

EO Science for Society Info Day 2024

Applications Section 2024 Opportunities

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**Pioneer innovative & reliable
Earth Observation solutions
for societal benefits,
in support to international policies
on the environment and
sustainable development**

The active involvement of stakeholders and end-users

throughout the co-design, development and validation phases,
to facilitate the integration of the developed innovative solutions into their operational systems and practices.

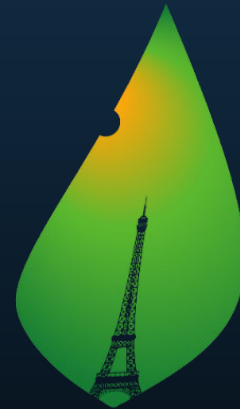
EO Supports Major International and European Policy Frameworks



UN SDG for 2030



Paris Agreement on Climate Change



PARIS2015
UN CLIMATE CHANGE CONFERENCE

The Sendai Framework for Disaster Risk Reduction 2030

	Reduce	Increase
7 GLOBAL TARGETS	Mortality/ global population 2020-2030 Average << 2005-2015 Average	Countries with national & local DRR strategies 2020 Value >> 2015 Value
	Affected people/ global population 2020-2030 Average << 2005-2015 Average	International cooperation to developing countries 2030 Value >> 2015 Value
	Economic loss/ global GDP 2030 Ratio << 2015 Ratio	Availability and access to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values
	Damage to critical infrastructure & disruption of basic services 2030 Values << 2015 Values	



EO Supports Major International and European Policy Frameworks



EU Biodiversity Strategy for 2030
Bringing nature back into our lives

New Common Agricultural Policy
NEW CAP #NewCAP

Nature Restoration Law
For people, climate, and planet

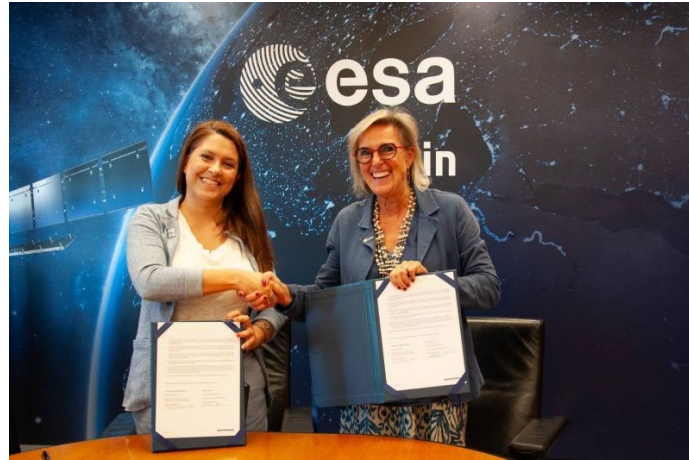
New EU Forest Strategy for 2030
EUDR
EU Deforestation Regulation



EU Soil Strategy for 2030
Soil protection and
ENV.D1 Land
Directorate
The benefits of healthy soils for people, food, nature

Work together with key partners

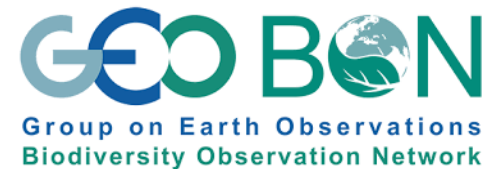
From institutional international and European partners, to national/local entities and stakeholders.



Extensive EC collaborations. E.g., with DEFIS, JRC, AGRI, ENV, ESTAT, MARE, ENER and agencies such as with EEA and EMSA, also with networks such as the Covenant of Mayors and Regions.

Alignment of high-priorities and investments.

Example partners for Biodiversity :



System of Environmental Economic Accounting



The process

Road map, communities recommendations, projects definition, relevant Advisory Boards



