Global Ecosystems Atlas

This document is submitted to the Plenary for information.

DESCRIPTION OF PROJECT CONCEPT & PROJECT DETAILING PHASE

July-December 2023

GEO GROUP ON EARTH OBSERVATIONS

GLOBAL ECOSYSTEMS ATLAS

4 July 2023

GROUP ON EARTH OBSERVATIONS

GLOBAL ECOSYSTEMS ATLAS

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EXECUTIVE SUMMARY

The Global Ecosystems Atlas project is an international collaboration led by the Group on Earth Observations (GEO) to create an urgently needed common reference to facilitate harmonized and coherent national, regional and global stock-taking and reporting on ecosystems.

Effective ecosystems monitoring is more urgent than ever because the biodiversity crisis presents a serious threat to economies, livelihoods, food security, health and quality of life.

In recognition of the severity of the biodiversity crisis and the urgent need for action to bend the curve of biodiversity loss and the decline of ecosystems services, in December 2022 more than 190 governments adopted the landmark Global Biodiversity Framework (GBF), signalling unprecedented political will and commitment to halt towards nature. To deliver on its mission of halting and reversing biodiversity loss and the decline of ecosystems services, the GBF contains 4 specific goals and 23 targets, which require effective monitoring, stocktaking and reporting.

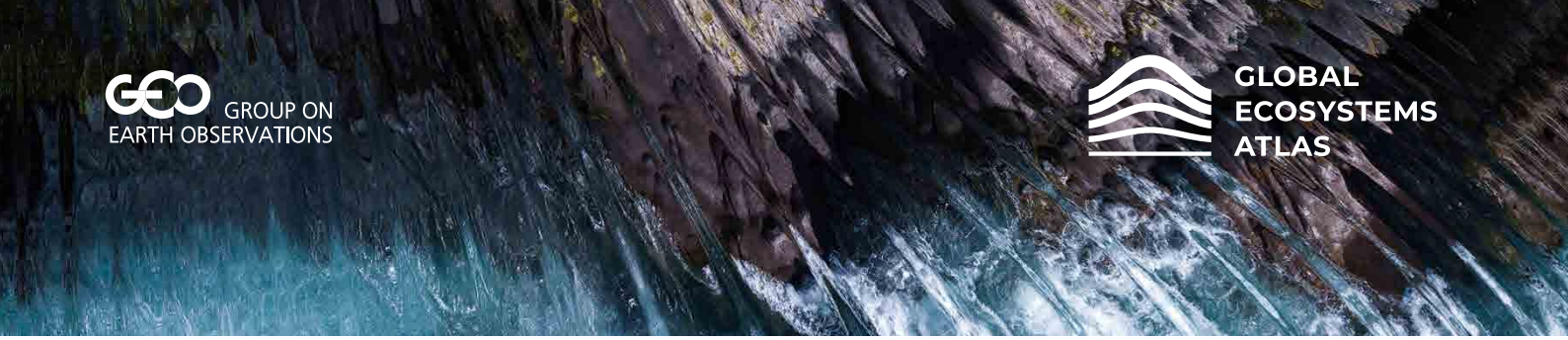
To-date, we do not have a coherent map of the world's ecosystems but strong political will, societal awareness, and unprecedented commitment towards nature combined with advancements in science and technology present a timely opportunity to change the way we assess, monitor and, most importantly, take action to converse and restore ecosystems.

The Global Ecosystems Atlas project will be the first international, multi-disciplinary collaboration to agree on standards, integrate existing ecosystem maps and generate new data to create a harmonized tool for countries to effectively implement the GBF. The Atlas would also support other environmental agreements addressing climate change, desertification, loss of wetlands and freshwater habitats, ocean health as well as the implementation of the System of Environmental Economic Accounting (SEEA), an internationally agreed statistical standard for valuing nature and the services it provides.

The world's ability to effectively respond to the biodiversity crisis and to achieve national and internationally agreed goals and targets is dependent on the accessibility to affordable, accurate and up-to-date information about the extent, distribution and condition of world's ecosystems. The Atlas will enhance the knowledge about ecosystems and strengthen the enhance base for nature-positive development. Special emphasis will be given to the inclusion of country data and national needs.

