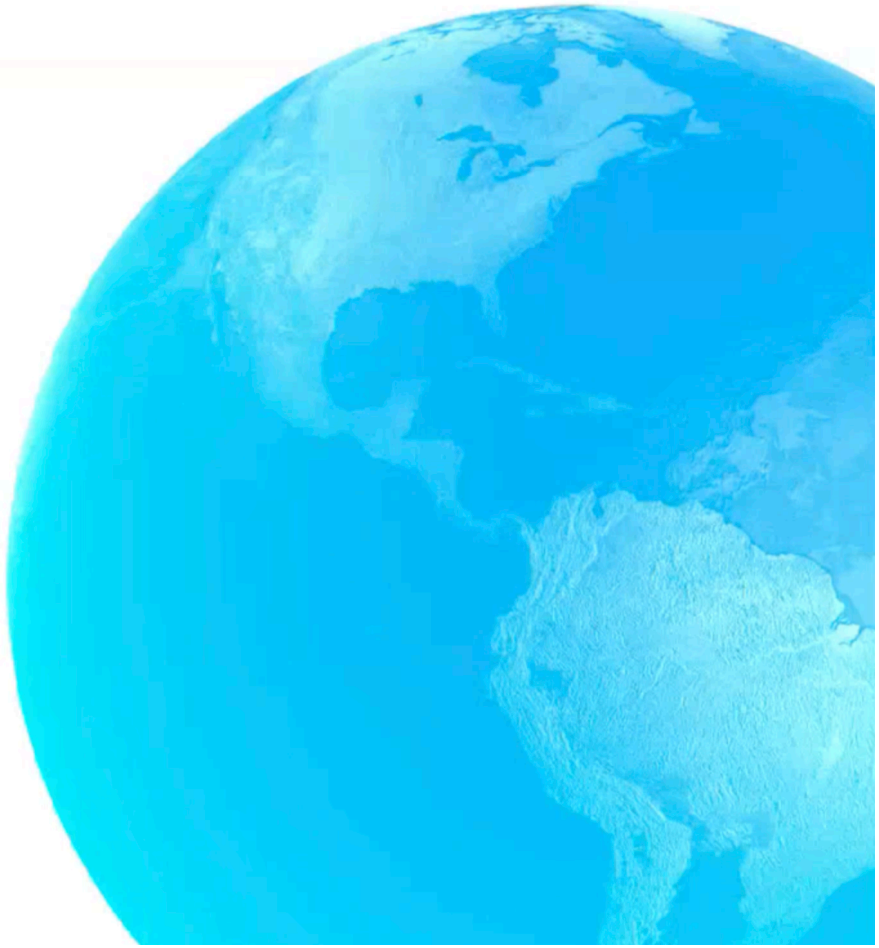
Open Geospatial Consortium

# Standardization Working Group (SWG) on Geospatial Reporting Indicators

## CEOS LSI-VC-16

**Contact:**
**Nils Hempelmann (OGC)**
**nhempelmann@ogc.org**



# Outline

- Introduction to OGC
- From raw data to information
- Case of UNCCD data encoding for national reporting cycle
- Geospatial Reporting Indicators SWG


OGC -
Collaborative Solutions and
Innovation Program (COSI)

