Space4SDG's: focus on biodiversity and water management

E-shape solutions
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SUSTAINABLE DEVELOPMENT GOALS

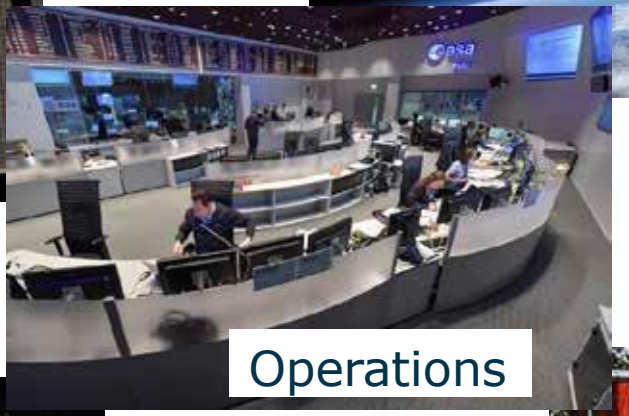
SPACE4SDGS

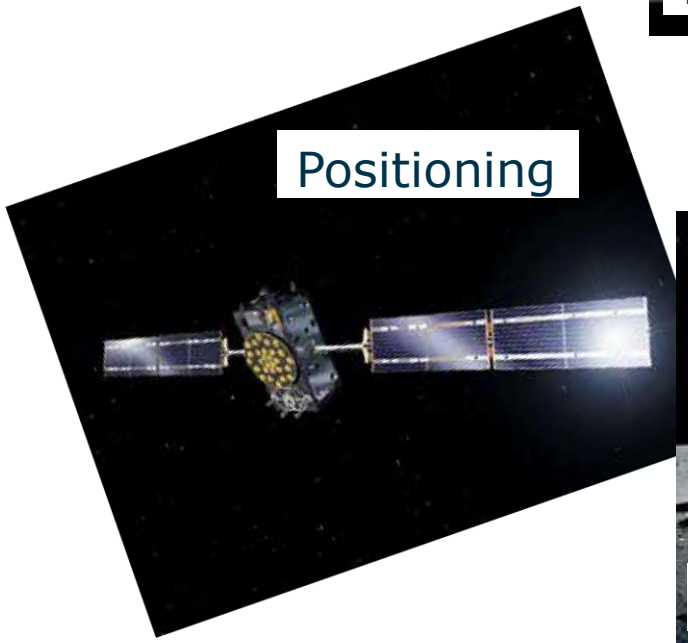
All means →socio economic benefits


Telecommunications


Human Spaceflight

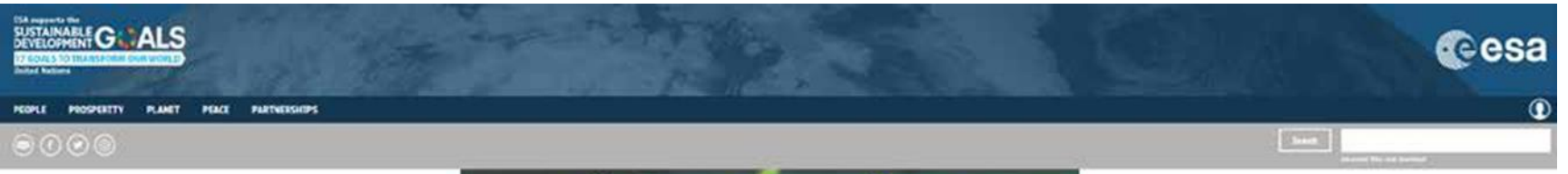

Earth Observation

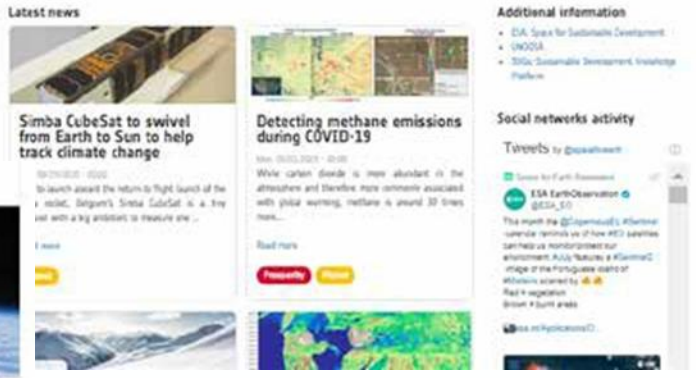

Operations

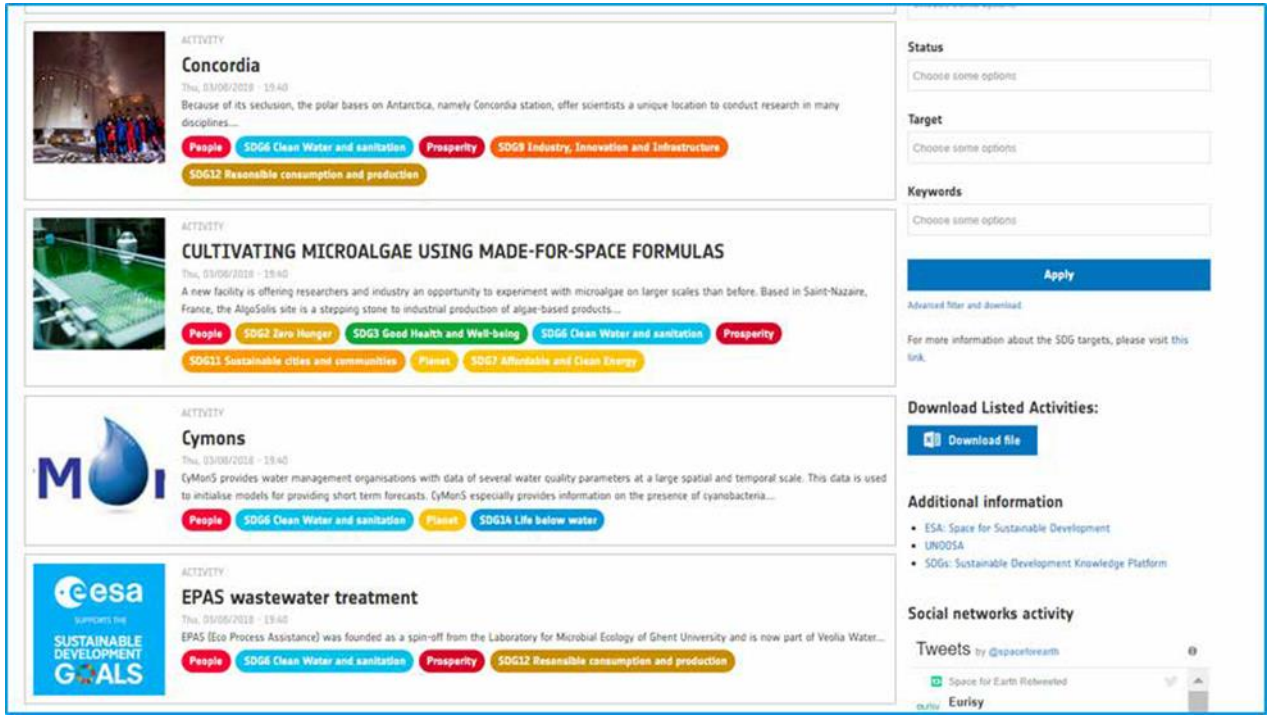

Positioning


Exploration


Space Technologies







ESA online catalogue: https://sdg.esa.int

Key questions

- **What** kind of **satellite applications** could support decision–makers, industry, citizens and researchers to tackle biodiversity/water management challenges?

- **How** could **space applications & technologies** represent an **added value** for ensuring reliable and objective information on soil, air, water, vegetation, and assets valuable for human well-being?