International policies

Environmental Agenda, Sustainable Development, Africa 2063



THE GLOBAL GOALS
For Sustainable Development



Feedback to policy



Direct Engagement of Stakeholders and End-Users



Users' needs and pro-active engagement



Integration of developed solutions



Excellence in EO innovation with Industry and Academia

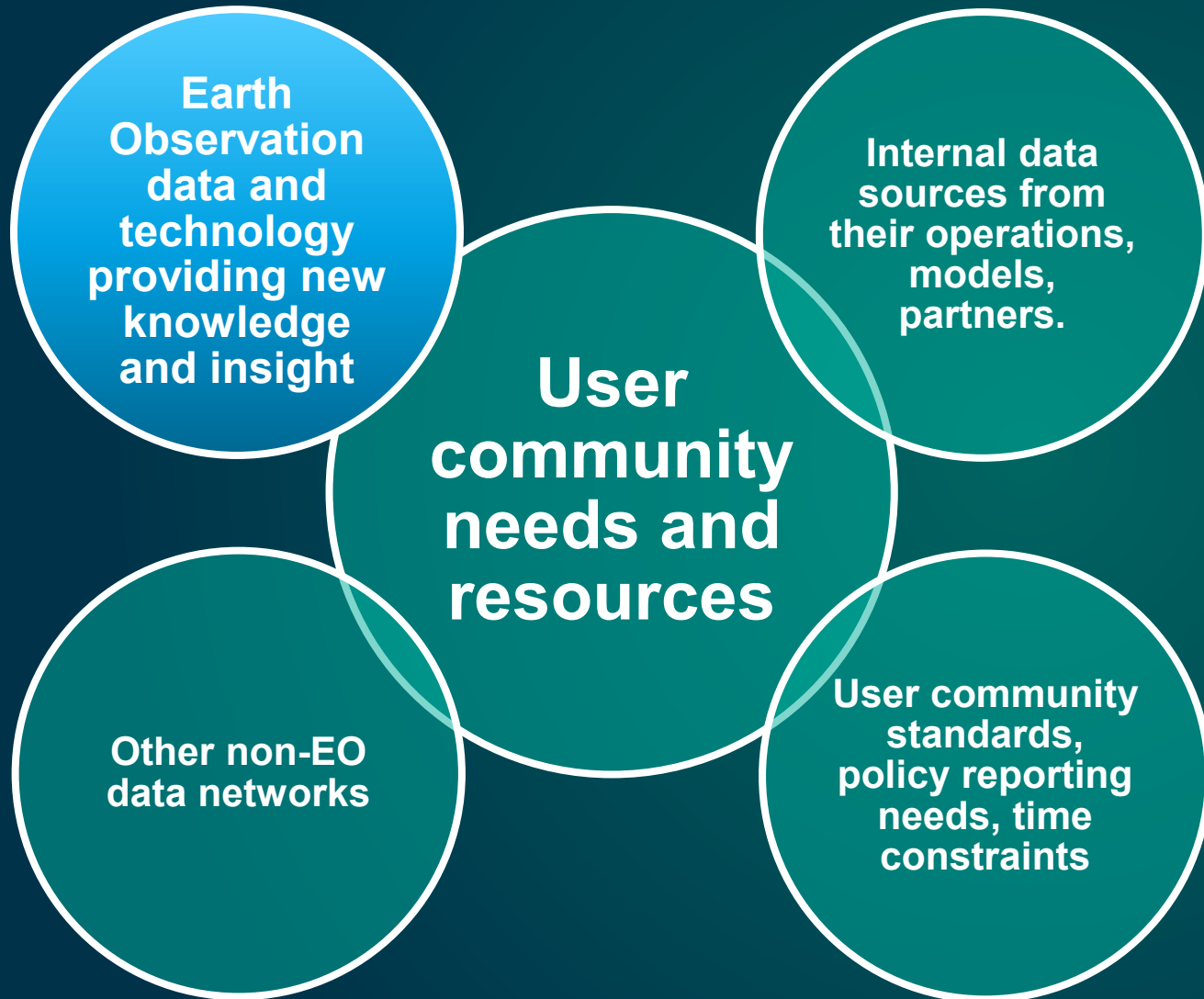


- Building on Science element
- Multi-mission & inter-disciplinary

Leveraging on cutting-edge ICT for rapid development & amplification of users



An EO-integrated approach & Open Innovation



Open Innovation approach

Knowledge sharing.

Capacity expansion.

FAIR (Findable, Accessible, Interoperable & Reusable) principles.

principles:

Interoperable & Reusable)

FAIR (Findable, Accessible,

capacity expansion:

Heterogeneous stakeholder and end-user groups

As the various stakeholders/end-user categories have very heterogeneous needs, each project may be characterized by different aspects and objectives, including capacity development and stakeholders/user-empowerment actions.