CLIMATE RESILIENCE AND NATURAL DISASTERS

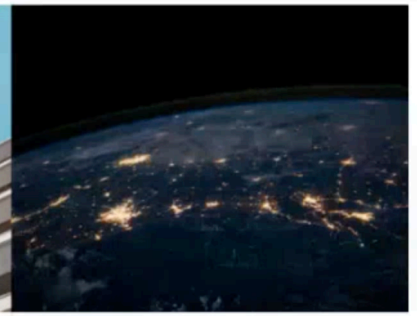
DOMAINS

FEDERATED MARINE ENVIRONMENT

DOMAINS

DIGITAL BUILDING PERMITS

DOMAINS



SEMANTIC INTEROPERABILITY

ARCHITECTURE

NEXT GENERATION SDI

ARCHITECTURE

OPEN SCIENCE

ARCHITECTURE

GEODATACUBES

TECHNOLOGY

3D IN SPACE

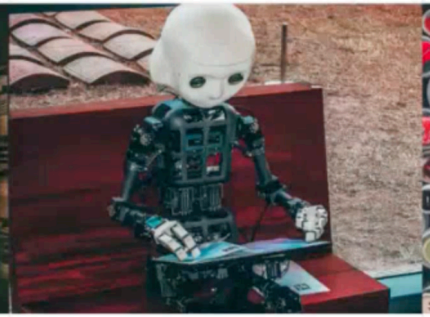
TECHNOLOGY

ANALYSIS READY DATA

ARCHITECTURE / TECHNOLOGY

HIGH PERFORMANCE COMPUTING

ARCHITECTURE / TECHNOLOGY



ARTIFICIAL INTELLIGENCE

TECHNOLOGY

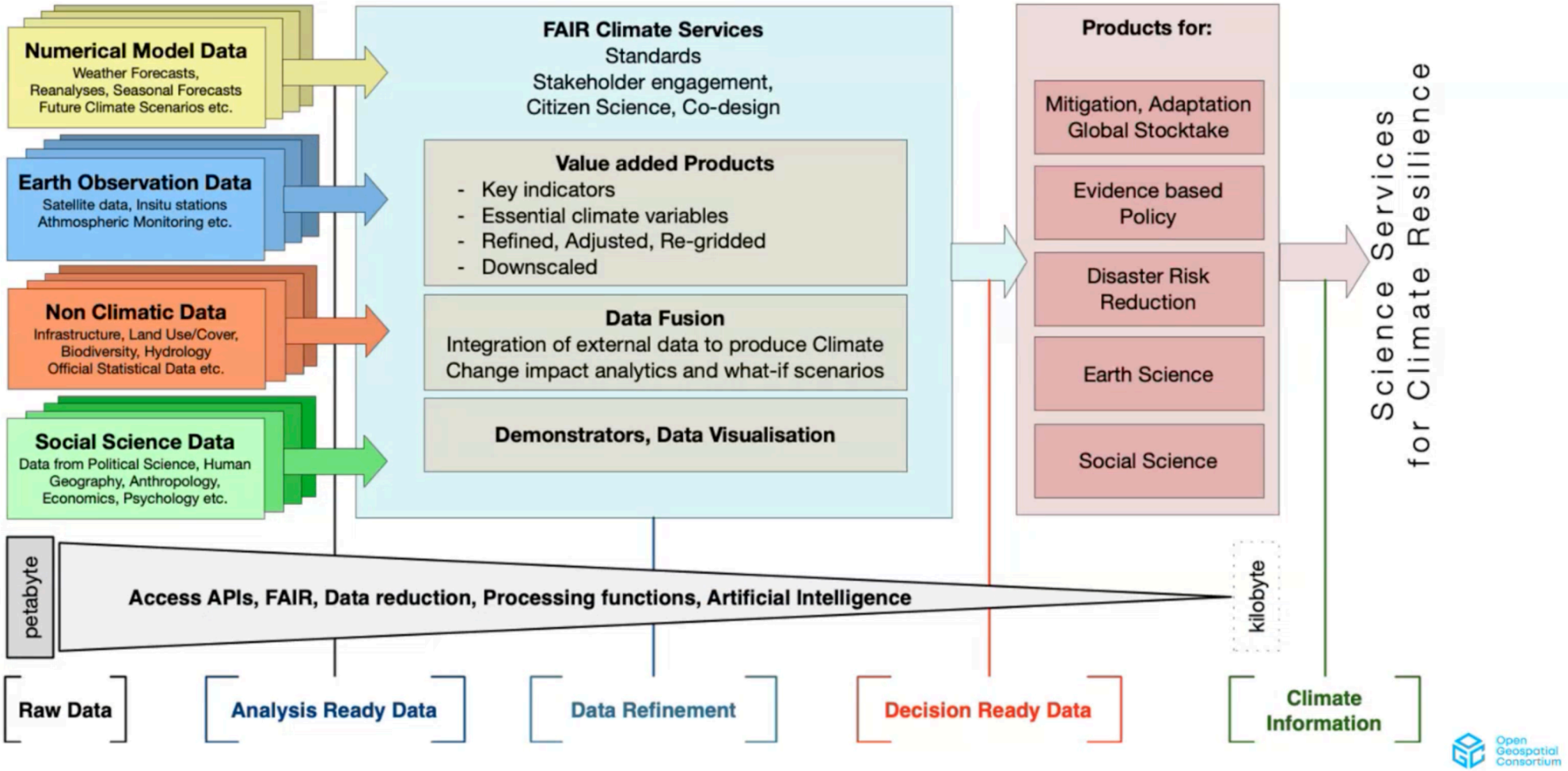
GEOSPATIAL RESEARCH

DOMAINS


OGC-driven
Research Topics
Identified by OGC staff
Execution
Driven by OGC staff
Collaboration as necessary
Output
Operational tools
Models
Advise & best practices
Collaborative Solutions & Innovation
OGC member-driven
Research Topics
Defined by OGC members
Execution
Managed by OGC staff
Collaboration is goal
Driven by OGC members
Output
Prototypes
Reports/Best practices
Draft standards