Space4SDGs can support the EU Biodiversity Strategy 2030 objectives➔ to build resilience against

- The impacts of climate change
- Forest fires
- Food insecurity
- Disease outbreaks - including by protecting wildlife and fighting illegal wildlife trade

Biodiversity

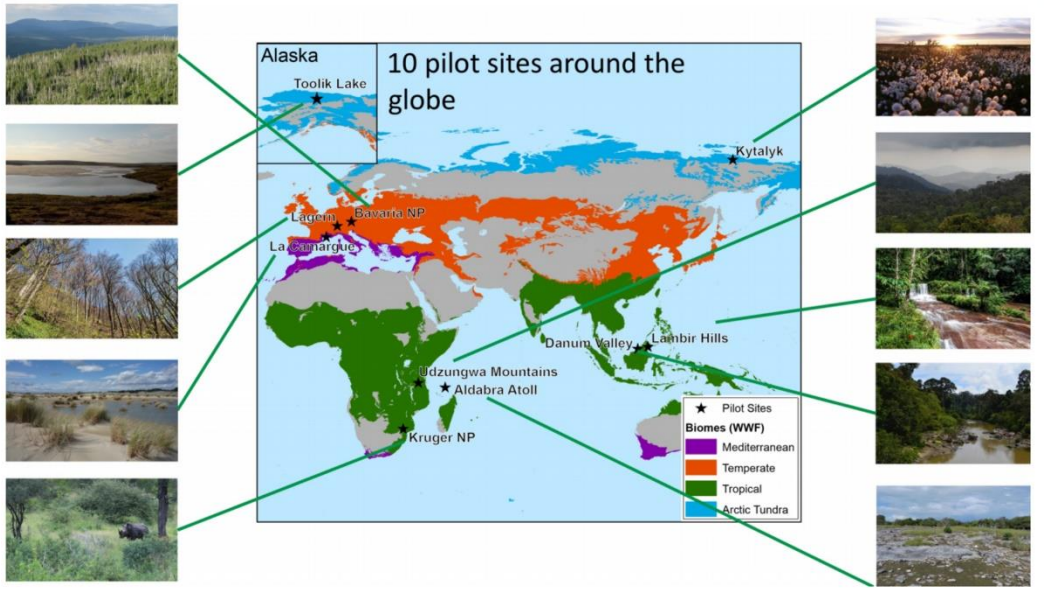
GlobDiversity

- **Enabling the integration of satellite observations into biodiversity strategies ➔Develop, validate, showcase** and scale up a number of High Resolution **RS-enabled EBVs**

