



The GROUP ON EARTH OBSERVATIONS (GEO)

GEO Secretariat
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www.earthobservations.org
www.geoportal.org

Group on Earth Observations

An overview

What is GEO?

GEO is an intergovernmental organization working to improve the availability, access and use of Earth observations for the benefit of society.



A SHARED VISION
TO REALIZE A FUTURE WHERE
DECISIONS AND ACTIONS,
FOR THE BENEFIT OF HUMANKIND,
ARE INFORMED BY
COORDINATED, COMPREHENSIVE AND SUSTAINED EARTH
OBSERVATION INFORMATION AND SERVICES.

An aerial photograph showing a dense forest of green and yellow trees along a rocky coastline that meets a dark blue ocean. The text is overlaid on three black horizontal bars.

**COORDINATED GLOBALLY, REGIONALLY,
NATIONALLY & LOCALLY**

**COMPREHENSIVE ACROSS DOMAINS,
NETWORKS & PLATFORMS**

SUSTAINED OVER TIME

Data Sharing

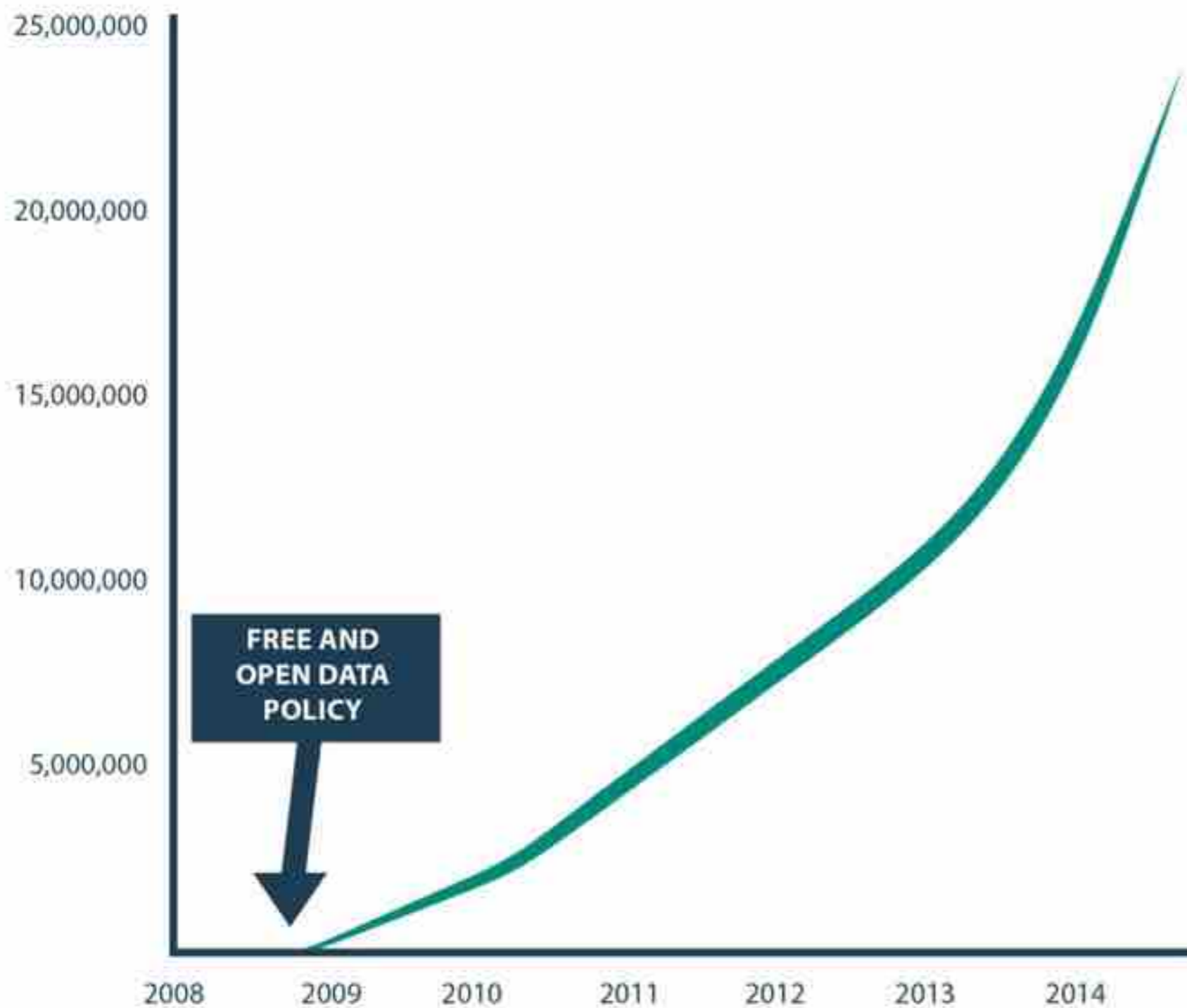
Open Data for the Benefit of Humankind

Why does open data matter?

Societal benefits arising from Earth observations can only be fully achieved through the open sharing of data, information, knowledge, products and services.