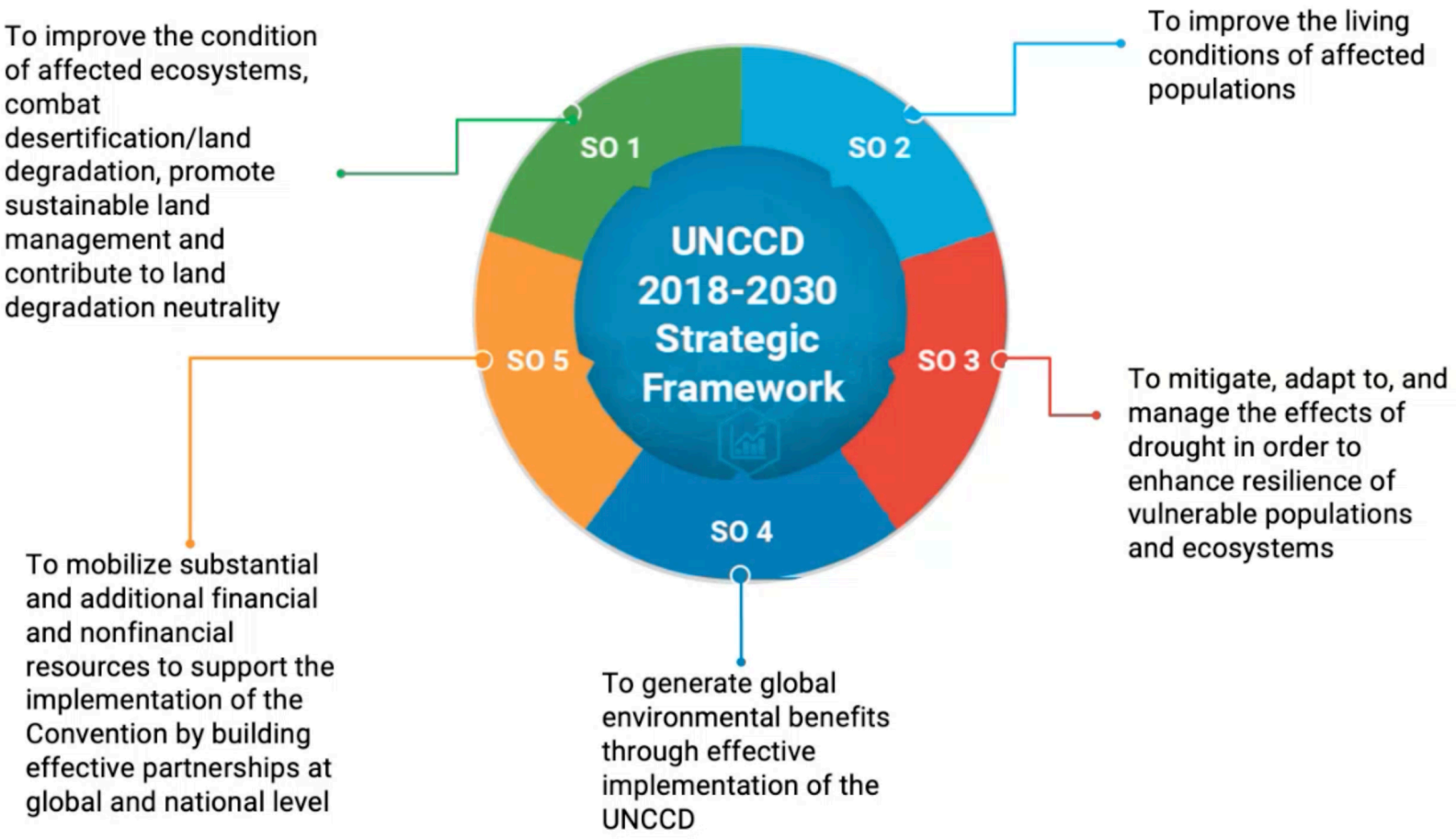

Fram raw data to information

# Value chain from raw data to information

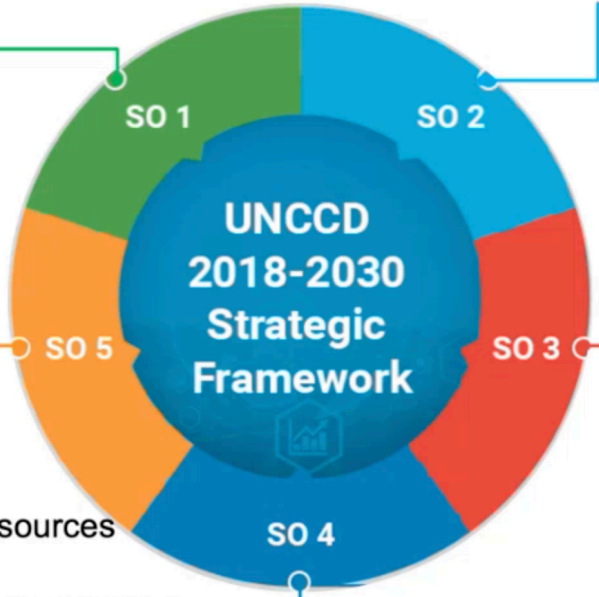



Example of
UNCCD data encoding
for national reporting cycle

# UNCCD strategic objectives



# Indicator framework




**Trends in:**

- Land cover
- Land productivity
- Carbon stocks above and below ground
- SDG indicator 15.3.1 – Proportion of land that is degraded over total land area

