

The Global Ecosystems Atlas Project Design Workshop

Workshop Summary Report

Villars-sur-Ollon, Switzerland

19-22 September 2023

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 60 individuals attended the workshop, in person and online, representing 43 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.

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.

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 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.

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 (Annex C) focused on the topic of curation of existing high-quality maps covering various ecosystem types and alignment with the IUCN Global Ecosystem Typology (GET). Breakout Group 2 (Annex D) 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 (Annex E) 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 (Annex F) explored the topic of user uptake and capacity building, including for low-capacity countries to develop their own national maps.

The technical input by the breakout groups will serve as a basis for 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.

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 assessment and 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.

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.

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 for 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.

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.

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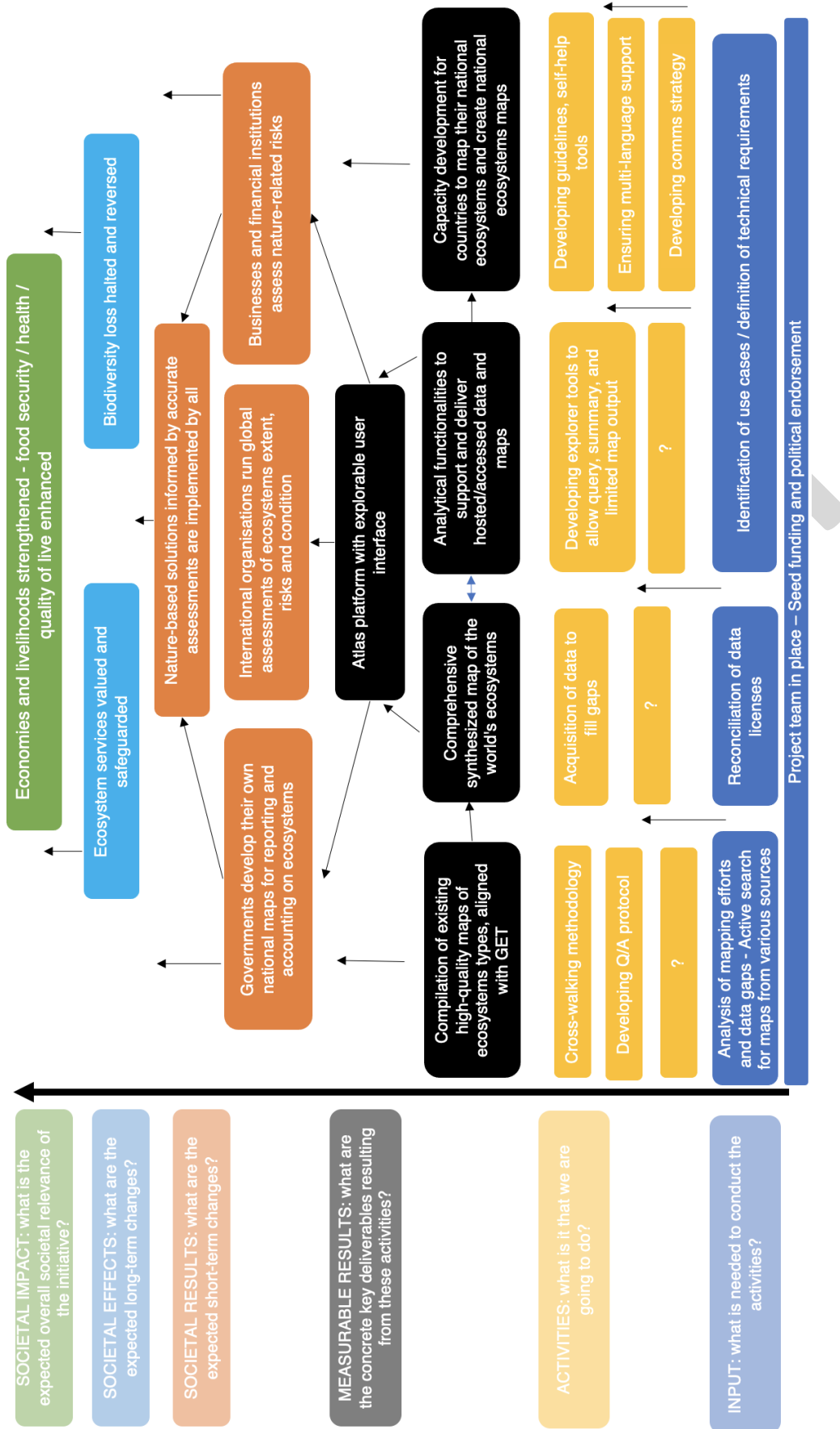
Annex A: Project Design Workshop – Participants