In May 2023, the Atlas collaboration has brought together the three Rio Conventions, the Wetlands Convention and 70 subject matter experts, including world leaders in ecology, remote sensing, environmental modelling and information technology from organizations within the GEO network such as the Global Biodiversity Observation Network and the Committee on Earth Observation Satellites, and other stakeholders such as IUCN, the UNEP World Conservation Monitoring Centre and senior representatives of the Governments of Costa Rica, New Caledonia, the Republic of Maldives and the Republic of South Africa. More participants are expected to join the collaboration during the project detailing phase.

The current project detailing phase runs from July until December 2023 with a demonstration of the Atlas use cases to be presented at the GEO Ministerial Summit in Cape Town and at COP 28 in Dubai. Subject to financial resources, the full-fledged project will be implemented starting in early 2024.



1.

BACKGROUND

This document outlines the rationale, project strategy and working arrangements for the Global Ecosystems Atlas project. The project is an international collaboration led by the Group on Earth Observations (GEO) to create an urgently needed common reference to facilitate harmonized and coherent national, regional and global reporting of the state of ecosystems.

Effective ecosystems monitoring is more urgent than ever because unabated biodiversity loss and a decline in vital ecosystems services is threatening to erode economies, livelihoods, food security, health and quality of life.

The Urgency of the Biodiversity Crisis

At the current rate of consumption of nature's assets, we would need 1.6 times the Earth to sustain ourselves[1] but nature loss is further accelerating.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystems Services (IPBES) warned in its 2019 landmark Global Biodiversity Assessment that nature is declining globally at rates unprecedented in human history and the rate of species extinctions is accelerating with at least one million species threatened with extinction.[2] According to the report, measures of the extent and condition of natural ecosystems have declined 47 percent since the earliest estimates. [3] The Living Planet Index (LPI), which tracks the population of mammals, birds, fish, reptiles and amphibians across terrestrial, freshwater and marine habitats, shows an alarming rate of wildlife loss of 69 per cent since 1970.[4]

The potential economic impact of biodiversity loss is equally alarming, with estimates indicating that US$44 trillion in economic value generation - more than half of the world's Gross Domestic Product (GDP) - is dependent on nature.[5]

The Global Biodiversity Framework (GBF)

In recognition of the severity of the biodiversity crisis and the urgent need for action to bend the curve of biodiversity loss and the decline of ecosystems services, in December 2022, more than 190 governments adopted the landmark Global Biodiversity Framework (GBF), signalling unprecedented political will and commitment to halt and reverse biodiversity loss and put nature on a path towards recovery.[6] To deliver on its mission, the GBF framework contains 4 specific goals and 23 targets, which require effective monitoring, stocktaking and reporting.

The Need for Ecosystem Information

The world's ability to effectively respond to the biodiversity crisis and to achieve national and internationally agreed goals and targets in the GBF is dependent on access to affordable, accurate and up-to-date information on ecosystem extent, distribution and condition.

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[1] Dasgupta, P. (2021). The Economics of Biodiversity, p. 16, at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957292/Dasgupta_Review_-_Abridged_Version.pdf
[2] IPBES Media Release (6 May 2019), at https://www.ipbes.net/news/Media-Release-Global-Assessment#:~:text=The%20Report%20finds%20that%20around,20%25%2C%20mostly%20since%201900.
[3] Science (16 May 2019), at: https://www.science.org/content/article/landmark-analysis-documents-alarming-global-decline-nature
[4] WWF. Living Planet Report 2022, at: https://livingplanet.panda.org/en-US/
[5] WEF (2020). Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy, at: https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf
[6] CBD/COP/DEC/15/4 (2022). Global Biodiversity Framework, at: https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

Ecosystems data is also critical for the implementation of other multilateral environmental agreements (MEAs), including the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations to Combat Desertification (UNCCD), the Convention on Wetlands of International Importance (Ramsar Convention) and the Treaty of the High Seas, also known as Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) as well as for the System of Environmental Economic Accounting (SEEA), an internationally agreed statistical standard for valuing nature and the services it provides.

To-date, we do not have a coherent map of the world's ecosystems but strong political will, societal awareness, and unprecedented commitment towards nature combined with advancements in science and technology present a timely opportunity to change the way we assess, monitor and, most importantly, take action on ecosystems.