- a) **Policy owners** (e.g., international organizations and policy groups, such as UN agencies, the EU and EC with its agencies, GEO, regional or national entities such as Alpine convention, Transboundary water authority, Regional Economic and Social Commission).
- b) **Policy regulators** (e.g., National environmental protection agencies, public local and regional authorities, CAP paying agencies, national statistical offices).
- c) **Implementers** (e.g., ministries, public and private entities providing services or directly implementing the policies. These can be municipalities, regional/national/local authorities and industry in different value chains - like construction, energy, insurance, agriculture, forestry - infrastructure operators, non-governmental organizations, non-profit, national statistical offices)
- d) **Funding entities** (e.g., investors, banks, nature credits managers)
- e) **Expert networks** (e.g., proxy entities, sectorial and professional networks representing communities of stakeholders, lobby groups and corporations)
- f) **EO service providers/operators** (e.g., academia, value adding industry)
- g) **Citizens**



Food and Agriculture
Organization of the
United Nations



World Food
Programme



Global Agricultural Monitoring



EO for Agriculture Under Pressure

Workshop 2024

13–16 May 2024 | ESA–ESRIN | Frascati (Rome), Italy

<http://eo4agri.esa.int/>



URBIS24

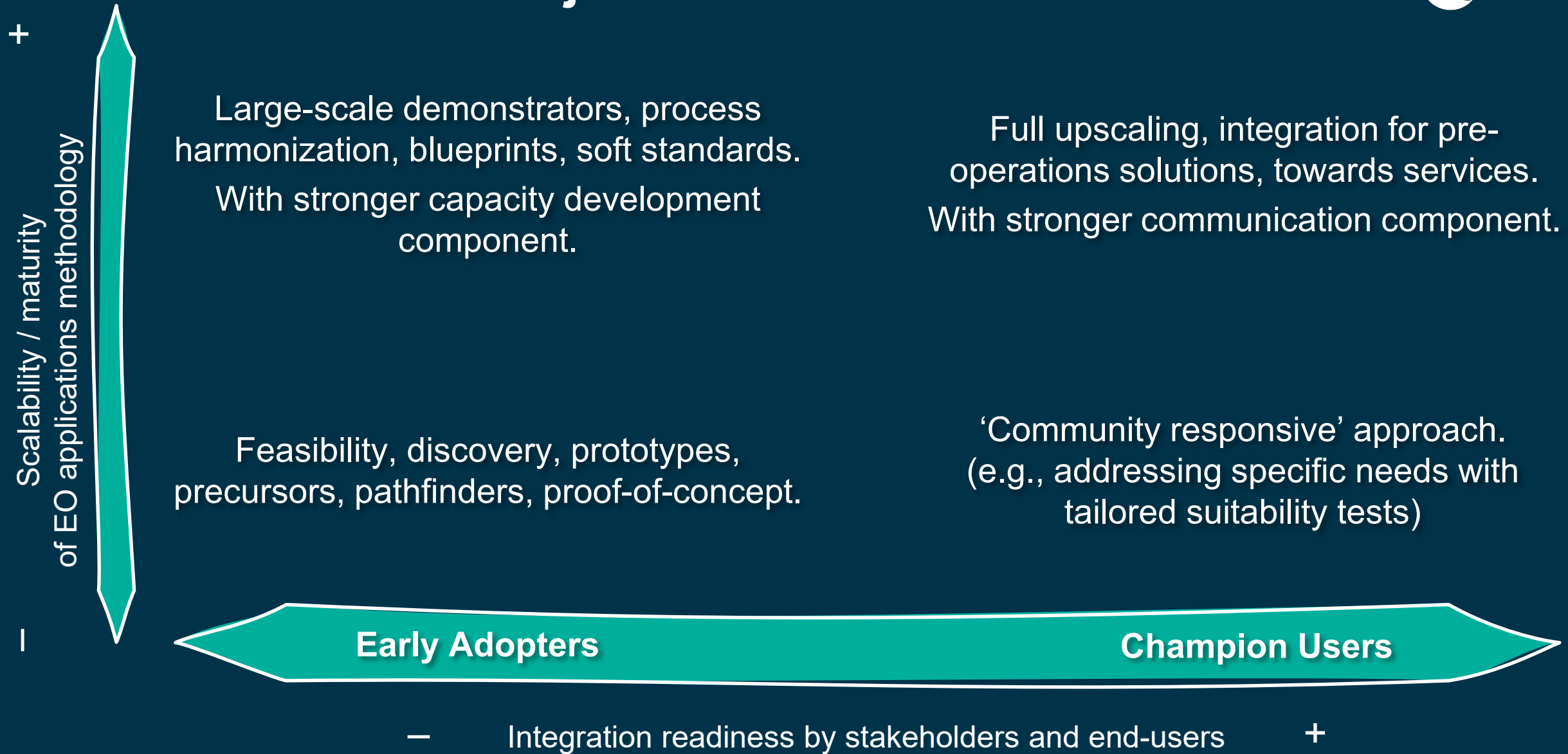
URBan Insights from Space

<https://urbis24.esa.int/>

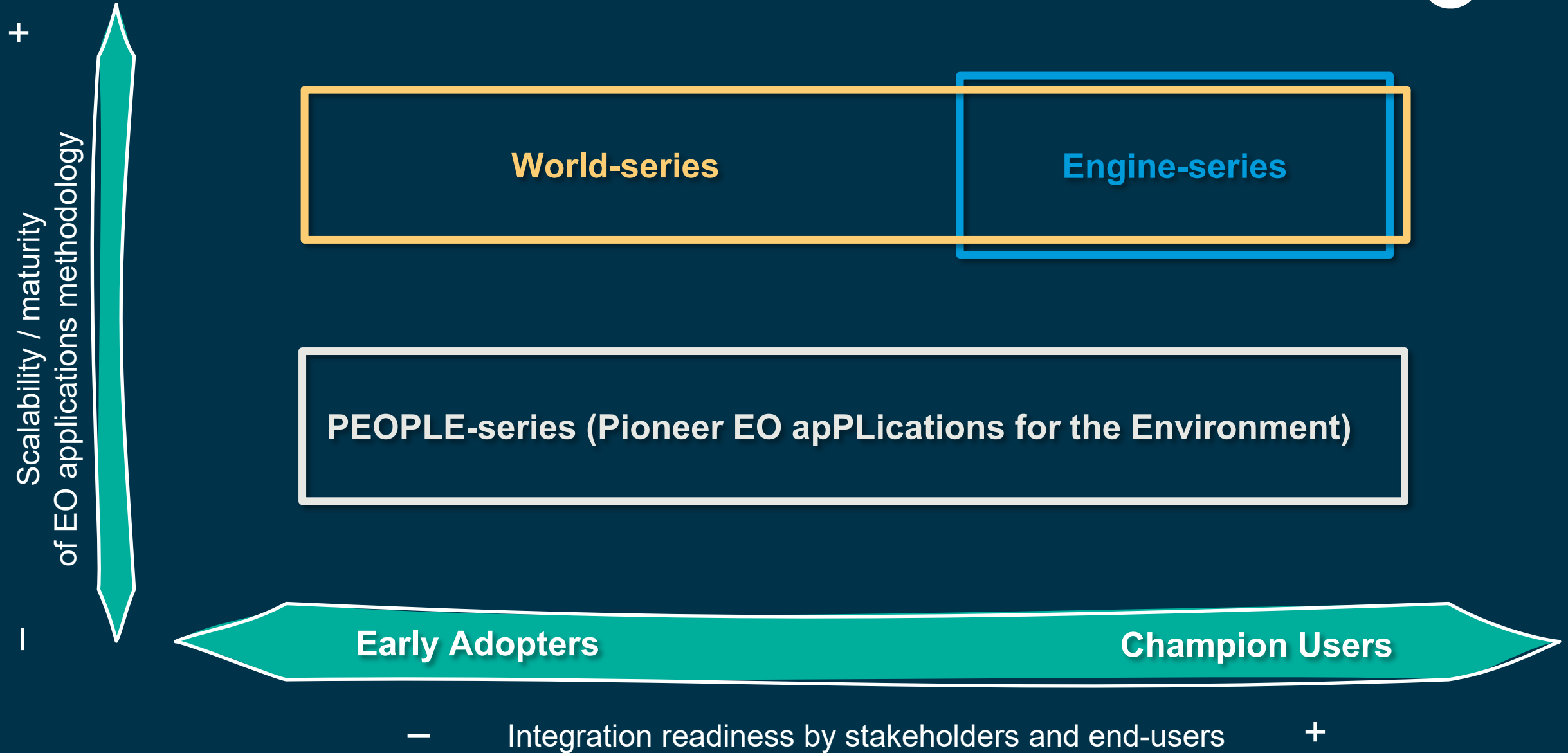
16–18 September 2024

ESA–ESRIN | Frascati (Rome), Italy

Project characterization



Project series types



Expand the