LANDSAT SCENES DOWNLOADED FROM USGS EROS CENTER (CUMULATIVE)



Before open data policy:

53 scenes / day



After open data policy:

5,700 scenes / day

ANNUAL ECONOMIC BENEFIT

USA.....\$1.7 billion

International.....\$400 million

Global total.....\$2.1 billion

GEO ENGAGEMENT PRIORITIES



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11



UN World Conference on
Disaster Risk Reduction
2015 Sendai Japan

GEO & the SDGs

Priority Engagement Area

Earth observations play a major role in achieving the SDGs.

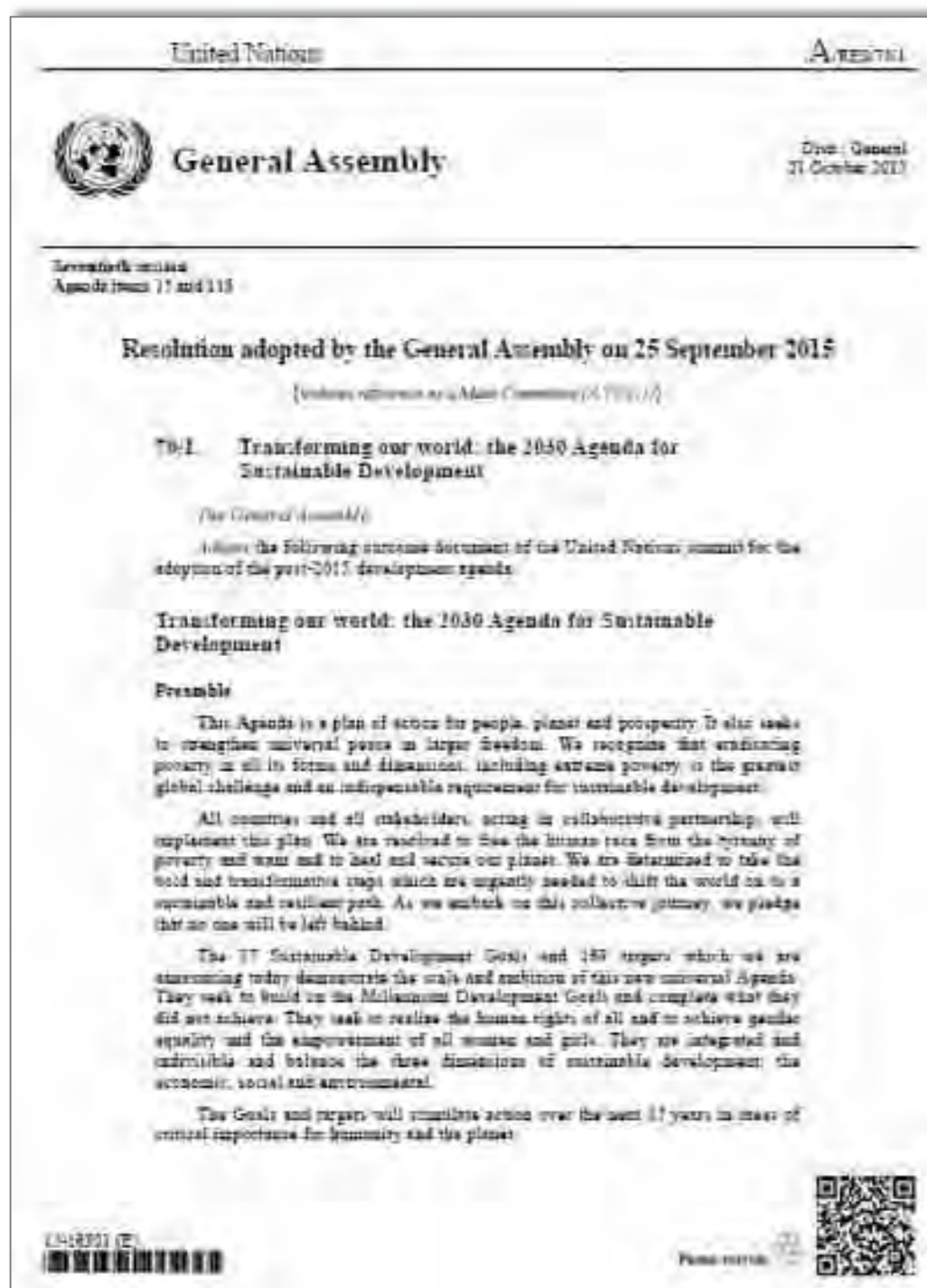


Earth observations are used for monitoring goals, targets, and indicators, tracking progress and helping Member States and custodial agencies make decisions and ongoing adjustments.

GEO is instrumental in integrating Earth observation data into the methodology of measuring and achieving the SDGs.



SDGs and Earth Observation



Transforming our World: The 2030 Plan for Global Action - Article 76:

We will promote transparent and accountable scaling-up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, **including Earth observation and geo-spatial information**, while ensuring national ownership in supporting and tracking progress.