The Global Ecosystems Atlas project will be the first international, multi-disciplinary collaboration to agree on standards, integrate existing ecosystem maps and generate new data to create a harmonized tool for countries to effectively implement the GBF, support other MEAs and the implementation of SEEA.

The Role of GEO

As a global partnership dedicated to the equitable access to quality Earth observations, GEO is uniquely positioned to mobilize its extensive network and convene governments, scientists and researchers, data owners, technology companies, civil society organizations, philanthropic foundations and other stakeholders, breaking down silos and facilitating true global cooperation on ecosystems mapping.

The Atlas concept was developed taking into account the strategic direction of the GEO partnership in line with the GEO Post-2025 Strategy under consideration by the Executive Committee (ExCom) and the GEO community.

The project concept was first presented to the ExCom on 4 November 2022, and was subsequently discussed by the GEO Programme Board at its 25th meeting from 6-7 February 2023, at ExCom 60 from 22-23 March 2023 and again at the GEO Programme Board at its 26th meeting from 15-16 June 2023. Based on the endorsement of the project concept by the ExCom, the GEO Secretariat convened the first expert group on the Atlas from 17-18 May 2023 in hybrid format, with the participation of the three Rio Conventions and the Wetlands Convention, IUCN and 70 subject matter experts from around the world. The second expert meeting is scheduled to take place 20-22 September 2023 in Villars, Switzerland with financial support from the Villars Institute.

Invitation to Get Involved

The purpose of this document is to provide updated information to the GEO ExCom and potential funders and supporters about the project. The project development and detailing phase outlined in this document will result in the Global Ecosystems Atlas project being ready for full-scale implementation from early 2024 onwards.

2.

THE GLOBAL ECOSYSTEMS ATLAS

a. Vision

The vision of the Global Ecosystems Atlas is to enhance the world's ability to effectively respond to the biodiversity crisis by providing harmonized, coherent and timely ecosystems information, that will help countries achieve national and international targets to halt and reverse biodiversity loss and safeguard vital ecosystems services for present and future generations.

b. Project Objective

The project objective is to create the world's first ecosystems atlas. The objective will be achieved through global collaboration and leveraging past investments, existing initiatives and technology advancements.

Specifically, the project will:

- ▸ Develop an agreed list of ecosystem typologies across all major stakeholders, including the UN, the Rio conventions and the Ramsar Wetlands convention, the GEO network and civil society;
- ▸ Harmonize all mapping efforts around a common and shared list of ecosystem extent aligned to IUCN Global Ecosystem Typology (GET);
- ▸ Integrate the most relevant, existing terrestrial, freshwater, marine ecosystems maps into a single platform;
- ▸ Create a coherent, universal reporting and assessment tool for ecosystem extent;
- ▸ Provide downloadable content for use in national and international reporting on the state of ecosystems, natural capital accounting and tracking trends on ecosystem extent for an area of interest;
- ▸ Maintain an updated map with new data and AI/ML to provide a near-real time view of ecosystem distributions;
- ▸ Include a temporal dimension, showing ecosystems changes over time; and
- ▸ Develop and implement a quality assurance protocol.

Special emphasis will be given to country needs with respect to ecosystem information and the application of national ecosystems data in the Atlas.

c. Collaboration

The project is designed to be a platform for collaboration among governments, scientists and researchers, data owners, technology companies, civil society organizations, philanthropic foundations and other stakeholders, breaking down silos and facilitating true global cooperation on mapping and understanding ecosystems.
Global collaboration will result in a broad consensus on methodology, integration of existing and new data sets into a harmonized, coherent and scientifically vetted resource. Importantly, the process provides for the development and implementation of a scientifically rigorous review protocol for quality assurance purposes. Countries will benefit from accessing the ecosystem products and also of contributing data to the Atlas, thereby enhancing their domestic capacities and agency to produce standardized assessments of ecosystem change needed for the GBF and the SEEA.

To-date, the collaboration has brought together at its first convening meeting in May 2023, the three Rio Conventions, the Wetlands Convention and 70 subject matter experts, including world leaders in ecology, remote sensing, environmental modelling and information technology from organizations within the GEO network such as the Global Biodiversity Observation Network and the Committee on Earth Observation Satellites, and other stakeholders such as IUCN, the UNEP World Conservation Monitoring Centre and senior representatives of the Governments of Costa Rica, New Caledonia, the Republic of Maldives and the Republic of South Africa. More participants are expected to join the collaboration during the project detailing phase.

d. Impact

While the world generates a large amount of geospatial data with many landcover products available, currently, there is no authoritative resource to serve as a reference on ecosystem extent.