**Trends in:**

- Population living below the relative poverty line and/or income inequality in affected areas
- Access to safe drinking water in affected areas
- Proportion of the population exposed to land degradation, disaggregated by sex

**Trends in:**

- Proportion of land under drought over the total land area
- Proportion of the total population exposed to drought
- Degree of drought vulnerability

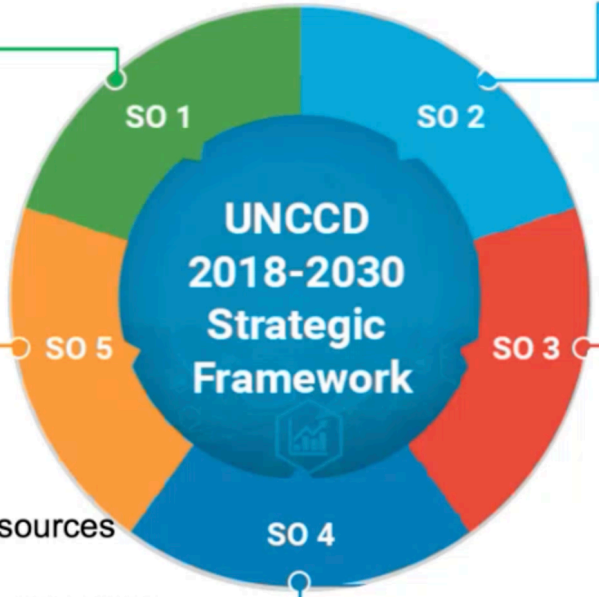
**Trends in:**

- Bilateral and multilateral public resources
- Domestic public resources
- International and domestic private resources
- Technology transfer
- Future support for activities related to the implementation of the Convention

Trends in:

- Carbon stocks above and below ground
- Abundance and distribution of selected species
- Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type

# Indicator framework




**Trends in:**

- **Land cover**
- **Land productivity**
- **Carbon stocks above and below ground**
- **SDG indicator 15.3.1 – Proportion of land that is degraded over total land area**

**Trends in:**

- **Population living below the relative poverty line and/or income inequality in affected areas**
- **Access to safe drinking water in affected areas**
- **Proportion of the population exposed to land degradation, disaggregated by sex**

**Trends in:**

- Bilateral and multilateral public resources
- Domestic public resources
- International and domestic private resources
- Technology transfer
- Future support for activities related to the implementation of the Convention