	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 Commission	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 Commission on Ecosystem Management (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

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Annex B: The Presented Impact Framework



Annex C: Outcomes of Breakout Group 1 included:

<p>Output 1: Candidate maps to be included in the Atlas</p>	<p>Activity 1.1: Develop criteria for selecting candidate global and national maps of ecosystem types Activity 1.2: Issue call for candidate maps based on the criteria Activity 1.3: Do a literature search to unearth existing maps Activity 1.4: Select candidate maps based on the criteria Activity 1.5: Compile candidate maps</p>
<p>Output 2: Quality-assured maps to be included in the Atlas</p>	<p>Activity 2.1: Develop the Quality Assurance protocol, which must cover: Technical documentation Description of ecosystem units Metadata Spatial data quality Guidelines on uses and limitations Task 2.1.1: Review relevant existing Quality Assurance protocols for geospatial data Activity 2.2: Apply the Quality Assurance protocol to the candidate maps Activity 2.3: Work with map owners to meet Quality Standards where necessary Activity 2.4: Compile the quality-assured maps</p>
<p>Output 3: Maps with ecosystem units cross walked to the GET and ready to be loaded on to the platform</p>	<p>Activity 3.1: Develop a tool to support cross walking of national ecosystem types to the GET, including a protocol for expert elicitation. Activity 3.2: Facilitate expert elicitation process to apply the tool in countries Activity 3.3: Bring data layers annotated with GET classes into the same data format Activity 3.4: Compile cross walked maps</p>
<p>Output 4: Database of maps</p>	<p>Activity 4.1: Create, update and maintain database of maps on a regular timeline. Including: Submitted maps Candidate maps Quality-assured maps Cross walked maps</p>
<p>Output 5: Summary Assessment</p>	<p>Activity 5.1: Identify data gaps (thematic, resolution, temporal) and uncertainty Activity 5.2: Identify Spatial and thematic areas that are covered by multiple maps Activity 5.3: Compile summary assessment</p>

Annex D: Outcomes of Breakout Group 2

Output 1 A comprehensive synthesis map of the world's ecosystems developed	
Activity 2.1: Develop a protocol	<p>Task 2.1.1 Create a protocol to harmonise/classify/rescale the different data layers, e.g.,</p> <ul style="list-style-type: none"> Temporal Scale Spatial Scale Propagate known uncertainties Data overlaps <p>Subtasks include:</p> <ul style="list-style-type: none"> • Rapid assessment of existing synthesis good practices
Activity 2.2: Implement protocol	<p>Task 2.2.1 Implement protocol for input datasets</p> <p>Subtasks include:</p> <ul style="list-style-type: none"> • Construct additional Quality Assurance layers • New accuracy assessments
Activity 2.3: Carry through GET ecosystem descriptions and metadata	
Activity 2.4: Package integrated product for serving on the platform (metadata, citations)	

Annex E: Outcomes of Breakout Group 3

Primary goals audiences: donor engagement, art of the possible, rough estimate of global stocktake

Timeline: Launch by CBD COP 16

And so, need to:

- Produce static map, without change over time and space, for the beta version
- Have seamless, comprehensive maps for each realm (freshwater, terrestrial, marine) – presented as clickable on-off layers to be superimposed
- Allow map to be summed or disaggregated at GET Level 3, Level 2, Level 1
- Not necessary for realms to be fully spatially mutually exclusive at this stage, i.e. there may be some spatial overlaps between some ecosystem types in different realms, such as some wetlands overlapping with some terrestrial ecosystem types, or overlaps between terrestrial and marine ecosystems along the coast
- Complement static map with a case study showing change in a single ecosystem or country
 - Include a diagram or “Storyboard” of South Africa as a champion case study, showing the many uses of national ecosystem classification map
- Share beta version across multiple portals in a form that allows for countries to clip out shapes for their own use
- Engage with countries early in design-build process who might be early adopters / champions

