EO Data Infrastructure & Governance

- Develop data-sharing guidelines and best practices for agricultural EO data
- Improve access to and interoperability of Earth Observation data for farmers and agribusinesses



SA-EO&S Youth Forum

- Promote youth participation in EO for agriculture and food security
- Support capacity building, mentorship, and youth-led agri-tech research and entrepreneurship

Alignment and Collaboration with National Programmes or Initiatives

DLRRD

Support implementation of the National Policy on Food and Nutrition Security (2014). Contribute towards the vision of "Equitable access to land, integrated rural development, sustainable agriculture and food security for all."

ARC

Collaborate on agricultural research, innovation, and the application of EO technologies to improve agricultural productivity and resilience.

CSIR

Advance the CSIR Precision Agriculture Information System (PAIS) and other EO-enabled decision-support tools for operational use.

DSTI

Align with the DSI Decadal Plan (2021–2031) by advancing remote sensing, EO, and 4IR technologies for agriculture and food security.

Forestry

Support increased productivity, conservation and rehabilitation of natural resources, and climate change adaptation and mitigation in forestry.

NSSTS

Support environmental resource management through the application of EO and space technologies, aligned to the National Space Science and Technology Strategy.

Alignment and Collaboration with GEO and Other International Initiatives

The Agriculture and Food Security CoP will contribute to regional and global Earth Observation initiatives that advance sustainable agriculture, biodiversity conservation, and food security.



GEOGLAM

Contribute to increasing market transparency and improving food security by producing and disseminating timely, relevant, and actionable information on agricultural conditions and production outlooks at the national scale.



JECAM

Collaborate on crop assessment, agricultural monitoring, and development of EO applications for agriculture through the Joint Experiment for Crop Assessment and Monitoring.



SDG 2 – Zero Hunger

Support the development and application of innovative technologies that contribute to sustainable agriculture and transformation of global food systems.



GEOBON

Collaborate with the Circular Economy and Natural Resources Management CoP to contribute towards the post-2020 Global Biodiversity Framework through biodiversity monitoring using EO.

THANK YOU

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