**Trends in:**

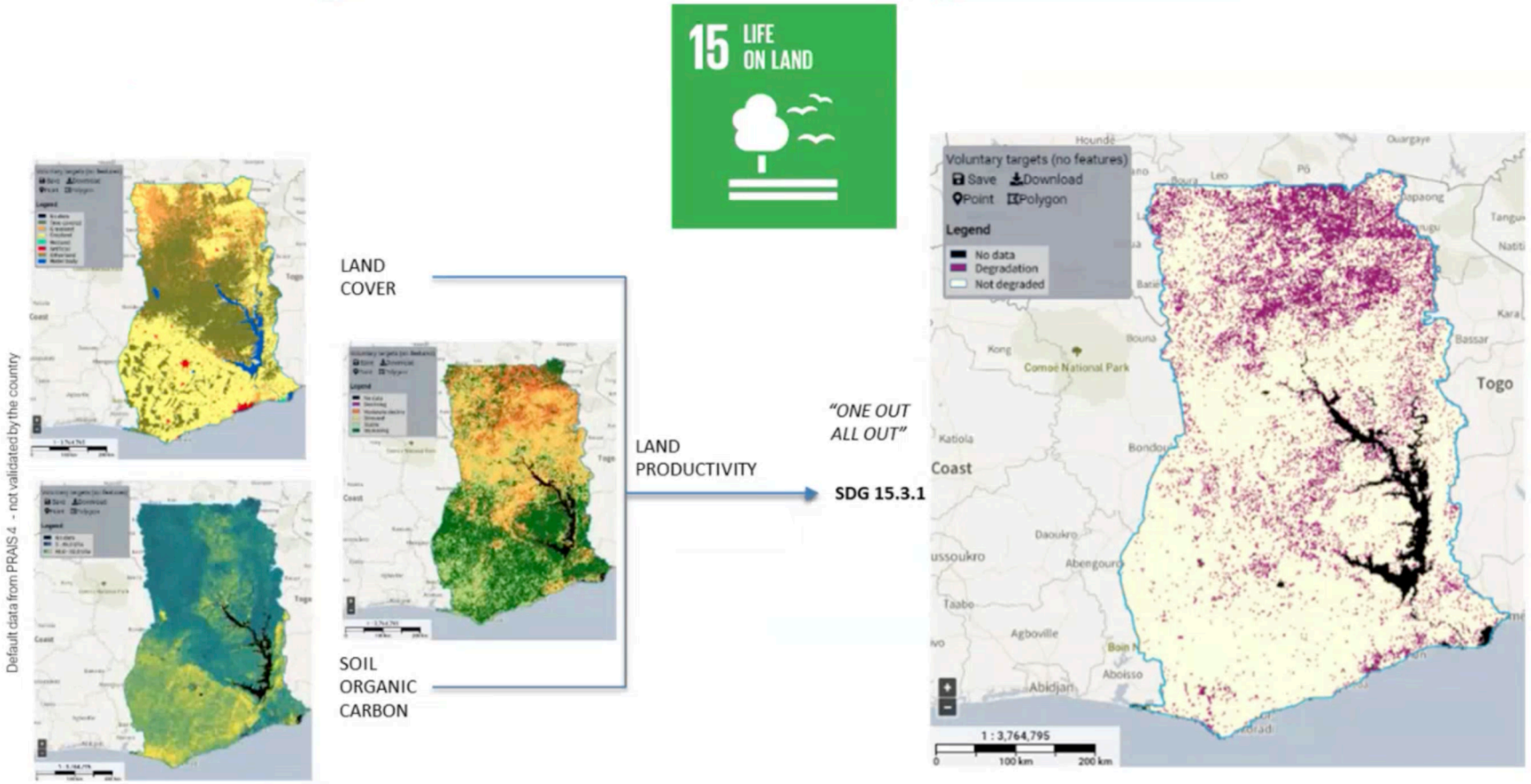
- **Proportion of land under drought over the total land area**
- **Proportion of the total population exposed to drought**
- **Degree of drought vulnerability**

New

**Trends in:**

- Carbon stocks above and below ground
- Abundance and distribution of selected species
- Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type

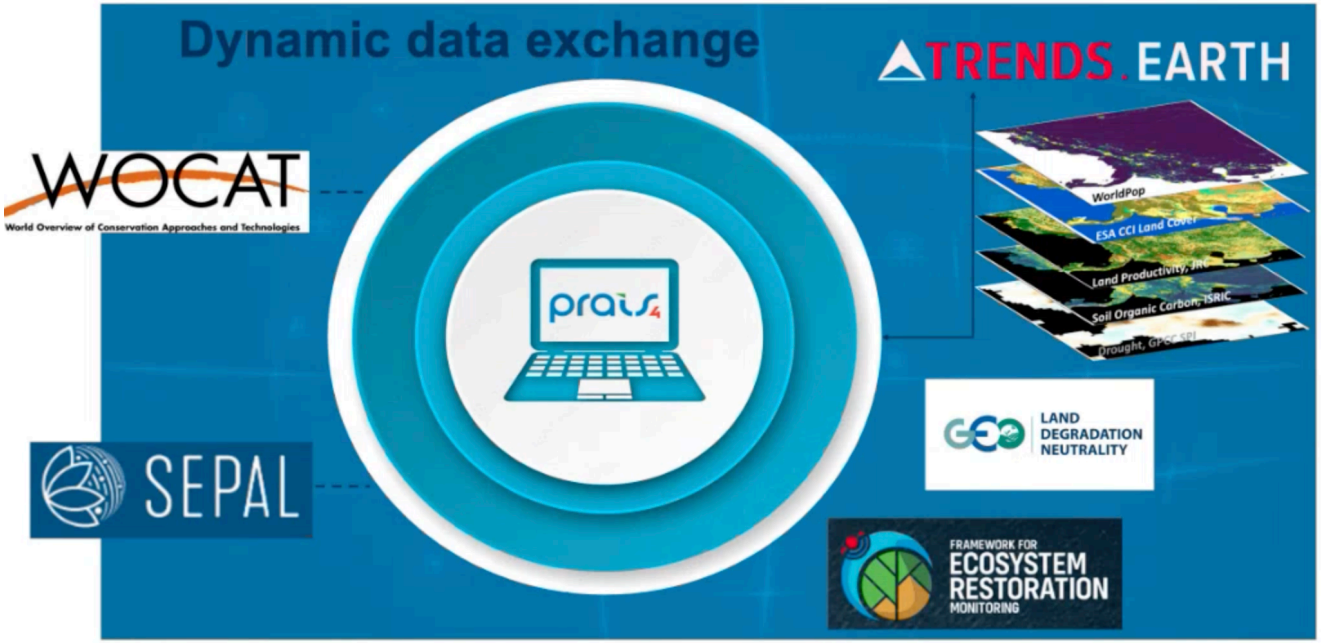
# SDG Target 15.3 : Land Degradation Neutrality