on the structure and function of terrestrial ecosystems

- **build a global knowledge system** on the biodiversity of ecosystems

globdiversity
rs-enabled ebvs for terrestrial ecosystems



➢ Space added value

Earth Observation data

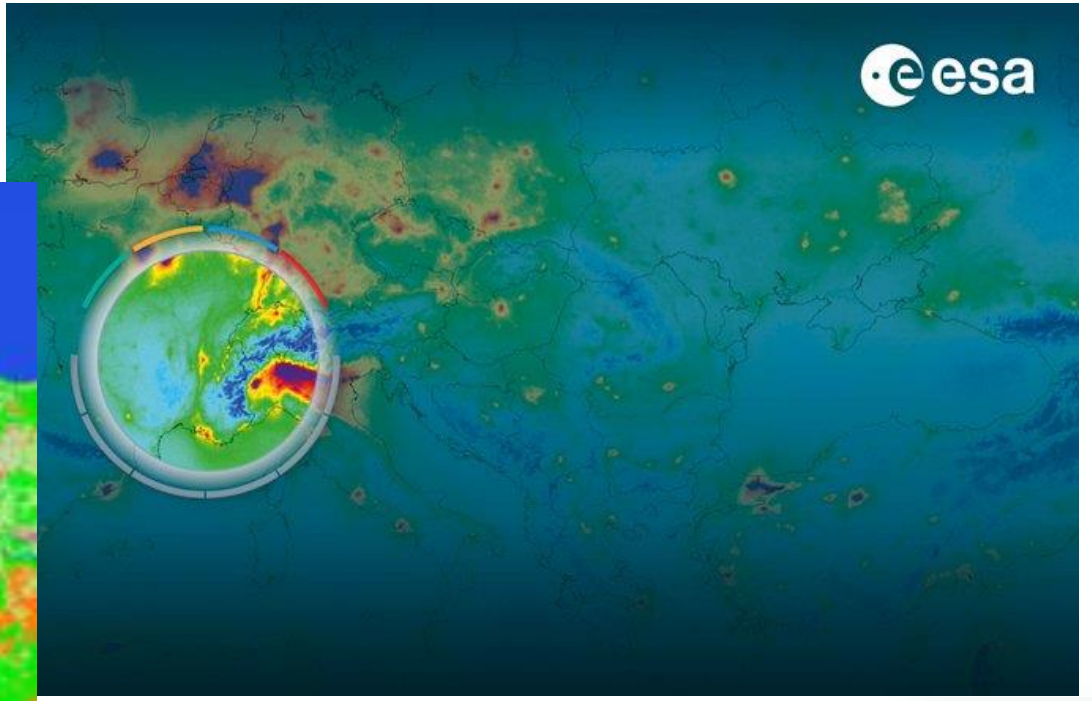
➢ Users

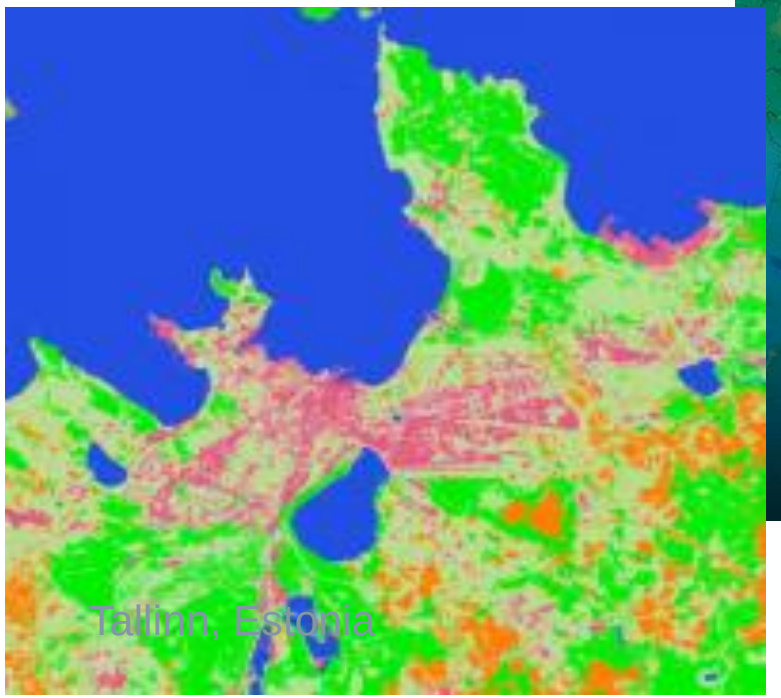
Industries, Governments, Local communities

15 LIFE ON LAND

EO4 City Biodiversity Index

- Capturing the **status** and **trends of biodiversity and ecosystem services** in **urban landscapes** ➔ understanding if **metropolitan area develops in a sustainable manner.**
- Re-orientate **conservation efforts** in **urban areas**





➢ Space added value

Earth Observation data

➢ Users

Industries, Governments,

Local communities

Forestry TEP: Thematic Exploitation Platform

- **On-line platform** services providing **access to EO data**, **tools** and **ICT resources** for forest management.

➔ improve forest management while ensuring sustainability and **carbon sequestration**.

➔ *Create* and **share** processing services, tools

and generating value-added **forest information products**

➢ Space added value

EO Satellite data combined with in situ data, SatCom

Users

Industries, Governments, Local communities,

National and Regional forest administrations

Lack of forest management

15 LIFE ON LAND

Food security Tep

- **On-line platform** services providing **access to EO data**, **tools** and **ICT resources** for **food security**

➔**Supports sustainable agriculture**, **aquaculture** and **fisheries** by providing access to data, processing tools and computing resources in a cloud environment

