



GLOBAL ECOSYSTEMS ATLAS



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GEO is convening partners to create the world's first ecosystems atlas.

Call to action

Over the last few decades, the Earth observation market has grown rapidly. The Global Satellite Earth Observation Market Size alone was valued at US\$7,705 billion in 2021,¹ expected to double by 2030. Earth observations based services are powering investments in sectors such as agriculture, fisheries, forestry, health, transport, utilities, mining and finance. In addition, there is a hard to quantify non-market value for Earth observations.

When it comes to the Earth's ecosystems - the foundation of our natural capital - investment has been inadequate. The data are inconsistent, incomplete or widely dispersed. How can this be the reality in today's information age, at a time when we chart a path towards a sustainable future?

Given our collective resolve to design new, regenerative systems to help address existential threats from climate change and biodiversity loss and to fulfil the articulated needs for accountability in environmental agreements and policy frameworks, the world urgently needs a common reference on the extents, structures, compositions and functions of ecosystems.

The technologies exist but the political will and a suitable cooperation model are required.

As a global partnership dedicated to Earth observations, we call on all the different stakeholders engaged in remote sensing and in-situ Earth observations, science, technology, policy-making and monitoring and reporting under environmental agreements to come together and accelerate cooperation to produce the urgently needed Global Ecosystems Atlas.

Global collaboration on ecosystems mapping has the potential to create new knowledge and transform the way we see, monitor, value and protect nature while meeting needs and aspirations.

About the Atlas

The Atlas project is a response to needs expressed by many different stakeholders engaged in the monitoring and reporting under environmental agreements, notably in relation to the Global Biodiversity Framework (GBF) adopted by the Convention on Biological Diversity at COP 15, inventories under the Convention on Wetlands, nature-based solutions under the UNFCCC and land degradation under the Convention to Combat Desertification (UNCCD) and others.

Driven by the best science and IT capabilities, the Atlas will integrate high-quality vetted global, regional, and national ecosystem maps into a single explorable interface, allowing for near-real time view of ecosystems across multiple classifications and mapping approaches. Over time, data gaps will be filled, new layers of information added, including species distributions, ecosystem processes, functions and services and other data.

Users will be able to view the ecosystems in unprecedented detail and quality, download content, launch queries and create derivative products to meet individual user needs.

The Atlas will be an open, user-friendly on-line resource designed in line with the GEO principles of transparency and equitable access to trusted Earth observation information.

Supported by



Convention on Biological Diversity



United Nations Framework Convention on Climate Change



United Nations Convention to Combat Desertification



Resilience Frontiers

How can the Atlas be used?

- Viewing global ecosystem extents.
- Setting conservation, restoration and related targets.
- Tracking indicators, including in the Global Biodiversity Framework (GBF).
- Managing natural resources.
- Forecasting changes.
- Designing early warning systems.
- Designing nature-based solutions and regenerative systems.
- Reporting and stock-taking under multilateral environmental agreements (MEAs).
- Reporting on corporate disclosure requirements and ESG.
- Designing mobility, food, health and others systems for the future.
- Managing project and financial risk.
- Implementing the System of Environmental-Economic Accounting (SEEA).
- Conducting research.

About the project

The Atlas project is a public-private collaboration convened and co-ordinated by GEO. The GEO Secretariat will act as the project manager and secure adequate, dedicated financial resources and services for the project.

As the convenor, GEO will establish a system for inputs by all relevant stakeholders, in particular the GEO networks, the scientific and academic communities, nature advocates and friends of the Atlas via committees and working groups that will be created under the governance of the project.

In order to facilitate a productive exchange between stakeholders from many disciplines, including the potential users of the Atlas, the committees and groups will be composed in a multi-disciplinary fashion.

GEO will also establish an "Atlas Consortium", in accordance with UN rules, of qualified partners to lead and oversee the actual production of the Atlas. All committees and groups under the governance of the project will support the production process with guidance and recommendations to the "Atlas Consortium".

In order to ensure the operational sustainability of the Atlas, the GEO secretariat is exploring innovative financing mechanisms to fund licensing, platform operations and maintenance over the long-term.

The project will kickoff with a high-level convening meeting in May 2023. The project will then be implemented in stages identified in the work programme developed in close consultation with all stakeholders.

Value for money

The Atlas will create value for the world by generating new knowledge on ecosystems through effective collaboration. It will add value in a critical yet under-served area, enhancing transparency and accountability in stock-taking, reporting and policy and decision-making.

Through collaboration, the Atlas will create synergies, efficiencies and scalability for existing initiatives and users. Input providers will benefit from having their products included in a global platform while being able to draw on the data to complement their own data, systems or needs.

The Atlas will also add value by identifying and filling existing data gaps where possible and incorporating over time additional layers, including species distributions, ecosystem processes, functions and services and other data to render the Atlas a universal and comprehensive resource.