The Global Ecosystems Atlas project would be the first such resource and harmonized tool for countries to effectively implement the GBF. The Atlas would also support other MEAs addressing climate change, desertification, loss of wetlands and freshwater habitats, ocean health as well as SEEA.

In addition to accessing ecosystems data, countries will contribute data to the Atlas, thereby improving the utility of the Atlas as well as their domestic capacities.

In sum, the Atlas will deliver new impact at national, regional and global levels by enhancing the:

- ▸ Effectiveness of strategies to halt and reverse biodiversity loss and the decline of vital ecosystems services, including through development planning and spatial planning under GBF goals and targets;
- ▸ Conservation, sustainable use and management of ecosystems, including the GBF's 30x30 target;
- ▸ Information base for valuing nature and the services it provides to support SEEA implementation;
- ▸ National capacities in ecosystems mapping; and
- ▸ Harmonization, coherence and accountability in stock-taking, monitoring and reporting under national and international targets of MEAs

e. Timeline

Project Detailing Phase	JUL 2023 - DEC 2023
Presentation of Use Case Demonstration*	NOV/ DEC 2023
Launch of Project	MAR 2024
Duration of Project**	MAR 2024 - DEC 2025
Resource Mobilization	ONGOING

* At GEO Ministerial Summit in Cape Town and COP 28 in Dubai

** Beyond the Global Ecosystems Atlas production itself, maintenance and up-dating are envisioned on a continuous basis.

3.

PROPOSED WORKSTREAMS

The creation of the Global Ecosystems Atlas requires multi-disciplinary expertise and substantial cooperation and collaboration across sectors, networks and organizations.

To manage these complex work streams and interactions, five main work streams have been identified by the GEO Secretariat and stakeholders at the first Atlas convening meeting in May 2023. By September 2023, at the time of the second Atlas convening meeting, members for each work stream will be selected.

During the project detailing phase (July-December 2023), the teams participating in the various work streams will establish their working arrangements and develop detailed work plans. In November 2023, these inputs will be reviewed by the GEO Secretariat and compiled into the Global Ecosystems Atlas project for full-scale implementation. Subject to financial resources and consistent with WMO procurement rules and regulations, the GEO Secretariat will appoint as soon as possible a company or a consortium of companies, to develop the use case demonstration by November 2023.

a. Science

- Refinement of science strategy for the Atlas;
- Identification of spatial, thematic and any other gaps; mitigation/ solution;
- Definition of project phases/ timelines;
- Identification of data sources/ inputs;
- Identification of time series options;
- Methods and systems for inclusion/ solicitation of national data;
- Definition of quality assurance protocol; and
- Definition of up-date intervals and related aspects.

b. Technology

- Definition of technical requirements for data contributors such as GeoJSON and similar;
- Definition of up-date protocols and related requirements;
- Review of AI and machine learning options;
- Definition of interoperability and relevant factors for the exchange of data between the Atlas and national contributors, including revisions by national contributors;

▸ Definition of downloadable content/ scale/ detail, particularly in settings with sub-optimal internet bandwidth;

▸ Identification of additional data (climate, weather, infrastructure, etc.) to complement the Atlas utility and potential integration; and

▸ Identification of means to improve technical quality of data.

c. Legal Aspects

▸ Review of relevant licensing agreements of potential public and private data contributors;

▸ Identification of options to engage with public and private data contributors;

▸ Identification of the most suitable legal arrangement/ structure for the Atlas;

▸ Proposal for a standard licensing agreement/ terms and conditions for users of the Atlas.

d. Use Case Demonstration

▸ Development of criteria for inclusion of up to three countries in the demonstration;

▸ Agreement on scope of the demonstration;

▸ Identification of required data sources/ inputs; and

▸ Demonstration at GEO Ministerial and COP28.

e. Financial Sustainability

▸ Identification of funding sources for project detailing phase;

▸ Development of submission of funding proposal for full-fledged Global Ecosystems Atlas project based on reconciled financial needs identified by all work streams during project detailing phase; and

▸ Development of an innovative financing mechanism for long-term income to operate and maintain the Atlas;

4.