GEO WORK PROGRAMME INITIATIVES

EO4SDG

AfHGEO
Reinforcing Resilience
African Engagement

AOGEOSS
Asia-Oceania GEOSS

Aquawatch
(pending approval)

Climate Change Impact
Observation on Africa's
Coastal Zones

GEO-DARMA
Data Access for Risk
Management

EO4EA
Earth Observations for
Ecosystem Accounting

EO4SDG
Earth Observations in Service
of the 2030 Agenda for
Sustainable Development

EuroGEOSS
(pending approval)

GEO Carbon and GHG
Initiative

GEOCRI
GEO Cold Regions Initiative

GNSL
GEO Geohazard Supersites
and Natural Laboratories

GEO ECO
GEO Global Ecosystem
Initiative

GEO-GNOME
Global Network for
Observation and Information
in Mountain Environments

GEOGLOWS
GEO Global Water
Sustainability

GEO Human Planet
Initiative

GEOSS-EVOLVE

GEO YENER
GEO Vision for Energy

GEO Wetlands Initiative

GDIS
Global Drought
Information System

GOS4POPS
Global Observations System
for Persistent Organic
Pollutants

Global Urban Observation
and Information

GWIS
Global Wildfire
Information System

Ocean and Society:
Blue Planet



EARTH OBSERVATIONS FOR THE SUSTAINABLE DEVELOPMENT GOALS

INITIATIVE CO-CHAIRS

Eduardo De La Torre
Mexico/INEGI



Chu Ishida
Japan/JAXA



Lawrence Friedl
USA/NASA



Executive Secretary
Argyro Kavvada
USA/NASA-BAH



Marc Paganini, ESA

	Population distribution	Cities and infrastructure mapping	Elevation and topography	Land cover and use mapping	Oceanographic observations	Hydrological and water quality observations	Atmospheric and air quality monitoring	Biodiversity and ecosystem observations	Agricultural monitoring	Hazards, disasters and environmental impact monitoring
1 No poverty										
2 Zero hunger										
3 Good health and well-being										
4 Quality education										
5 Gender equality										
6 Clean water and sanitation										
7 Affordable and clean energy										
8 Decent work and economic growth										
9 Industry, innovation and infrastructure										
10 Reduced inequalities										
11 Sustainable cities and communities										
12 Responsible consumption and production										
13 Climate action										
14 Life below water										
15 Life on land										
16 Peace, justice and strong institutions										
17 Partnerships for the goals										



UN-GGIM

United Nations Secretariat
Global Geospatial Information Management

Positioning geospatial information to address global challenges

ggim.un.org



6.6.1 WATER
11.3.1 POPULATION
15.3.1 LAND

<http://eo4sdg.org>
Twitter: @EO4SDG

DANE Pilot Project

National Administrative Department of Statistics in Colombia

Pilot project using EO to examine
SDG11, Indicator **11.3.1**

*Ratio of land consumption to
population growth*

DANE developed a method that
incorporates freely available
Landsat images with population
data to investigate the relationship
between land consumption and
population growth in the
Barranquilla Metropolitan Area
(MA) in northern Colombia.



[http://eo4sdg.org/wp-content/uploads/2017/08/4.-
Report Pilot Project Colombia v3-1.pdf](http://eo4sdg.org/wp-content/uploads/2017/08/4.-Report_Pilot_Project_Colombia_v3-1.pdf)

DANE Pilot Project

National Administrative Department of Statistics in Colombia

Next steps

EO and statistical data to address other aspects of SDG 11 Indicator 11.7.1 - Average share of the built-up area of cities that is open space for public use for all. Also use Earth observations for informing the next census.

Continue to work with EO4SDG and GPSDD: Global Partnership for Sustainable Development Data



http://eo4sdg.org/wp-content/uploads/2017/08/4.-Report_Pilot_Project_Colombia_v3-1.pdf

GEO & Climate Change

Priority Engagement Area

Climate change and its impacts cut across all areas of GEO's work.

GEO makes available Earth observations in support of effective policy making for climate change adaptation and mitigation, working with partners to enhance global observation systems in order to strengthen resilience and adaptive capacity to climate-related hazards.



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11



GEO & Climate Change

Responding to the Paris Agreement

Articles 4 & 13: National Reporting

- Reported five-yearly by parties, successive reductions in emissions
- Using existing methods and guidance; not validation

Article 5: Mitigation

- Knowledge of evolution of sinks and sources

Article 7: Adaptation

- (7.6) Strengthening cooperation,
- (7.7c) Research, systematic observation

Article 10: Technology Transfer

Article 11: Capacity Development

Article 14: Global stocktaking

- in the light of equity and the best available science: 2023, 2028...

Article 15 Compliance

GEO PB Action (August 2017):

Organize a workshop on the EO response to climate change.