World Series



WorldCover



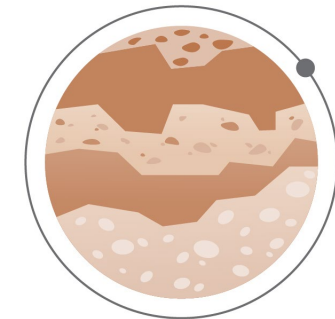
WorldCereal



WorldOceanCirculation



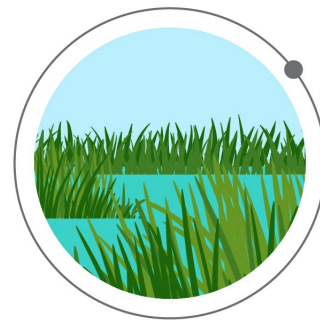
WorldWater



WorldSoil



WorldEmission

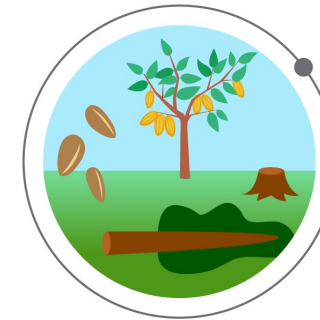


WorldPeatland



WorldEcosystemExtentDynamics

Kick-off



WorldAgroCommodities

Under evaluation

Continue investing in the



series



Eco-schemes in the new CAP



Ecosystem Accounting



Ecosystem Restoration



Agriculture Statistics



Coastal Erosion



Coastal Blue Carbon

Kick-off



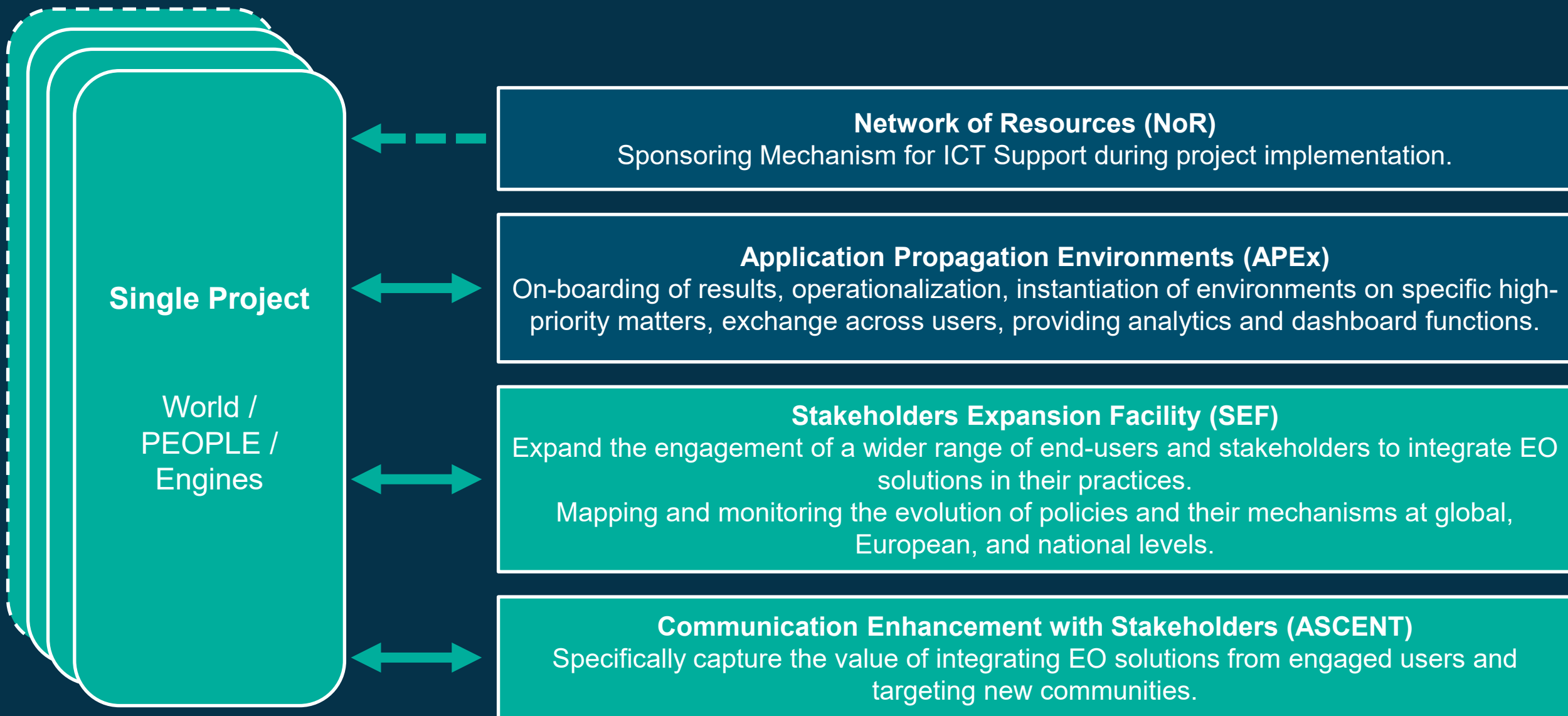
Agriculture Atmospheric Emissions

Under evaluation



Ecosystems Conservation

Under evaluation



[AP-1] Ecosystem Accounting.

[AP-2] Biodiversity and Ecosystem Conservation and Restoration.

[AP-3] Vulnerability, Adaptation and Resilience.

[AP-4] Food systems.