National and local data

The integration of national Earth observation information from remote sensing and in-situ data as well as citizen-generated data and data from local communities has the potential to add unique value to the atlas.

Many data projects and initiatives meet local, national and regional needs, but they are not sufficiently and systematically linked to realise their important potential.

Bridging data gaps through networks of existing and planned national biodiversity observation and monitoring systems will lead to near-real time understanding of global and regional trends in biodiversity and guide targeted conservation and restoration action.

Timeline

The project will commence in May 2023 with a convening meeting of stakeholders in Geneva, Switzerland. The Beta version is expected to be presented to the public in December 2023.

Who should use the Atlas?

- Governments
- Rio conventions (CBD, UNCCD, UNFCCC)
- Ramsar Convention
- Other Multilateral Environmental Agreements
- Local and indigenous communities
- Civil society organisations
- Citizen-generated data organizations
- Academic and research organizations
- Development banks and lending institutions
- Companies and private financial institutions
- Individuals

Potential applications

Standardized and consistent ecosystems mapping has universal relevance to the private and public sectors and a wide range of applications, as illustrated below:

Review of the Global Biodiversity Framework (GBF) under the Convention on Biological Diversity (CBD)

The GBF includes concrete targets to achieve its overall mission of halting and reversing biodiversity loss, including restoration of ecosystems and protection of indigenous rights. The plan includes concrete measures to halt and reverse nature loss, including protecting 30% of the planet and 30% of degraded ecosystems by 2030. The Atlas will deliver measurements and insights to fulfil the GBF mission, and support countries in stock-taking, monitoring and streamlining and national reporting on progress of the GBF.

National Wetland Inventories (NWI) under the Convention on Wetlands

National wetland inventories are developed by Contracting Parties to the Convention on Wetlands as critical data and decision support systems for national monitoring and assessment, ecosystem management and restoration, as an aid to implementing the "wise use obligation" under the Convention. National wetland inventories also provide the basis for reporting on international goals and targets, including the SDG indicator on the extent of water related ecosystems. The Atlas will directly support countries in developing and keeping up to date their national wetlands inventories.

Nature-based Solutions (NbS) under the Framework Convention on Climate Change (UNFCCC)

The UNFCCC encourages governments to consider NbS and ecosystem-based approaches for mitigation and adaptation action against climate change. The convention is also developing a financial framework for a loss and damage concept. The atlas can be used to input into these mandates.

Tracking methane emissions in GHG balance

As temperatures increase, biogenic sources such as permafrost peatlands, tropical wetlands and rice paddies emit vast amounts of methane. Methane emissions are the major source of anthropogenic emissions and in order to achieve the Paris Agreement, methane emissions from ecosystems need to be urgently identified, put into context of overall GHG emissions balances and mitigated. The Atlas will support countries in identifying and tracking methane emissions at the ecosystems level.

Tracking pollution, including plastics

Pollution is a major stress factor for nature, affecting the structure and functions of ecosystems and making them more vulnerable to the climate and pathogens, which in turn impacts health, food and water. Plastic debris, notably in the marine environment, is another challenge with severe consequences for wildlife, ecosystems and human health.

Natural capital accounting

The System of Environmental Economic Accounting (SEEA) is an internationally agreed statistical framework that aims to include natural assets on balance sheets. The atlas will support the system with up-to-date information.

Climate and nature-related financial disclosures

Financial disclosures by companies and financial institutions in relation to the climate and nature under laws or voluntary frameworks such as the Climate-Related Financial Disclosures (TCFD) or the Task Force on Nature-related Financial Disclosures (TNFD) aim to describe risks and opportunities and integrate them in decision-making. The atlas can offer baseline data for the effective operation of laws and frameworks.

Financial structuring and risk insurance

An increasing number of countries and communities invest in risk insurance to protect against climate- and nature-related loss and damage. New ecosystems knowledge can lead to new opportunities in financial structuring based on the underlying value of ecosystem services.

Footnotes:

1. Globe Newswire at <https://www.globenewswire.com/en/news-release/2022/10/18/2536258/0/en/Global-Satellite-Earth-Observation-Market-Size-to-grow-USD-14166-Billion-by-2030-CAGR-of-7.html>

About GEO

The Group on Earth Observations (GEO) is a global partnership comprised of 114 governments, 162 international, private sector and civil society organizations and thousands of scientists collaborating to provide equitable access to Earth observation information as a basis for evidence-based decision making. The partnership is hosted by the World Meteorological Organization (WMO).

Contact:

Group on Earth Observations
7 bis, avenue de la Paix
Case postale 2300
CH-1211 Geneva, Switzerland
Tel. +41 22 730 8505
Fax +41 22 730 8520

www.earthobservations.org
E-mail: secretariat@geosec.org