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

GEO & Disaster Risk Reduction

Priority Engagement Area

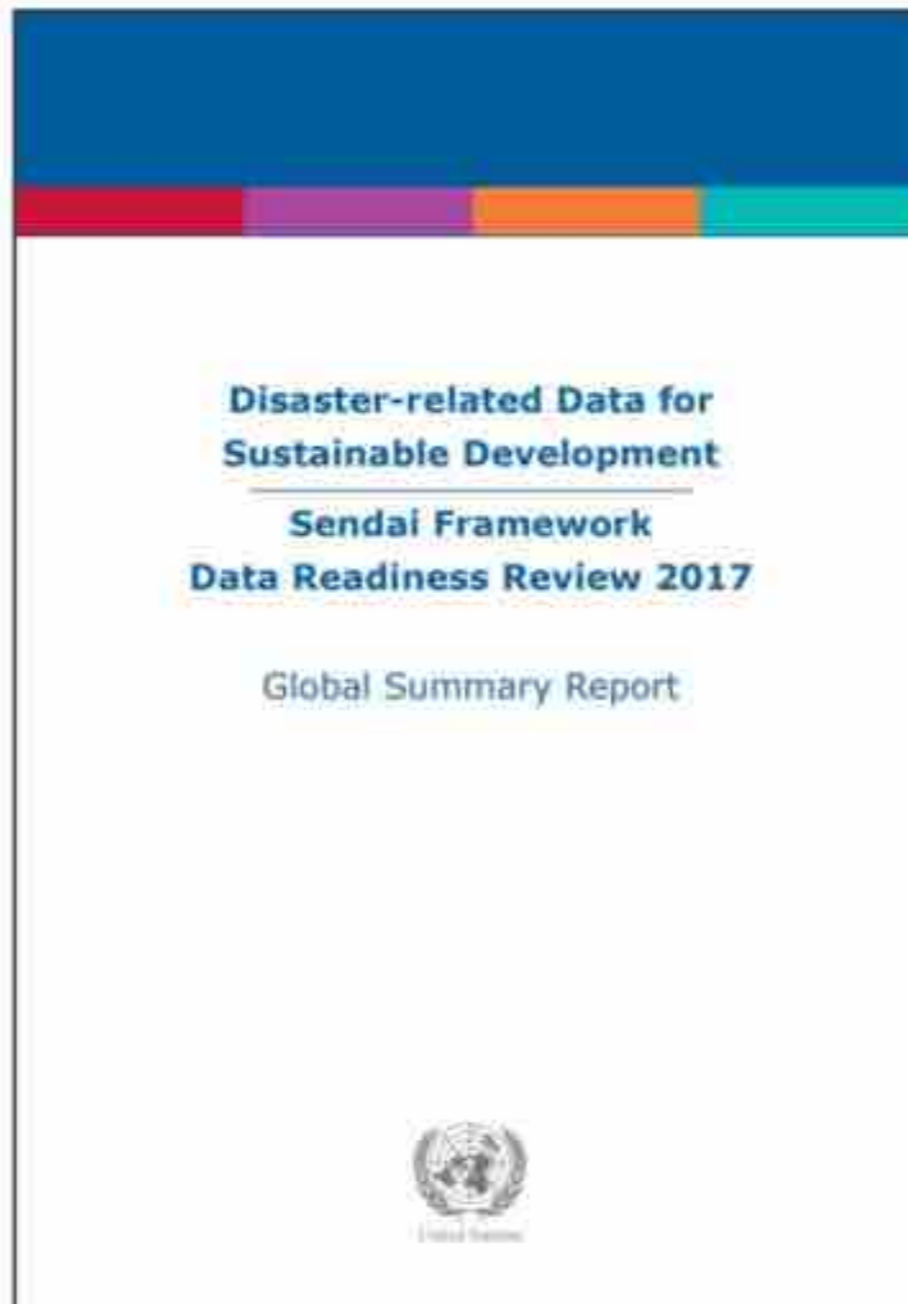
GEO supports disaster resilience by increasing coordination of Earth observations to forecast and prepare for disasters, to reduce damage and to better manage and recover from disasters.



UN World Conference on
Disaster Risk Reduction
2025 Sendai Japan



Disaster Resilience



Disaster-related Data for Sustainable Development: Sendai Framework Data Readiness Review 2017

Section 2.2

<http://bit.ly/drrreport>



22-26 MAY, 2017 | CANCUN, MEXICO
2017 GLOBAL PLATFORM
FOR DISASTER RISK REDUCTION

GEOSS

The GEOSS Common Infrastructure (GCI) presently brokers more than 165 open data catalogs and information systems, comprising over 400 million data and information resources .