[AP-5] Sustainable Development Goals (SDG) Targets and Indicators.

[AP-6] EO AFRICA Initiative.

[AP-7] Stakeholder Engagement.

EO for SDG Targets and Indicators



SDG Pathfinders



IDEAtlas
INFORMAL SETTLEMENTS

SEN4LDN
LAND DEGRADATION NEUTRALITY

E04SDG-Forest
SUSTAINABLE FOREST MANAGEMENT

SDG Scaling-up



RICE MONITORING

WETLAND INVENTORIES

SDG Engines



Orbit Guardian
INLAND WATER QUALITY

Eu-Mon
COASTAL EUTROPHICATION



Applications Opportunities 2024



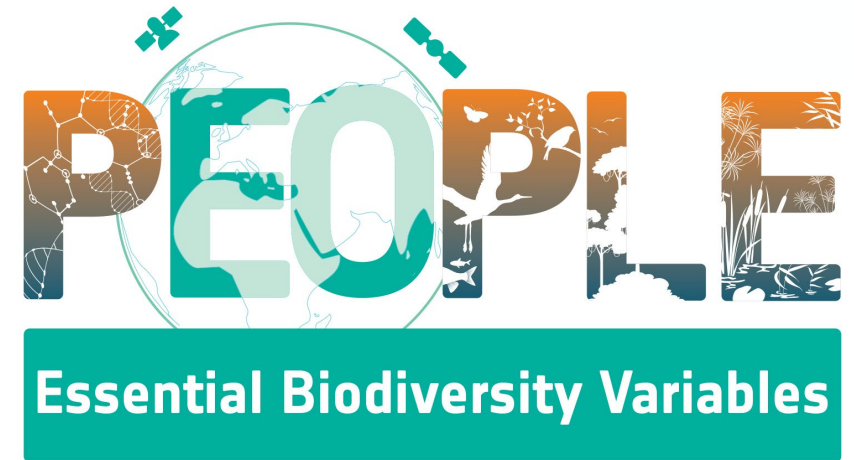
EO for Essential Biodiversity Variables & GBF indicators

In partnership with the **Group on Earth Observation Biodiversity Observation Network (GEO BON)** and the **European Biodiversity Monitoring Coordination Centre (BMCC)**, this activity will study how **Essential Biodiversity Variables (EBVs)** enabled by satellite remote sensing can be integrated in the **monitoring framework of the Kunming-Montreal Global Biodiversity Framework (KM-GBF)** adopted at COP 15 of the Convention on Biological Diversity (CBD) in December 2022.

The objective is to **develop state-of-the-art EO solutions for the production of EBVs** in **terrestrial, freshwater and marine ecosystems** addressing different EBV classes (e.g., ecosystem structure and function, community composition, species population).

The project aims to support the integration of EBVs, enabled by satellite remote sensing, into the GBF monitoring framework and its indicators.

The activity will **leverage existing EBV initiatives** conducted by European and international partners, including GEO BON, BMCC, the European Knowledge Centre for Biodiversity (KCBD), the European Biodiversity Partnership (Biodiversa+) and the Global Biodiversity Information Facility (GBIF).



Plan: ITT Q3 2024 - Single Contract. | Duration: 24 months. | Budget ~ 600 KEUR. | PEOPLE-series

This activity will address the use of EO data and tools in support to **Nature Finance** topics, stemming from the broader context of the Environmental, Social, and Governance (ESG) framework and with respect to Natural Capital Accounting (NCA) aspects. Key end-users and stakeholders of this activity are **specific industries, financial and economic operators, public entities, biodiversity credits entities**.



The first objective of the project is to develop and validate innovative EO-integrated methodologies to quantify and monitor **dependencies and impacts on nature of end-to-end supply value-chains** of at least 2 selected industries (mining and one other industry). The activity is linked to the efforts of the Taskforce on Nature-related Financial Disclosures (TNFD) and many other entities, and it aims at providing the needed information for harmonised procedures related to companies' overall nature-related disclosures and corresponding financial metrics. The second objective of the project is to pioneer, test and validate EO-integrated methodologies to **support specific finance and economic scenarios**: Physical and Transition risks; Biodiversity Credits scheme; integration of NCA in GDP reporting and economic modelling; Debt-for-Nature swaps mechanisms.

Plan: ITT Q1 2024. Single contract. | Duration: 24 months. | Budget ~ 1.8 Meuro. | PEOPLE-series

This activity is linked to a number of key **International entities and policies** (e.g., Food and Agriculture Organization, the 2030 Agenda for Sustainable Development) and **European policies** (e.g. the Marine Strategy Framework Directive, the Common Fisheries policy, the New strategic guidelines for EU aquaculture, the Zero Pollution action plan, the New EU offshore renewable energy strategy, the New EU strategy on adaptation to climate change).