PROPOSED WORKING ARRANGEMENTS

The current working arrangements for the project detailing phase will evolve into a formal governance structure in the full-fledged project.

a. Project Management

The Global Ecosystems Atlas project development will be managed by a dedicated project manager (temporary assignment, secondment or consultant) located within the GEO secretariat, reporting to the Director of the GEO Secretariat.

b. Atlas Advisory Board

A Global Ecosystems Atlas Advisory Board, comprised of maximum 12 individuals, who are leaders in relevant fields and supporters of the Atlas project, will provide advice and guidance on the project development process to the GEO Secretariat.

c. Scientific Technical Committee and Expert Groups

The Scientific Committee and five expert groups aligned to the five identified project detailing work streams will elaborate the Atlas project and inform the Advisory Board on a regular basis and the GEO Secretariat of the progress.

SUPPORTED BY

Convention on Biological Diversity

United Nations Framework Convention on Climate Change

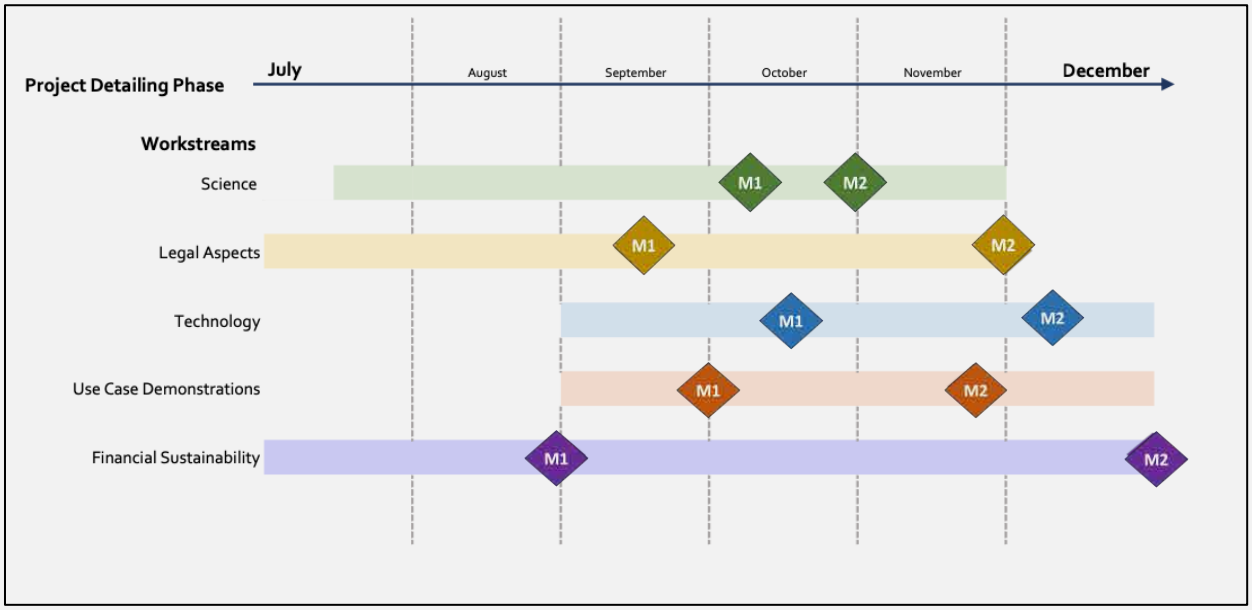
United Nations Convention to Combat Desertification

Ramsar Convention on Wetlands

Resilience Frontiers

Annex 1.

PROPOSED PROJECT DETAILING PLAN & MILESTONES



Milestones

M1 Refinement of science strategy for the Atlas; Identification of data sources/inputs; Identification of time series options; Definition of up-to-date intervals and related aspects.

M2 Identification of data sources/inputs

M1 Identification of options to engage with public and private data contributors.

M2 Proposal for a standard licensing agreement/terms and conditions for users of the Atlas

M1 Definition of technical requirements for data contributors such as GeoJSON and similar

M2 Definition of interoperability and relevant factors for the exchange of data between the Atlas and national contributors, including revisions by national contributors

M1 Agreement on scope of the demonstration

M2 Demonstration at GEO Ministerial and COP 28

M1 Identification of funding sources for the project detailing phase

M2 Development of submission of funding proposal for full-fledged GEA project based on reconciled financial needs identified by all work streams during project detailing phase

Annex 2.