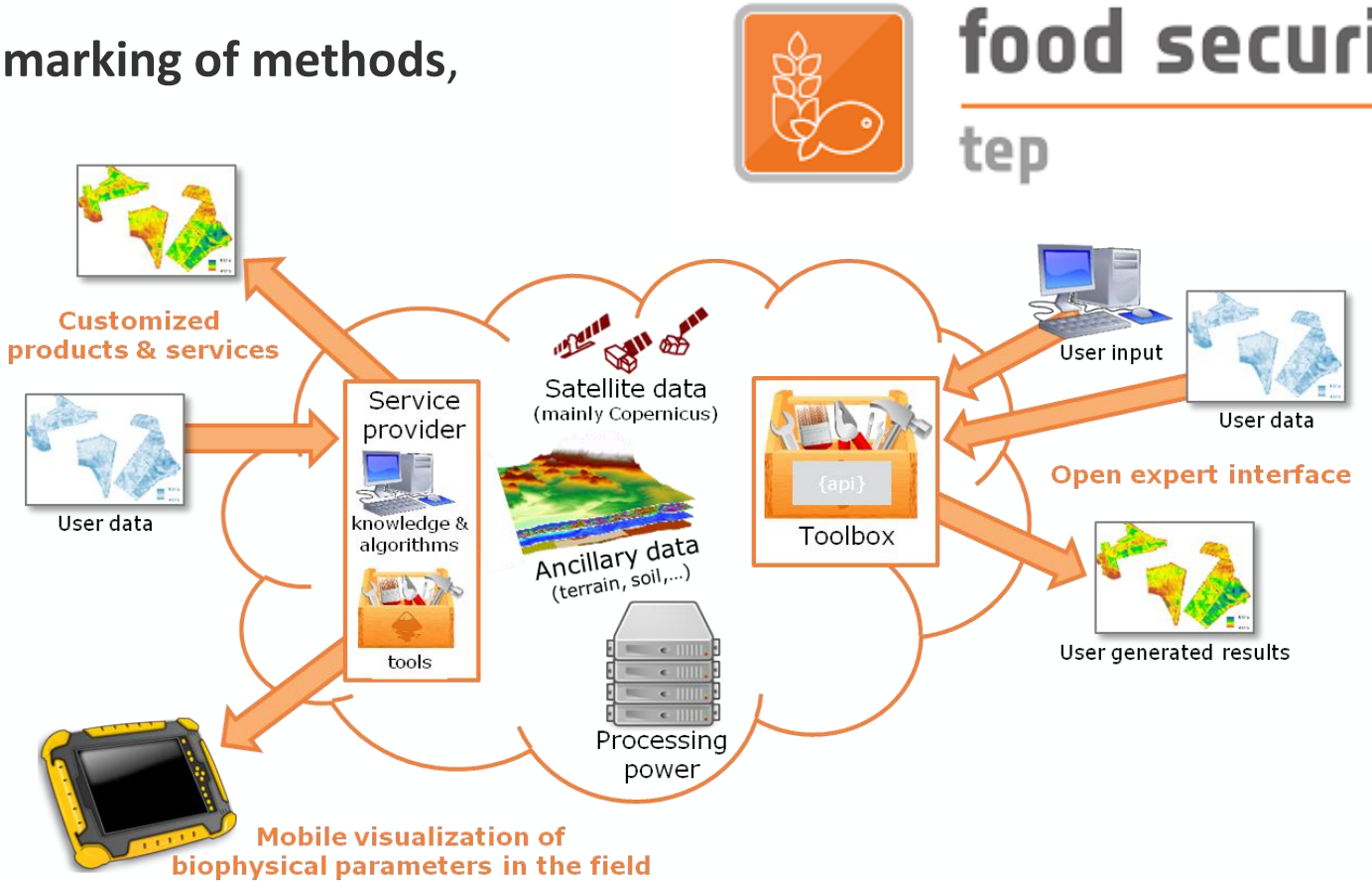
- **Facilitates collaborative research** and **bench marking of methods**, development of innovative Apps and services

➢ Space added value

EO data combined with in situ data, SatCom

➢ Users

Industries, Governments, Local communities



Smart Farming

- Use of high-end Real Time Kinematic (RTK) satellite **Navigation** (satellite data) to **steer** and **control** tractors to **raise productivity** and **reduce labour cost** in the + **avoids double spraying** of pesticides by precision of positioning

➢ Space added value

EO data with NAV data for precision of positioning (Galileo , GPS)

➢ Users

Farmers, local governments, private industries

Water management

360 Blue

- Aims to **determining water related risks**, supporting optimization **of water management**, and assessing **water footprints, availability and quality**
- Uses **satellite images** and **open data sources**

➢ Space added value

EO satellites, Satcom combined w IoT

➢ Users

Private companies, in the food and beverage, construction and agriculture industries, hydro engineering consultancy companies, local governments, environmental agencies

AIGANOVA

- **grey water** recycling system to o**ptimise** the **external water** and **energy resources** required **for large consumers of water** (e.g. hotels)
- **Minimise** the **overall cost of the life cycle of a water facility**.