The objective of the Blue Economy project is to fully exploit and optimize the use of satellite data, in synergy with in-situ and/or model outputs, to **support Blue Economy activities and monitor their impact on the marine environment.**

Innovative products, high-level indicators and tools shall be specified, developed, validated, and their benefit demonstrated, with the active participation of relevant end-users: **permitting and regulating authorities, the financial investors and the Blue Economy sector operators** for four different Blue Economy activities: **Fisheries, Aquaculture, Renewable Energy, Tourism.**

Plan: **ITT Q1 2024. Four Contracts.** | Duration: **24 months.** | Budget ~ **1.9 Meuro.** | **PEOPLE-series**

Since the creation of the first **Emission Trade System** in 2005 (EU ETS), carbon markets (voluntary or compliance) have evolved and become an important mechanism to incentivize GHG emissions reduction. The effectiveness of these markets depends on the **credibility and transparency** of the underlying carbon offset or emission reduction. The use of Earth Observation (EO) data has the potential to **improve reliability, ensure accuracy, and bring consistency** to carbon projects, which will ultimately contribute to the success GHG reduction efforts.

Based on findings and recommendation of the “**EO for Carbon Markets Forum**” this project aims to leverage the uptake of Earth observation (EO) in carbon markets. The activity will be conducted in close collaborations with key players and stakeholders from the **policy sector, regulators and project developers**.



The primary objective of this initiative is to explore **cutting-edge EO technologies** for carbon trading to improve **quality, transparency and credibility** of carbon projects. It will also aim to **harmonize and improve standards** and compare different algorithms and approaches from local to regional size.

Plan: ITT Q4 2024. Single contract. | Duration: 24 months. | Budget ~ 800 Keuro. | PEOPLE-series



WorldForest

The activity will develop methodologies in support to **Adaptive and Sustainable Forest Management** targeting the **New EU Forest Strategy 2030** and other EU regulations and directives related to forestry, and responding also to global needs from UN organizations (e.g., FAO, UNEP, UNFCCC) like the **Sustainable Development Goal 15**, the **Paris Agreement**, the **Global Biodiversity Framework** and the **Glasgow Leaders' Declaration on Forests and Land Use**.

This will also contribute to the ESA engagement with GFOI and CEOS AFOLU.

The project shall provide innovative information products / indicators and related tools on a number of **key forest parameters with a dynamic approach**, prototyping to **respond to on-demand scenarios**.

The project shall take full benefit from the **magnitude of space-borne sensors** (e.g., Sentinels, Earth Explorers and other), meteorological data and modelling. The project shall leverage on **state-of-the-art existing datasets** (e.g., classification maps and methods, CCI datasets) and **integrate open non-EO data** as necessary. The project shall explore enhancement opportunities with respected synergies of **commercial EO data**.

Plan: **ITT Q2 2024. Single contract.** | Duration: **24 months.** | Budget ~ **1.2 Meuro.** | **World-series**

The objective of the activity is to **customise and integrate state-of-the-art EO data processing and data analytics workflows (called SDG EO Engines)** into existing data exploitation environments, with the goal to demonstrate the value and use of geospatially explicit datasets to **produce national statistics on SDG Targets and Indicators**, to enable a seamless and cost-effective integration of EO data flows into official statistics on SDGs, and to allow an EO uptake in national processes and systems on SDGs, for different domains of use.

These **SDG EO engines** will include all the data workflows needed for data collection of EO and non-EO geospatially explicit datasets, data quality check, data preparation, data processing and data analytics, and their integration into federated cloud-based platform environments for SDGs. The activity will be conducted in synergy with the **Application Propagation Environment (APEX)**, a transversal application activity that supports the integration of innovative data processing, visualisation, analytics, statistics and dashboard functionalities through configurable functionality instantiation services and algorithm enhancement services.

The target user group is primarily the **National Statistical offices and supporting agencies** in charge of the production of national statistics on SDGs. The project will be done in consultation with a number of authoritative organisations (**SDG Custodian Agencies, UN Statistics Division, IAEG-SDGs WGGI, EUROSTAT, GEO EO4SDG, CEOS Coordination Group on SDGs**) which will be involved in the Project Advisory Board.