35 languages

5000 contributing organizations

200,000 keywords

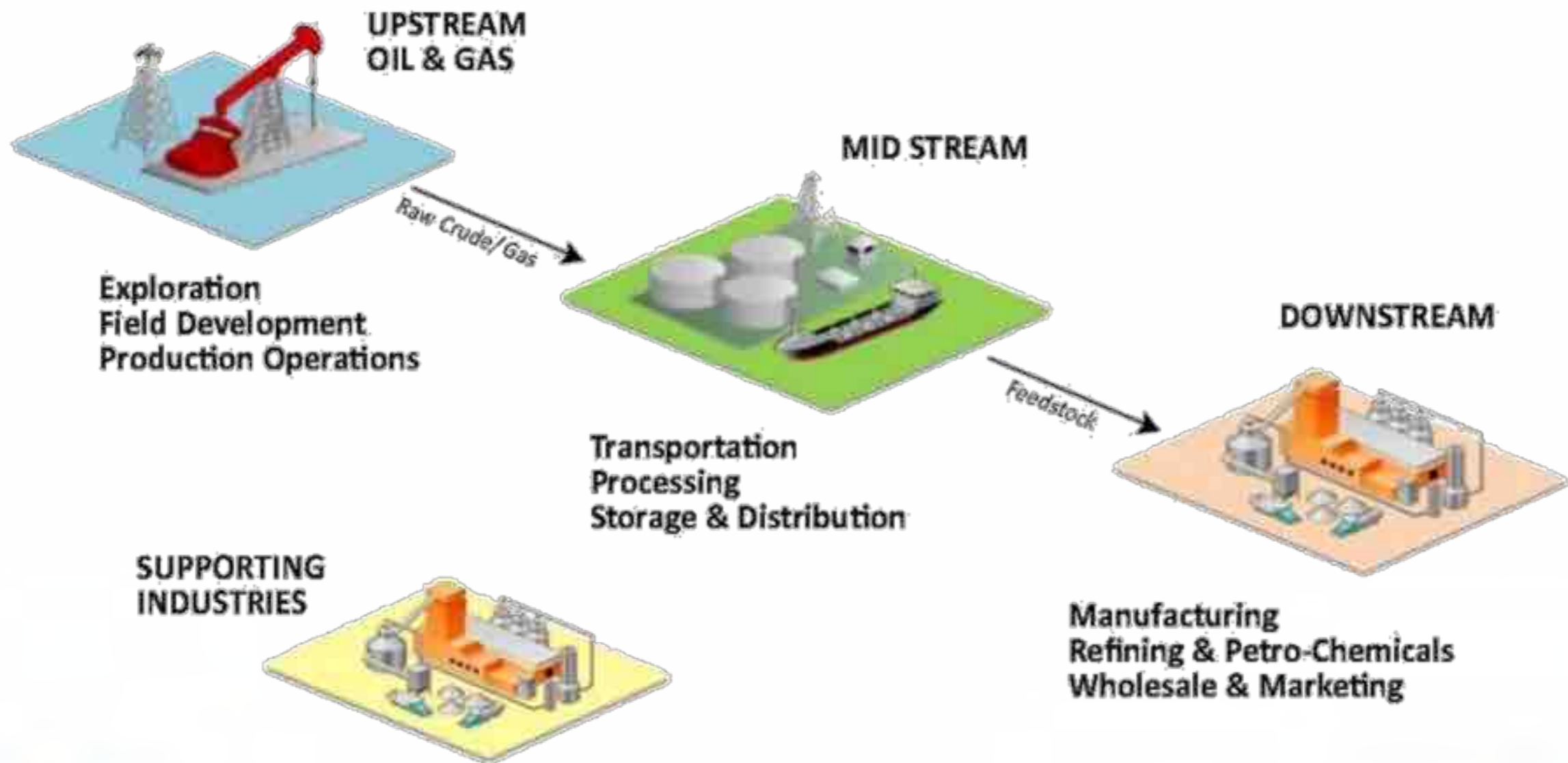
400,000,000

open EO data resources



Ecosystem: Supply-chain model


Data/information is the new “oil”