➢ Space added value

Long Life missions to Mars (MELiSSA project) knowledge

➢ Users

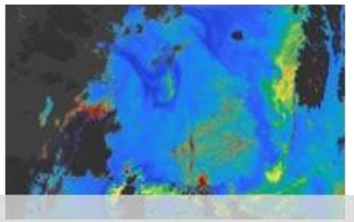
Private companies, in the food and beverage, local governments construction and agriculture industries, environmental agencies hydro engineering consultancy companies

UNDERSEE

- Aims to **monitor** and **predict water quality changes** in rivers, lakes and oceans
- Enables to **move** from a **reactive** to a **preventive** decision – making approach based on **actionable**

Real-time in-situ water data

Space Data



Forecast models

UNDERSEE

END USERS

AQUACULTURE COMPANIES

ENVIRONMENTAL ENTITIES

RESEARCH CENTRES

- Space added value

EO data, GNSS and SatCom.

- Users

Researcher centres, environmental agencies, acquaculture producers

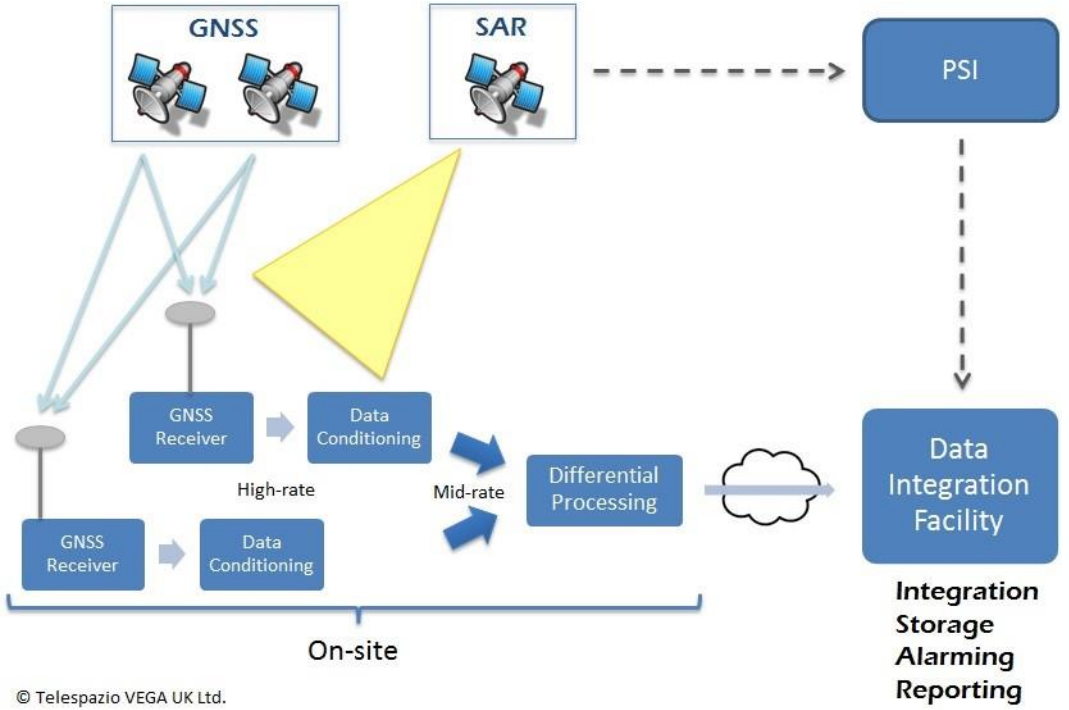
DAMMINGS

- Build a **dam motion monitoring service platform** based on

GNSS (Global Navigation Satellite System), **InSAR** (Interferometric Synthetic Aperture Radar)