PROPOSED PROJECT DETAILING BUDGET

Project Manager*	70,000 CHF
Consultants**	240,000 CHF
Meetings***	280,000 CHF
Travel****	50,000 CHF
Use Case Demo	100,000 CHF
TOTAL	**740,000 CHF**

* 1 Project manager based in Geneva for 7 months

** 2 consultants for Science, 2 consultants for Technology, 2 consultants for Legal, 1 consultant for Stakeholder Engagement, 2 consultants for Financial Sustainability/RM for 5 months

*** 8 meetings at an average of 35,000 CHF
**** 10 missions at an average of 5,000 CHF

The Global Ecosystems Atlas Project Design Workshop

Workshop Summary Report

Villars-sur-Ollon, Switzerland

19-22 September 2023

1 INTRODUCTION

The Global Ecosystems Atlas workshop took place between 19-22 September 2023, hosted by the Villars Institute in Villars-sur-Ollon, Switzerland. It advanced the design of the project including detailing key deliverables, use cases, technical requirements, and capacity development needs and collaborations.

The workshop was a follow-up to the first convening meeting of the Global Ecosystems Atlas held in Geneva, Switzerland, in May 2023. The invited participants were selected to ensure the appropriate technical expertise and representation, expanding on the community involved in the first meeting with additional organizations and experts identified for this workshop.

A total of 64 individuals attended the workshop, in person and online, representing 46 organisations (see Annex A), including government and intergovernmental organisations, academic and research institutes, environmental and conservation organisations, technology and Earth observation data providers.

The input to the workshop was a working version of the Global Ecosystems Atlas Project Document. It was compiled with the involvement of the "interim science group", who contributed to the current iteration of the document through bi-weekly calls since the first meeting in May. The draft document was presented as a basis for continued co-design with all experts involved, and it is meant to be further developed and validated after the workshop.

2 OPENING SESSION

The opening session focused on fostering alignment among workshop participants, ensuring that all attendees had a shared understanding of the initiative's objectives and direction as well as intended outcomes from the workshop. The session lay the foundation for a productive collaboration throughout the workshop.

3 ALIGNING ATLAS PROJECT GOALS AND DIRECTION

This session revolved around the proposed Impact Framework (Annex B) providing the context for the discussion of the overall collaborative effort and the agreed features of the Global Ecosystems Atlas initiative. The participants engaged in dialogue to ensure clarity

and alignment on these foundational aspects, which included the vision, objectives, scope, deliverables, and target users.

There was broad agreement that the vision of the Atlas initiative should be to enhance the humanity's ability to effectively protect and manage nature by providing harmonized, coherent and timely ecosystem information. The conceptual and operational scope should include providing information on ecosystem extent, ecosystem condition, and ecosystem services in near-real time, with an incremental approach over time as science and technology capabilities evolve.

Key deliverables were confirmed, including: 1) Curation of existing maps of ecosystem types; 2) Creation of an integrated synthesis map of ecosystem types; 3) Development of tools and functionalities hosted on a platform to support content access and analytics; 4) Uptake and capacity building of target users to create national maps of ecosystem types and utilize Atlas functionalities for analyses.

There was also agreement that national governments and businesses and financial institutions should be the primary targeted users, acknowledging that, while the basic data and services required by these users will be complementary, there may be different and additional needs for tools and services to be developed for the private sector specifically.

4 SCOPING THE ATLAS PROJECT DELIVERABLES

This session, which spanned over two days, served as the centrepiece of the workshop, where participants were encouraged to generate specific and actionable activities for the identified deliverables and address any lingering issues, via the breakout groups.

Breakout Group 1 focused on the topic of curation of existing high-quality maps covering various ecosystem types for alignment with the IUCN GET. Breakout Group 2 worked on the topic of creation of an integrated synthesis map of a significant share of the world's ecosystem types to be featured on a platform with explorable user interface. On the second day, Breakout Group 3 focused on the identification of specific use cases for target users (national governments, corporates and financial institutions) to support the development of minimum platform functionalities. Breakout Group 4 explored the topic of user uptake and capacity building, including for low-capacity countries to develop own national maps.