Plan: ITT Q2 2024 - Single Contract. | Duration: 18 months. | Budget ~ 700 KEUR. | Engine-series

New Integrated Policy Expert Scheme (IPES)

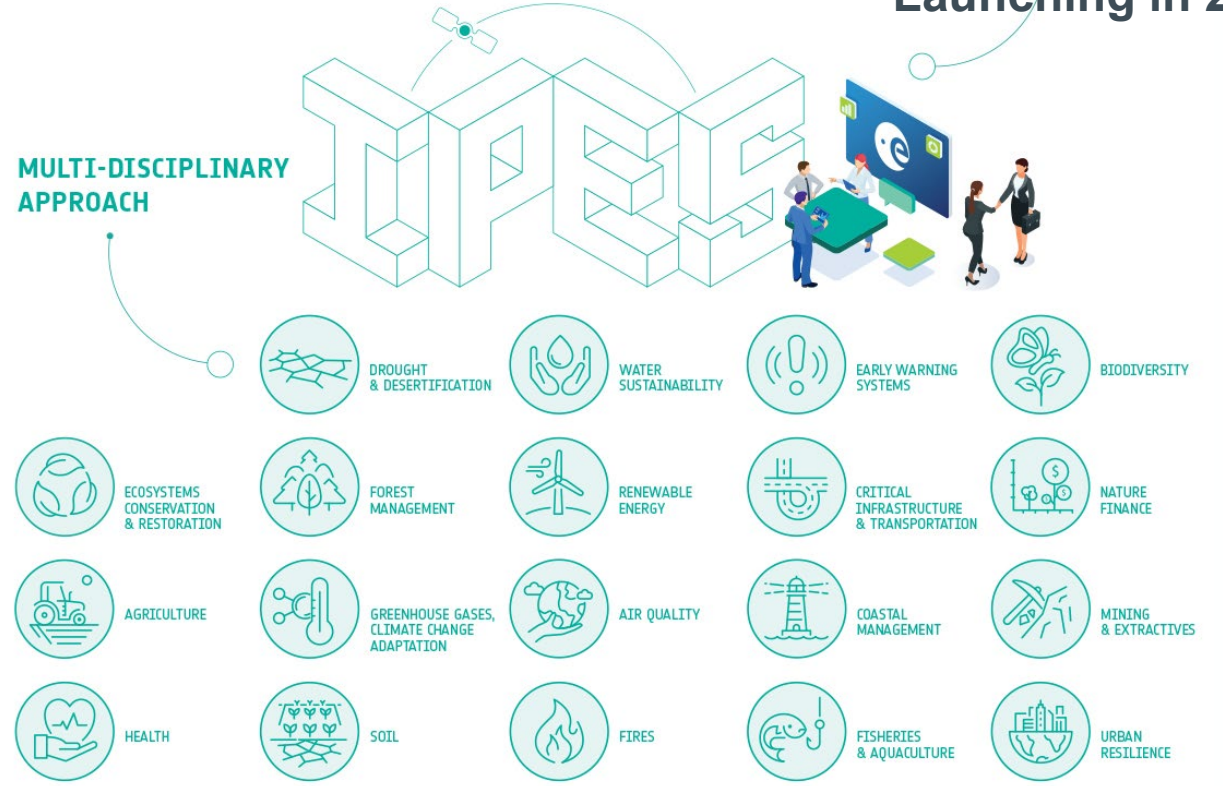
Launching in 2024

The policy expert is seamlessly integrated into the ESA team, fostering collaboration and leveraging unique insights to accelerate the implementation of effective strategies addressing the global climate and environmental crisis.

The scheme duration spans from four months to two years, with the possibility of renewal subject to mutual agreement. While actively engaged in ESA projects, the experts maintain their employment with their original organization. ESA assumes responsibility for covering expenses related to relocation, provision of on-site facilities, and participation in relevant events.

INTEGRATED POLICY EXPERTS FROM

- INTERNATIONAL AND EUROPEAN ORGANIZATIONS
- NATIONAL / REGIONAL / LOCAL ENTITIES
- MULTILATERAL CONVENTIONS
- CIVIL SOCIETY ORGANIZATIONS
- INDIGENOUS SOCIETIES



MUTUAL BENEFITS

- SYNERGISTIC ACTIONS AND RESOURCE MOBILIZATION
- POLICY ALIGNMENT
- ENHANCED DECISION-MAKING
- INTERDISCIPLINARY HOLISTIC SOLUTIONS DEVELOPMENT
- STAKEHOLDERS AND END-USERS EMPOWERMENT
- EFFECTIVE INTEGRATION INTO POLICY FRAMEWORKS
- FOSTER OPERATIONAL UTILIZATION
- ENABLE ACTION FOR A SUSTAINABLE GREEN TRANSITION TOWARDS A CARBON-NEUTRAL, RESOURCE-EFFICIENT AND RESILIENT SOCIETY

Thank you



FUTURE EO