GEOSS supply-chain SECO

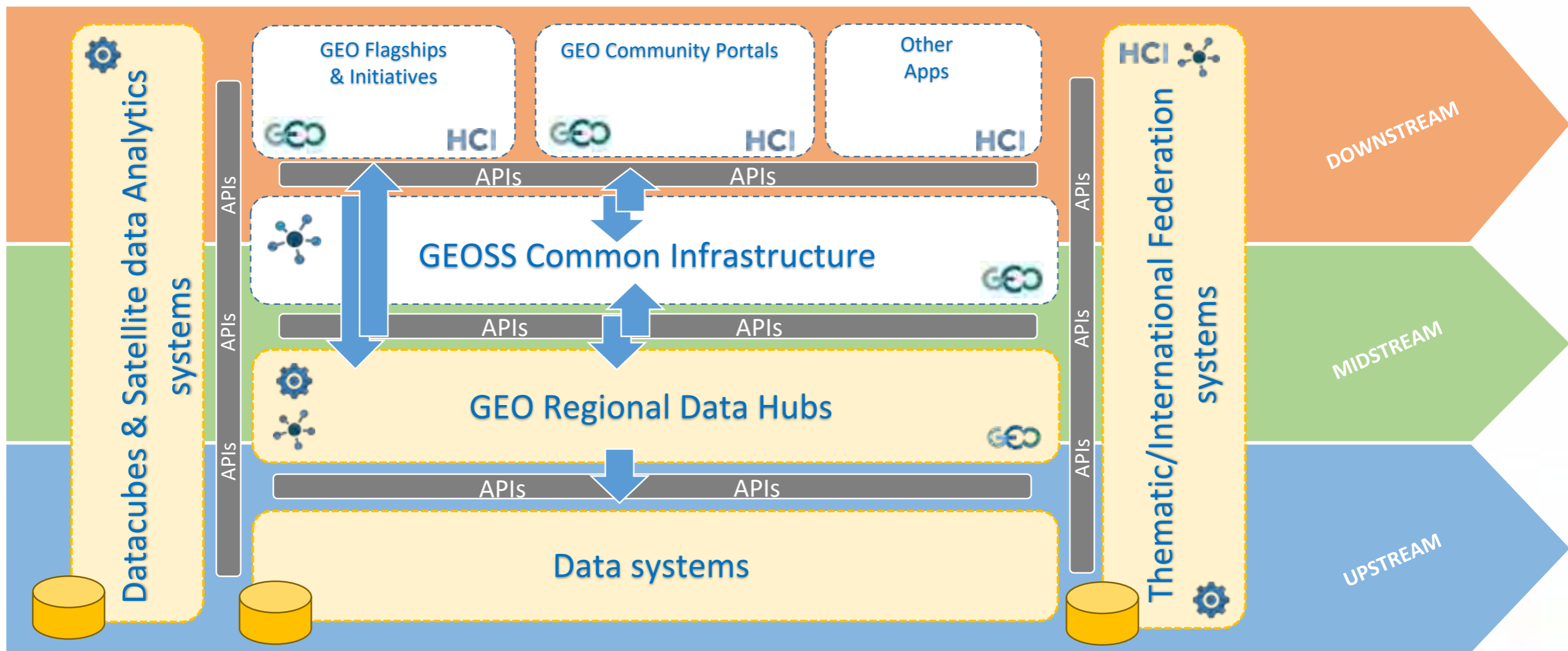
From GCI to GEOSS Platform

HCI Human Computer Interface

 Harmonization capacity

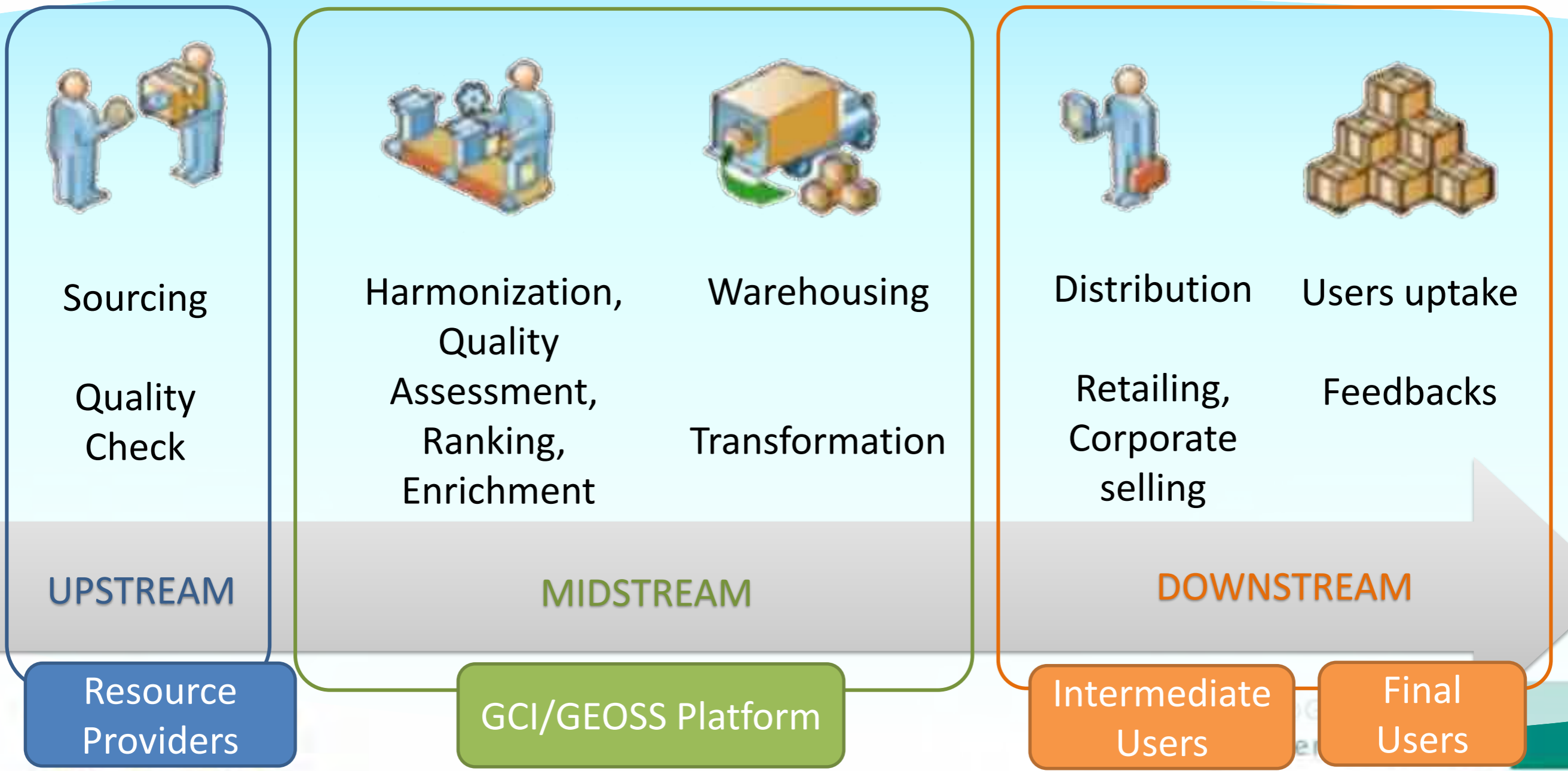
 Storage capacity

 Computing capacity



Ecosystem: Supply-chain model

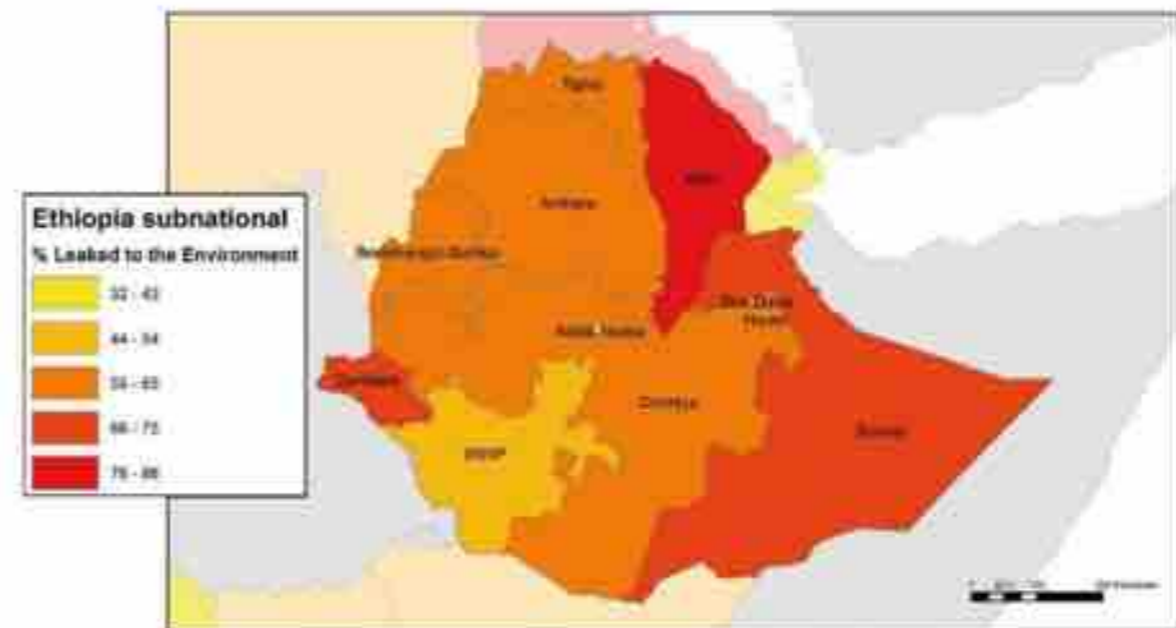
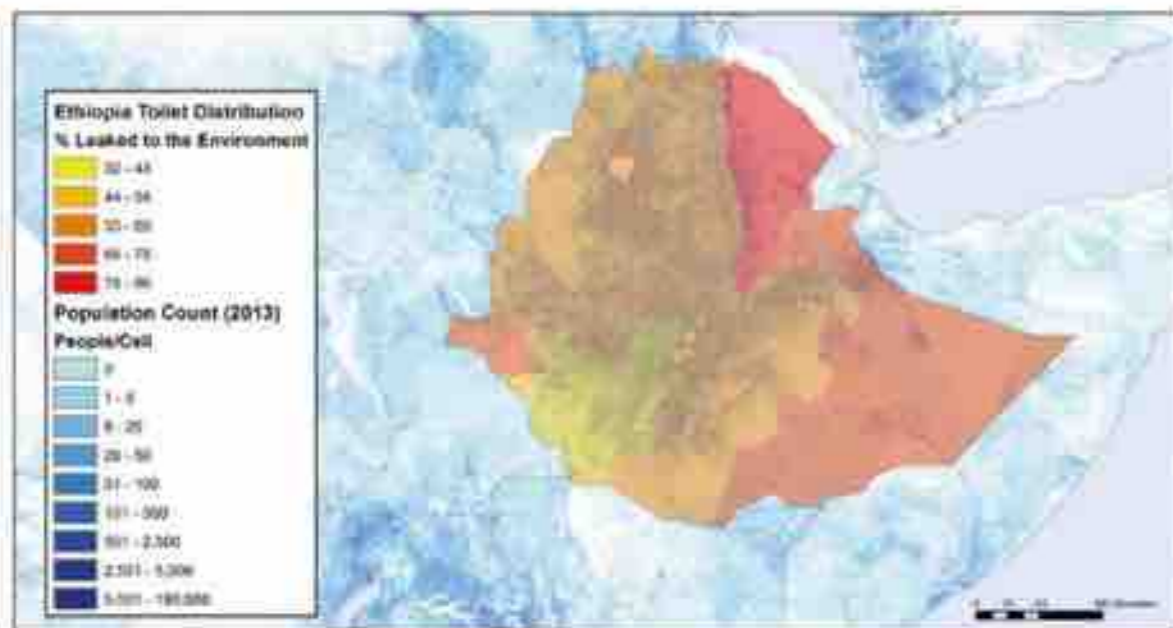
GEOSS Work Program





Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the least hazardous chemicals and materials, halving the proportion of untreated waste water and substantially increasing recycling and safe reuse globally.

POPULATION DENSITY OVERLAID ON UNTREATED WASTEWATER LEAKING TO THE ENVIRONMENT, ETHIOPIA SUB NATIONAL



WHO/UNICEF Joint Monitoring Programme (JMP)
for Water Supply and Sanitation

Integrating data from Earth observations and geospatial information with national surveys to monitor the impact of untreated wastewater on the population. The map on the left shows the extent of leakage of wastewater, excreta and grey water, with areas in red denoting extensive pollution. The map on the right integrates all data and shows where there is high impact, i.e., high leakage in densely populated areas.