The technical input by the breakout groups will serve as a basis to further project design. One important outcome of these discussions was the agreement on the feasibility of a Beta version of the Atlas synthesis map, with a view to present it to CBD COP16 in October-November 2024.

5 STORYTELLING THROUGH DATA VISUALISATION

This session focused on storyboarding a data-driven visualisation to effectively communicate the Global Ecosystems Atlas's purpose and potential impact. During the session, CREATE Lab of the Carnegie Mellon University presented ideas for creating a compelling animation accompanied by a fact-based narrative based on the EarthTime tool. Key themes included empowering individuals as changemakers, emphasizing the viewer's role in utilising the Atlas, and highlighting the potential for impact. Unique selling points

of the Atlas, such as its envisaged ability to provide valuable, consistent ecosystem information across scales, and scaling up of existing best practices that could illustrate the value of biodiversity monitoring (e.g. from SANBI, South Africa), were discussed.

As a result of this initial exchange, selected experts will be supporting CREATE Lab to gather information needed to develop the data visualisation in time for presentation at GEO Week 2023 and UNFCCC COP28 in November – December 2023. This is an intended contribution by the Villars Institute.

6 DATA SHARING BY DESIGN

This session aimed at brainstorming on a possible data sharing approach for the Global Ecosystems Atlas project with respect to national and commercial data, including identifying expected choke points. The session began with a presentation by NORAD (Norwegian Agency for Development Cooperation), sharing insights and lessons learned from the NICFI (Norway's International Climate and Forest Initiative) experience related to data licensing and partnerships, and the upcoming OpenEPI (Open Earth Platform Initiative) designed around open principles where all datasets, services and solutions must adhere to the digital public goods standard. The subsequent group discussion explored best options for data licensing as crucial aspects of the Atlas initiative's data-driven approach.

The discussion highlighted that, in order to benefit all and promote open innovation as transformative scale initiative, the Global Ecosystems Atlas should aim at pursuing open licensing such as Creative Commons to the greatest degree possible. Where data licensing restrictions (limitations or conditions imposed on the use, distribution, or sharing of data) cannot be avoided, they will need to be explicitly documented. To effectively explore technical licensing requirements, it will be imperative to continue honing the end goals of the initiative.

7 MANAGEMENT OF THE ATLAS PROJECT, GOVERNANCE AND PARTNERSHIPS MODELS

This session explored key aspects related to the project's future operational model, governance structure, consortium building, and resource mobilisation. Participants briefly examined three options for how the Global Ecosystems Atlas initiative would operate. Options ranged from creating an Atlas Trust Fund under the GEO-WMO hosting arrangement, to launching a project under UNOPS, to establishing a Swiss Foundation. For each option, implications on the management and decision-making process were preliminarily discussed.

The session also delved into the initial governance structure of the initiative, outlining how responsibilities and decision-making authority would be distributed among different governing bodies. A decision on the operating model will be a priority resolution of the main governing body (i.e. Board/Steering Group/Steering Committee) when it is set up.

Consortium building was addressed, and the GEO Secretariat called for potential partners to express interest in formally joining the initiative, including intended technical and

financial/in-kind contributions. Villars Institute was the first partner to announce an interest in joining the Consortium. Finally, the session addressed the topic of resource mobilisation, exploring strategies for securing necessary political buy-in, funding and other resources. The GEO Secretariat invited experts to support the quantification of the costs to develop the identified project deliverables, to finalise the Project Document.

8 NEXT STEPS

The GEO Secretariat will continue engaging partners in the co-design of the Atlas initiative and building of the Atlas Consortium, while seeking to secure funding to complete the design phase and initiate the implementation phase.

The following action items were agreed as next steps from the workshop:

1. GEO Secretariat and CREATE Lab to gather input from experts to develop data visualisation to be presented at a dedicated session at GEO Week 2023 / side events at UNFCCC COP28;
2. GEO Secretariat to provide the description for the Atlas Consortium and invite Expressions of Interest by prospective partners;
3. GEO Secretariat to update the Project Document based on the workshop discussions, including full budget and timeline for the identified deliverables, in collaboration with experts. Considering a Beta version of the Atlas synthesis map to be developed by CBD COP16, subject to funding;
4. GEO Secretariat to prioritize resource mobilization with potential donors identified;
5. GEO Secretariat to continue engagement and advocacy with governments and other users in 2023 and 2024. This includes the CBD process, through input to the Ad Hoc Technical Expert Group (AHTEG) on Indicators for the Kunming-Montreal Global Biodiversity Framework, and the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). It also includes other opportunities such as the Villars Institute Summit in March 2024.