Defining use case 7: Corporate Risk Sustainability & Compliance

Context	Corporate complying with TNFD/SBTN/EU Directive (or third party vendor service provider)
Broad Class of users	Corporate (strategy agent)
Expected specific type of users	Risk, Sustainability, Compliance Management
Value statement for Atlas	<ul style="list-style-type: none"> • Recognition of Atlas as trusted source (authoritative consortium) • Endorsement of Atlas by TNDF / SBTN • Corporate activity (positive change) reflect in Atlas
Goal (what user might do with the Atlas / multiple items)	<ol style="list-style-type: none"> 1. Assessing impacts, risks, dependencies, opportunities on ecosystems of current and planned economic activities and assets 2. Prioritise locations (state of nature, key ecosystems impacted) 3. Set targets (act, monitor) to avoid/reduce impacts, or regenerate/restore ecosystems
Needs (what user might need most from the Atlas / per item)	<ul style="list-style-type: none"> • Spatial resolution of data • Time series • Export to CSV • Upload asset location and relevant info • Query .shp fil / .kml / .kmz

Defining Use case 2: Low-capacity country/technical and policy agent

Context	Low-capacity country with no national ecosystem map
Broad class of users	National Government (policy agent)
Expected specific type of user	National CBD COP delegate
Goal	NBSAPs GBF Headline Indicators Targets 1,2,3
Needs	<ol style="list-style-type: none"> 1. spatial info on ecosystems and ecosystem types 2. ecosystem types in protected areas (WDPA/WDOECMS) 3. ecosystem condition and degradation 4. ecosystems under restoration (FAO FERH) 5. crosswalk to Global Ecosystem Typology
Functionality	<ol style="list-style-type: none"> 1. Show spatial data <ol style="list-style-type: none"> a. extent/ condition/ change 2. Basic spatial analysis <ol style="list-style-type: none"> b. % of global extent of ES in country / % of country area / % of PAs / No. of protected species in ES / Condition (fragmentation, degradation, change) / % under restoration 3. Info on status of ecosystem, for example from Red List of Ecosystems 4. Export / Report

Annex F: Outcomes of Breakout Group 4

Output	Activities
Output 1: Tools/Guidance/Training	<p>Activity 1.1 Awareness raising using existing NGO networks, UN, regional centers, etc</p> <p>Activity 1.2 Develop reporting tools to produce country summary</p> <p>Activity 1.3 Develop user notes</p> <p>Activity 1.4 Develop training programmes on platform and reporting tools</p> <p>Activity 1.5 Awareness raising using existing NGO networks, UN, regional centres etc.,</p> <p>Activity 1.6 Publish data in easy-to-understand format</p> <p>Activity 1.7 Develop training programmes for use of data</p>
Output 2: Guidance material	<p>Activity 2.1 Develop guidebook on map development. To cover different dimensions: Thematic, technology, requirements for the Atlas integration of national maps</p> <p>Activity 2.2 Atlas wiki</p>
Output 3: Tools	<p>Activity 3.1 Develop dedicated tools to implement remote sensing workflows/in situ standards (Tasks include: open source approach, common repository of tools)</p>
Output 4: Community of Practice(s)	<p>Activity 4.1 Establish thematic CoP for user support</p> <p>Activity 4.2 Establish community of practice for user support for national level reporting</p>
Output 5: Training Programmes	<p>Activity 5.1 Develop training programmes (Tasks include partnering to develop and deliver online training. Training of trainers (also targeting service providers) and link to existing networks)</p>
Output 6: Grants programme	<p>Activity 6.1 Grants programme for capacity for national mapping, notably to support identified data gaps e.g. mechanism for matching funding (Tasks include: long-term grants e.g. for collection of reference data on ecosystems changes)</p>
Output 7: Corporate reporting frameworks and standards integrating Atlas data/co-funded co-developed analytics	<p>Activity 7.1 Engagement and endorsement of key partners in co-design phase via TNFD/SBTN for specific functionalities of the Atlas:</p> <ul style="list-style-type: none"> Ecosystem use and change linked to GBF, SBTN, TNFD, EU Dir Remediation, restoration Monitoring of implementation <p>Activity 7.2 Co-production of integrated narrative and guidance with standard setting entities</p>

	<p>Activity 7.3 Training Programmes for service providers that will do geospatial work for corporates.</p> <p>Activity 7.4 Co-development of future analytics</p>
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