- **Demonstrate** the advantages of **combining both techniques** to

monitor dams and their surroundings



- Space added value

GNSS, InSAR, SatCom

- Users

Governments,

Local communities, Industri

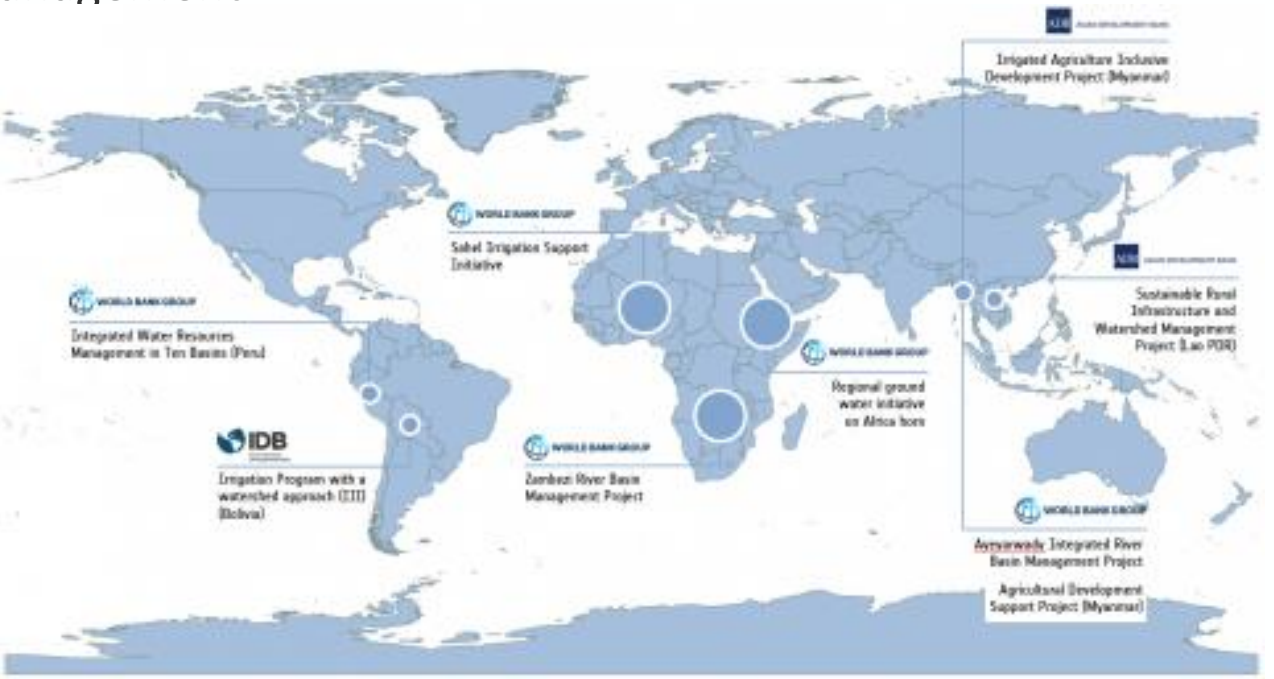
7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

EO4SD Water Resource Management

- **EO4SD initiative supports** international development assistance by **helping countries to better measure and manage their water resources**.
- Achieves a step **increase** in the uptake of satellite-based environmental information in the **IFIs** (**Internat. Financial Instit.)regional and global programs** in sustainable development projects related to water management
- Uses **satellite images** and **open data sources**

water resources management
eo4sd



➢ Space added value

EO data

➢ Users

International and regional organizations,

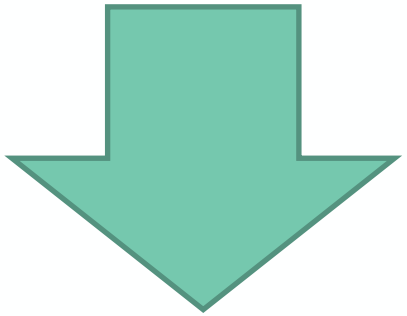
local governments, NGOs

WAY FORWARD

- A **coordinated approach** across ESA programmes
- Ensure **information easily available**
- Making the **link** between **space** (experts) and **ground** (users)

  ➔understanding the needs and “translating” them into space projects

- Support those able to “pass the message”– **Uniting with other actors**



UNOOSA compendium linked to ESA catalogue

Thank you for your attention!