Annex A

List of Participants

	First name	Last name	Organisation	Participation
1	Andy	Hardy	Aberystwyth University	In person
2	Dimitri	Boulze	Airbus	Remote
3	Illah	Nourbakhsh	Carnegie Mellon University	Remote
6	Meghan	Halabisky	Digital Earth Africa	In person
8	Sean	Breyer	Esri Inc.	In person
9	Gilles	Doignon	European Commision	Remote
10	Franz	Immler	European Commission	Remote
11	Pavel	Milenov	European Environment Agency	Remote
12	Marc	Paganini	European Space Agency	In person
13	Lela	Gomersall	GEO Secretariat	In person
14	Madeeha	Bajwa	GEO Secretariat	In person
15	Sara	Venturini	GEO Secretariat	In person
16	Yana	Gevorgyan	GEO Secretariat	In person
17	Robert	Fillip	GEO Secretariat	Remote
18	Nicoleta	Panta	GEO Secretariat	Remote
19	Joseph	Teuben	ITC/UT / GEO Secretariat	In person
20	Tim	Hirsch	Global Biodiversity Information Facility (GBIF)	In person
21	Mark	Grasy	GEO Land Degradation Neutrality	Remote
22	Antje	Hecheltjen	GEO Land Degradation Neutrality	Remote
23	Ruben	Remelgado	iDiv / GEO BON / GlobES	Remote
24	Steven	Brumby	Impact Observatory	In person
25	Amanda	Driver	Independent	In person
26	Gensuo	JIA	Institute of Atmospheric Physics, Chinese Academy of Sciences	Remote
27	Mark	Tozer	IUCN-CEM	In person
28	Nicholas	Murray	IUCN-CEM	In person
29	Osamu	Ochiai	Japan Aerospace Exploration Agency	Remote
30	Ake	Rosenqvist	Japan Aerospace Exploration Agency / soloEO	Remote
31	Kelly	Vaughan	Mercuria	In person
32	Raphael	Craig	Mercuria	In person
33	Andres	Huby	Mercuria	Remote
34	Gary	Geller	NASA Jet Propulsion Laboratory / CEOS	Remote
35	Christer Solheim	Gundersen	NORAD	Remote
36	Andiswa	Mlisa	Pacific Community Secretariat	Remote
37	Amy	Rosenthal	Planet Labs	In person
38	Flavia de Souza	Mendes	Planet Labs	Remote
39	Jerker	Tamelander	Ramsar Convention on Wetlands	In person
40	Jonathan	Duncan	Reyl	In person

41	Huawei	WAN	Satellite Environmental Application Center, Ministry of Ecology and Environment	Remote
42	Will	Cadell	Sparkgeo	In person
43	Marco	Daldoss Pirri	Systemiq	In person
44	Andrew	Skowno	The South African National Biodiversity Institute (SANBI)	Remote
45	Sara	Minelli	UNCCD	In person
46	Neil	Burgess	UNEP-WCMC	In person
47	Roger	Sayre	United States Geological Survey	In person
48	Xiyan	Xu	University of Chinese Academy of Sciences	Remote
49	Emma	Benameur	Villars Institute Foundation	In person
50	Suzan	Craig	Villars Institute Foundation	In person
51	Lee	Howell	Villars Institute Foundation	In person
52	Suzan	Craig	Villars Institute Foundation	In person
53	Bruno	Smets	VITO NV	In person
54	Hugh	Reeves	Walder Wyss Ltd	In person
55	Lammert	Hilarides	Wetlands International	In person
56	Emily	Darling	Wildlife Conservation Society	In person
57	Rod	Taylor	World Resources Institute	In person
58	Michelle	Sims	World Resources Institute	Remote
59	Marco	Lambertini	WWF International	Remote
60	Walter	Jetz	Yale University	In person

Annex B

Project Impact Framework