*Proportion of degraded land over total land area*

# The UNCCD reporting infrastructure

## Vision: To be enabled by standards-based interoperable tools and APIs




**Already used OGC Standards:**
JSON
GEO-JSON,
ogcapi-common-1/1.0/conf/core
ogcapi-common-2/1.0/conf/collections
ogcapi-edr-1/1.1/conf/core

**PRAIS OpenLayers Mapping Service:**
https://openlayers.org/en/latest/examples/cog-blob.html
WMS, https://openlayers.org/en/latest/examples/wms-image.html
OGC API - Tiles, https://openlayers.org/en/latest/examples/ogc-map-tiles-geographic.html
WFS, https://openlayers.org/en/latest/examples/vector-wfs.html

# Why do we need standards?

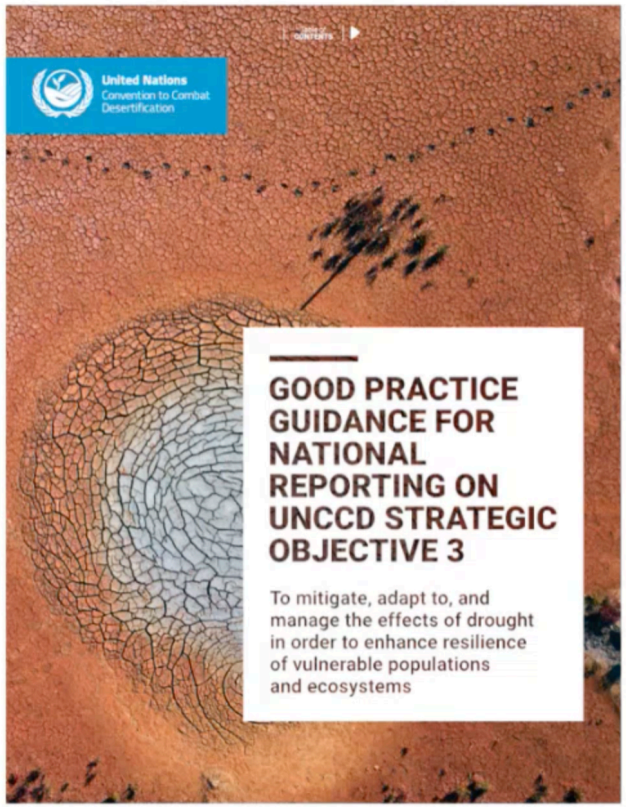
- Irregular country reported data creates inconsistencies which need to be cleaned consuming resources, time and effort
- The lack of standards in default data could lead to inconsistencies, standards allow potential default datasets to be “vetted”
- Standards create buy-in and build community among the UNCCD’s network, e.g., through the GEO Land Degradation Neutrality Flagship
- Ultimately, we want to move towards a wider ecosystem of software tools which are interoperable with the UNCCD reporting platform “PRAIS”
- Taxonomies, e.g. restoration actions, are not standardized