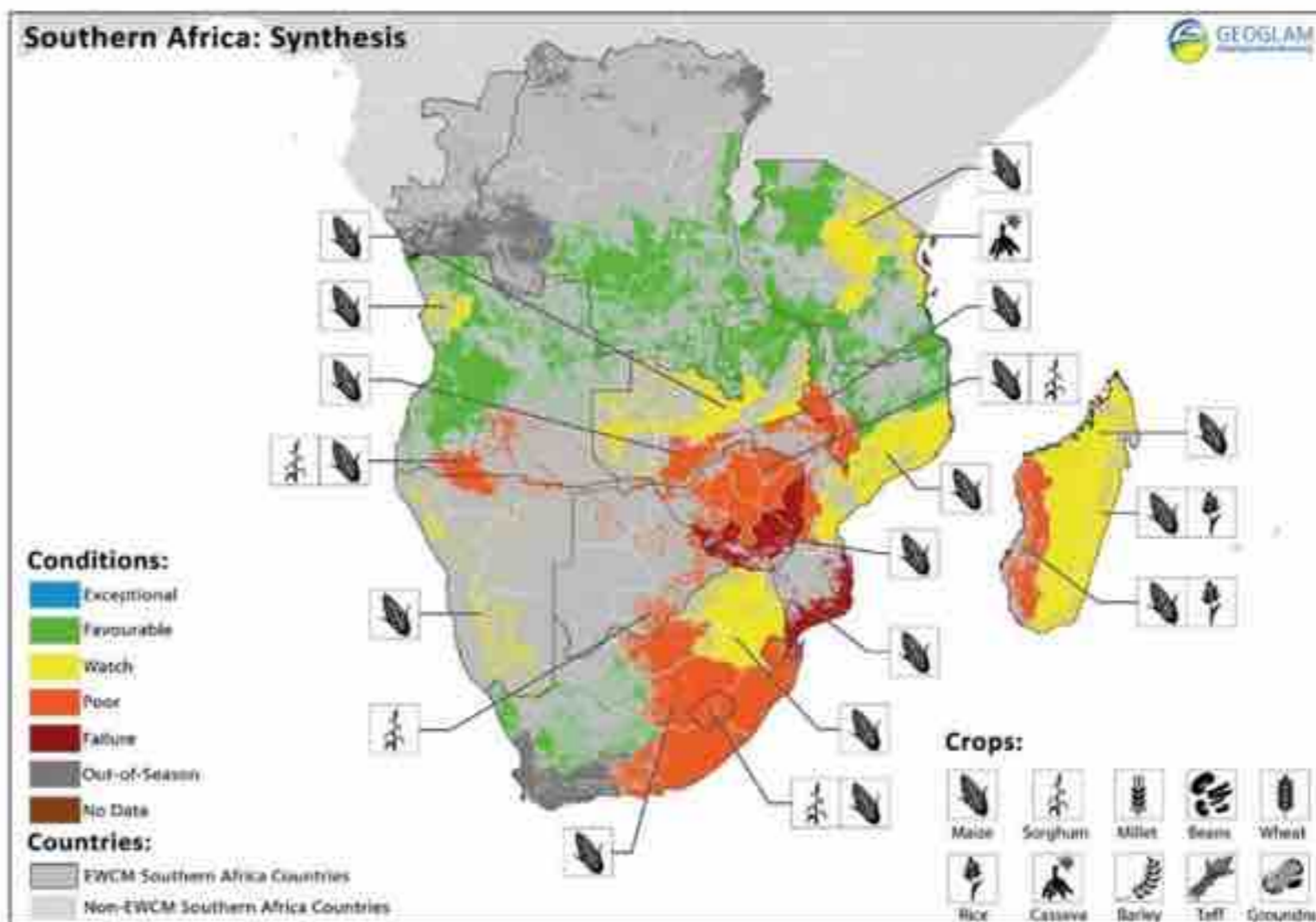


Target 2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

MONITORING CROP CONDITIONS WITHIN COUNTRIES AT RISK OF FOOD INSECURITY

Crop condition map synthesizing information for all Early Warning Crop Monitor (EWCM) crops. Crop conditions over the main growing areas are based on a combination of national and regional crop analyst inputs along with Earth observation data. Crops that are in other than favourable conditions are displayed on the map with their crop symbol.

“Development planning and SDG outcomes can be visualized with maps.” (CIESIN)



Agenda 2030

EO case studies

GEO is instrumental in integrating Earth observation data into the methodology of measuring, monitoring and achieving the SDG Indicators.

This brochure gives graphic illustrations of EO data allowing decision-makers to help identify the status of conditions they need to report, as well as visualize solutions.

https://www.earthobservations.org/documents/publications/201703_geo_eo_for_2030_agenda.pdf



Closing thoughts on combined/complementary use of space technologies and in-situ data

- **Effective reporting of progress requires the use of multiple types of data.**
- **EO and geospatial information are often continuous in spatial and temporal resolutions, thus capture the sustainability of development.**
- **EO and geospatial information, which include satellite, airborne, land- and marine-based data, as well as model outputs, can significantly expand monitoring capabilities at local, national, regional and global levels, and across sectors.**
- **Exploiting various data sources, including EO and geospatial information, reduces cost of monitoring SDGs and associated Targets and Indicators.**
- **EO and geospatial information to measure and monitor progress towards achieving the SDGs will provide developing countries and regions with increased capacity to acquire, analyze, and utilize these data for other policy-making purposes.**
- **Integrating all of these data represents a quantum leap in how we monitor and track development and advance the well-being of our societies.**
- **Open data policies!**

Thank You

Communicate and Collaborate with GEO:

