

GEO IS CONVENING PARTNERS TO CREATE THE WORLD'S FIRST ECOSYSTEMS ATLAS.

The Global Ecosystems Atlas will bring together high-quality global, regional and national ecosystem maps into an open, online resource. Presenting the extent, structure and function of the world's ecosystems in unprecedented detail, the Atlas will enable everyone to take action to protect nature.

CONTEXT

Over the last few decades, the Earth observation market has grown rapidly. The global satellite Earth observation market alone was valued at **US\$7,705 billion in 2021** and is expected **to double by 2030**. Earth observation-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.

However, when it comes to the Earth's ecosystems — the foundational systems that sustain human, plant, and animal life on Earth — investment in Earth observation services has been inadequate. Despite the information and technology available, existing data are inconsistent, incomplete, or widely dispersed.

This is a massive missed opportunity. It's time to transform the way we see, monitor, value and protect nature.

AN ATLAS TO MEET GLOBAL NEEDS

Around the world, there is significant momentum for designing new, regenerative systems to help address existential threats from climate change and biodiversity loss. Additionally, stakeholders in the GEO community and beyond recognize the need for increased accountability in environmental agreements and policy frameworks.

The Global Ecosystems Atlas will be an open, user-friendly online resource that brings together high-quality ecosystems data in a single place.

Designed in line with the GEO principles of transparency and equitable access to trusted Earth observation information, the project is a response to needs expressed by many different stakeholders engaged in monitoring and reporting under environmental agreements, notably 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 United Nations Framework Convention on Climate Change (UNFCCC), and land degradation under the United Nations Convention to Combat Desertification (UNCCD).

**SCIENCE,
TECHNOLOGY,
AND DATA FOR
IMPACT**

Driven by world-class science and information technology capabilities, the Atlas will integrate high-quality, vetted global, regional, and national ecosystem maps into an interactive interface, allowing for a dynamic view of ecosystems across multiple classifications and mapping approaches. Over time, users and contributors will fill data gaps and add new layers of information, including species distributions, ecosystem processes, and functions and services.

By enabling collaboration across sectors and countries, the Atlas will generate knowledge and insights on ecosystems, help improve and scale existing initiatives, and enhance transparency and accountability in stock-taking, reporting, and decision-making.

APPLICATIONS

As an open-source tool, the Atlas will be useful to a broad range of users. In fact, the more users and use cases the Atlas has, the stronger and more useful it will become. Integrating national Earth observation information from remote sensing, in-situ data, citizen-generated data, and data from local communities will 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 together to realise their full 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.

How can the atlas be used?

Viewing global ecosystem extents

Monitoring and reporting on multilateral environmental agreements including the Global Biodiversity Framework (GBF)

Forecasting changes and conducting research

Reporting on corporate disclosure requirements and ESG

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Managing project and financial risk

Setting conservation, restoration, and related targets

Managing natural resources

Designing early warning systems, nature-based solutions, and regenerative systems

Designing mobility, food, health, and other systems for the future

Implementing the System of Environmental-Economic Accounting (SEEA)

Who should use the Atlas?

-  Governments
-  Signatories to, stewards of, and other stakeholders affiliated with Rio conventions (CBD, UNCCD, UNFCCC), the Ramsar Convention, and 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

Review of the global biodiversity framework under the convention on biological diversity

The Global Biodiversity Framework (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 percent of the planet and 30 percent of degraded ecosystems by 2030. Countries can use the Atlas to access measurements and derive insights that support stock-taking, monitoring, and reporting on progress toward achieving the various GBF indicators.

National Wetland Inventories under the Convention on Wetlands

National Wetland Inventories (NWIs) 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, and as an aid to implementing the “wise use obligation” under the Convention. National wetland inventories NWIs also provide the basis for reporting on international goals and targets, including the SDG indicator on the extent of water-related ecosystems. Countries can use the Atlas to develop and update their NWIs.

Nature-based Solutions under the UN Framework Convention on Climate Change

UN Framework Convention on Climate Change (UNFCCC) encourages governments to consider Nature-based Solutions (NbS) and ecosystem-based approaches for climate change mitigation and adaptation. The convention is also developing a financial framework for loss and damage. The Atlas can be used to input into these mandates.

Tracking methane emissions in the greenhouse gas balance

As temperatures increase, natural and human-influenced emission sources such as permafrost peatlands, tropical wetlands, and rice paddies emit vast amounts of methane. Methane is the most powerful greenhouse gas (GHG) in terms of global warming potential. To achieve the objectives of the Paris Agreement, methane emissions from ecosystems need to be urgently identified, put into context of overall GHG emission balances, and mitigated. The Atlas will support countries in identifying and tracking methane emissions at the ecosystems level.

Tracking pollution, including plastics

Pollution affects the structure and functions of ecosystems. It makes them more vulnerable to climate change and pathogens, which in turn impacts human health as well as quality and availability of food and water. For example, plastic pollution in the marine environment poses severe consequences for ecosystems, negatively affecting wildlife 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 provide up-to-date information to SEEA.

Climate and nature-related financial disclosures

Under some laws or voluntary frameworks, such as the Task Force on Climate-Related Financial Disclosures or the Task Force on Nature-related Financial Disclosures, companies and financial institutions are required to make financial disclosures that describe risks and opportunities related to the climate and nature. This process keeps private sector participants accountable and integrates 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.

WORK PLAN

The Atlas project is a public-private collaboration convened and coordinated by GEO. The GEO Secretariat will act as the project manager and secure adequate, dedicated financial resources and services for the project. GEO will establish an “Atlas Consortium,” in accordance with UN rules, of qualified partners to lead and oversee the production of the Atlas.

Under the guidance of the Atlas Consortium, necessary committees and working groups will be created to support the production process and manage 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. To facilitate a productive, multi-stakeholder exchange, including with potential Atlas users, the committees and groups will be composed in a multi-disciplinary fashion.

To ensure operational sustainability, the GEO Secretariat is exploring innovative financing mechanisms to fund licensing, platform operations, and maintenance over the long-term.

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