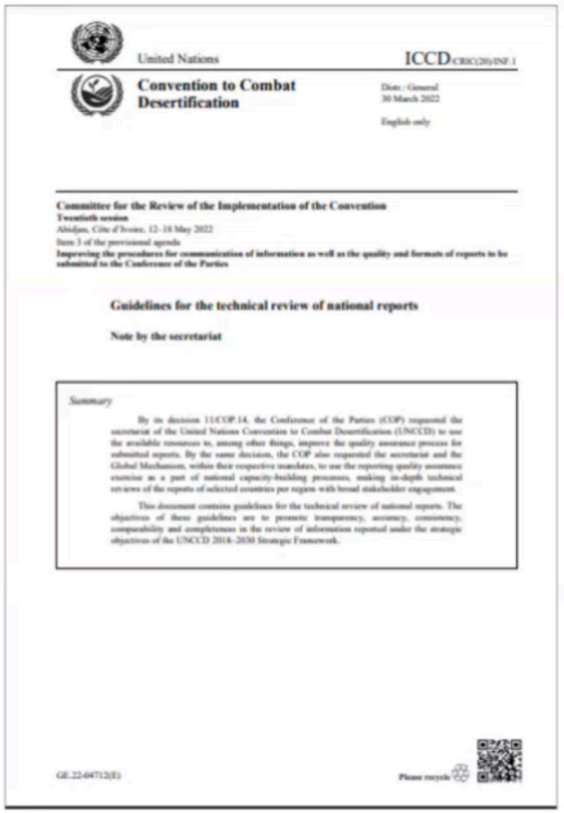
# Geospatial Reporting Indicators SWG

# Why do we need standards?

- Irregular country reported data creates inconsistencies which need to be cleaned consuming resources, time and effort
- The lack of standards in default data could lead to inconsistencies, standards allow potential default datasets to be “vetted”
- Standards create buy-in and build community among the UNCCD’s network, e.g., through the GEO Land Degradation Neutrality Flagship
- Ultimately, we want to move towards a wider ecosystem of software tools which are interoperable with the UNCCD reporting platform “PRAIS”
- Taxonomies, e.g. restoration actions, are not standardized

# Methodological guidance as a minimum standard

United Nations ICCD/CRIC(20)/INF.1

**Convention to Combat Desertification**

Distr.: General
30 March 2022

English only

**Committee for the Review of the Implementation of the Convention**
**Twentieth session**
Abidjan, Côte d'Ivoire, 12–18 May 2022
Item 3 of the provisional agenda
**Improving the procedures for communication of information as well as the quality and formats of reports to be submitted to the Conference of the Parties**

**Guidelines for the technical review of national reports**

**Note by the secretariat**

*Summary*

By its decision 11/COP.14, the Conference of the Parties (COP) requested the secretariat of the United Nations Convention to Combat Desertification (UNCCD) to use the available resources to, among other things, improve the quality assurance process for submitted reports. By the same decision, the COP also requested the secretariat and the Global Mechanism, within their respective mandates, to use the reporting quality assurance exercise as a part of national capacity-building processes, making in-depth technical reviews of the reports of selected countries per region with broad stakeholder engagement.

This document contains guidelines for the technical review of national reports. The objectives of these guidelines are to promote transparency, accuracy, consistency, comparability and completeness in the review of information reported under the strategic objectives of the UNCCD 2018–2030 Strategic Framework.

GE.22-04712(E)

Please recycle

# Moving towards “operational” standards

- Early discussions with the OGC indicate there may be at least two opportunities for UNCCD led standards:
  - The reporting data structure (in JSON format) as an **encoding standard**
  - The SDG Indicator 15.3.1 methodology as an **Analysis Ready Data standard – this may qualify as a ‘profile’** of the ARD standard addressing the specific needs of the LDN community
- The encoding standard appears to be the low hanging fruit but the SDG 15.3.1 may be a practical use case for the GRI-SWG

# Moving towards Documented Standard

United Nations
Convention to Combat Desertification


LAND DEGRADATION NEUTRALITY


**Land Cover Meta Language** (LCML) ISO 19144-2 standard
**Encoding standards** for structured reporting data
**Analysis ready data standards** for indicator processing chains
**API standards** for data exchange between tools in LDN Toolbox

# Current state:
# The JSON file format used for data exchange

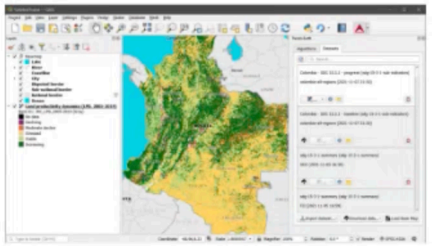
- JSON files were used to exchange data between Trends.Earth and PRAIS4 during the last reporting round
- Examples of the datasets used by countries can be downloaded here: https://docs.trends.earth/en/latest/for_users/downloads
- Existing JSON files contain data for three UNCCD Strategic Objectives (SOs):
  - SO1 (land degradation) and SO2 (population exposed to degradation)[1]
  - SO3 (drought hazard, exposure and vulnerability)[2]

1. https://github.com/ConservationInternational/trends.earth-schemas/blob/master/te_schemas/reporting.py#L263
2. https://github.com/ConservationInternational/trends.earth-schemas/blob/master/te_schemas/reporting.py#L273

# Current state:
# Trends.Earth communication with PRAIS4

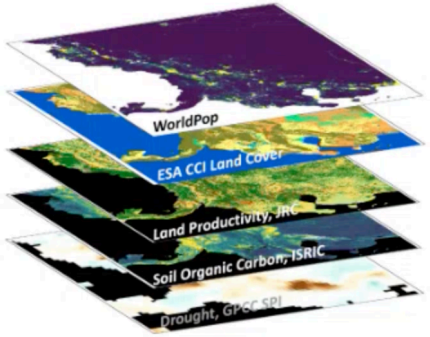
Data processing in Trends.Earth

TRENDS.EARTH



Final data

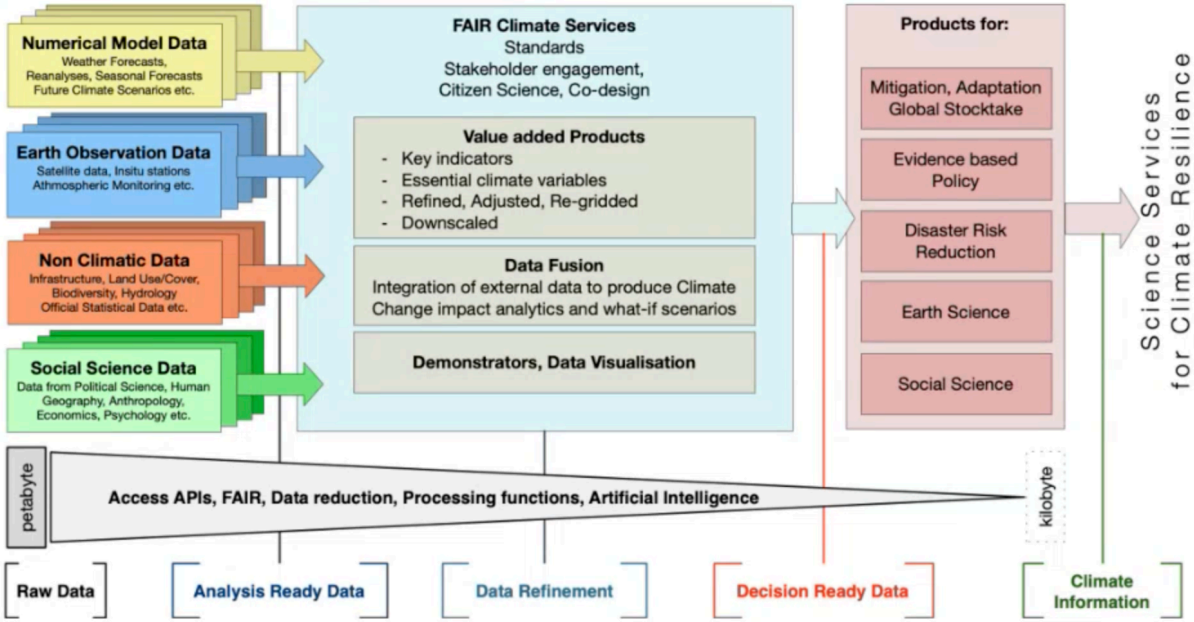
JSON




Rasters & Vectors

Upload to PRAIS4

# Moving towards “operational” standards




**OGC Standardisation Working Group on Analysis Ready Data**

API Processes
DataCubes
Semantic
AI

**OGC Standardisation Working Group on Geospatial reporting indicators**

# Moving forwards

- The GEO LDN Flagship serves as the organizing body for work related to land degradation monitoring and reporting.
  - Restructuring the Working Groups

    **1) Data integration,**
    **2) Tools / Data analytics,**
    **3) Capacity development,**
    **4) Decision support.**

- Interest from GEO LDN in continuing the conversation about potential for collaboration on standards development

# Join the GRI SWG

**Open Geospatial Consortium**

Submission Date: 2024-02-08

Approval Date: 2024-07-19

Internal reference number of this OGC® document: 24-003

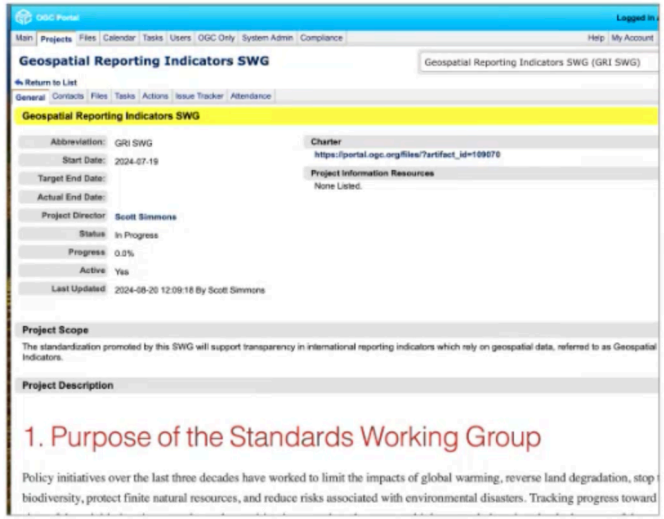
Category: OGC® Standards Working Group Charter

Authors: Nils Hempelmann, Rachel Opitz, Neil Sims, Allan Jamieson

**OGC Geospatial Reporting Indicators Standards Working Group Charter**



https://portal.ogc.org/files/?artifact_id=109070




https://portal.ogc.org/?m=projects&a=view&project_id=738


https://portal.ogc.org/?m=public&orderby=default&tab=7