

## **GEO Strategic Plan 2016-2025: Implementing GEOSS**

### **FOREWORD**

The World Summit on Sustainable Development, Johannesburg 2002, highlighted the urgent need for coordinated observations relating to the state of the Earth. At the first Earth Observation Summit, convened in Washington DC in July 2003, governments and international organizations, as well as the European Commission, adopted a Declaration signifying a political commitment to move towards development of a comprehensive, coordinated, and sustained Earth observation system. An ad-hoc group on Earth observations was tasked to develop a 10-Year Implementation Plan which was adopted at the third Earth Observation Summit in Brussels, in February 2005. This third Summit also formally established the intergovernmental Group on Earth Observations (GEO) as a voluntary coalition of governments and participating organizations having as its mission the construction of a Global Earth Observation System of Systems (GEOSS) to meet the need for timely, quality long-term global information as a basis for sound decision-making.

Subsequent GEO Ministerial meetings have re-affirmed the commitment to develop the GEOSS, and in 2014 the decision was made to renew the mandate of GEO through to 2025. The GEO-X Plenary (January 2014) initiated the preparation of the next implementation plan 2016 – 2025 for acceptance at the GEO-XII Plenary and endorsement at the Ministerial Summit in 2015.

## **1 INTRODUCTION**

### **1.1 Strategic Plan**

This Plan outlines the strategic framework for the Group on Earth Observations (GEO) to fulfill its vision, define its objectives, and produce key deliverables while determining structures and resources needed to accomplish these goals. The Plan will be realized through a set of implementation activities within specific timeframes. These actions will be defined in multi-annual Work Programmes, which will be updated periodically to account for changes that impact the course of implementation.

### **1.2 Societal Challenges**

Food, water and energy security; resilience to natural hazards; mitigation of, and adaptation to, climate change; pandemics of infectious disease; preservation of ecosystem services; development of a sustainable economy: these are among the primary worldwide environmental challenges faced by humankind today. Moreover, in this inter-connected world, the impact of one event can immediately cross borders and bring cascading consequences to geographically remote countries. Concerted, global action is needed to respond to these societal challenges in a sustainable and equitable way, in order to improve living conditions for all people, especially the world's poorest and most underprivileged citizens, and ensure these conditions remain optimal for future generations. Solutions encompassing sustainability and equitability require humankind to make intelligent decisions concerning the use of increasingly scarce resources while recognizing the interdependencies between behaviour and impact on the Planet.

Earth observations from diverse sources, when integrated together, can provide powerful tools for understanding the present status of each of the Earth systems as well as the interplay between them. These tools may also be used to predict the future behaviour of Earth systems, thereby allowing potential consequences of human activities on the planet to be understood and anticipated.

### **1.3 GEO Vision and Value**

The intergovernmental Group on Earth Observations (GEO) is a global partnership of governments and organizations that envisions “a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations.”<sup>1</sup> GEO works through voluntary best efforts to create the Global Earth Observation System of Systems (GEOSS) from among thousands of individual Earth observation, information and processing systems.

GEO is a unique initiative that occupies a key, strategic, upstream coordination position in the international community. This position enables GEO to improve the quality, timeliness, range and availability of Earth observations, data, information and knowledge about the Earth system in support of other major initiatives, and ultimately improve the observational foundations of decision-making globally. GEO is therefore uniquely positioned to:

- foster new economic opportunities, improve efficiency, and reduce costs to public sector budgets through innovation and collaboration; and
- provide value to society due to its distinct characteristics, such as providing a flexible and agile forum involving public sector agencies, specialized organizations, universities and the private sector, who work together on a voluntary basis.

The convening power of GEO allows it to respond to specific challenges faced by multiple users through facilitating the development of efficient, sustainable solutions to environmental societal challenges. GEO does this through fostering strategic partnership frameworks which serve to coordinate and integrate the rich and diverse observing, scientific and technical resources and expertise of the GEO community and external partners. These frameworks broker custom

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<sup>1</sup> The Global Earth Observation System of Systems 10-Year Implementation Plan, GEO, 2005, p. 5.

combinations of these actors to deepen understanding of Earth system processes and respond to societal challenges. In so doing, GEO supports the achievement of national and international objectives for a resilient society, sustainable economies and a healthy environment worldwide as it improves the link between scientific understanding and policy-making.

## 2 SCOPE AND STRATEGIC OBJECTIVES

### 2.1 Scope

Informed, sound decision-making will lead to long-term economic benefits optimized for all elements of society, and to sustainable behaviour by humankind in relation to Earth’s available environmental resources. Current and future decision-making will rely on the ability of expert communities to handle complex data from Earth observations and combine these with social and economic analyses. Through engagement with user communities, GEO will play a key role in systematically identifying data needs and advocating for data provision; ensuring access to, while promoting interoperability among, multiple sources of data; and delivering tools, skills and services to allow intelligent exploitation of the data by the user communities.

This end-to-end process of identifying needs, ensuring the availability of data to develop critical information about key societal challenges, and transforming that information into knowledge, which can be used to generate products and services for end-users, defines the scope of GEO.

### 2.2 Areas of Action

To realize its Vision and maximise the benefits that GEO can bring to users, during 2016-2025, GEO defines three Areas of Activity in which it will actively *advocate* for the value of Earth observations as a fundamental component of timely information regarding the state of the Earth, *engage* with stakeholder communities to address societal challenges, and *deliver* critical data, information and knowledge to inform decision-making (Figure 1).

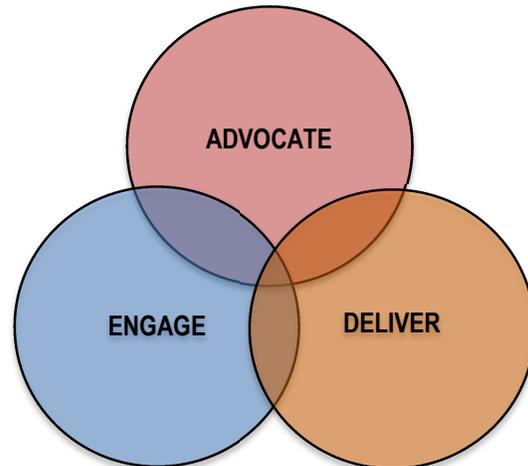


Figure 1: The three overlapping Areas of Action.

### 2.3 Strategic Objectives

Collectively, these three Areas of Action – advocate, engage, deliver – provide the basis for Strategic Objectives that will guide GEO implementation activities through 2025. The Strategic Objectives defined below are expected to endure throughout the 10-year span 2016-2025.

#### 2.3.1 Advocate

**Strategic Objective:**

GEO will **ADVOCATE** for the value of Earth observations as a vital means of achieving national and international objectives for a resilient society, and sustainably growing economies and a healthy environment worldwide.

GEO works to champion and coordinate strategies for acquiring Earth observations with relevant existing and emerging global initiatives having complementary mandates. In collaboration with these initiatives, GEO seeks to promote full and open access to Earth observation data, strengthen Earth observing networks and strategic planning, and identify the needs for applications and services in support of sound decision-making.

**2.3.1.1 Data Sharing Principles**

GEO recognizes that the societal benefits arising from Earth observations cannot be achieved without the sharing of data, information, knowledge, products and services. To encourage and enhance data sharing, GEO therefore strives to implement the following GEOSS Data Sharing Principles:

1. Data, metadata and products will be shared through GEOSS as Open Data by default, by making them available as part of the GEOSS Data Collection of Open Resources for Everyone (Data-CORE) without charge, without restrictions on reuse, subject to the conditions of registration and attribution when the data are reused;
2. Where international instruments, national policies or legislation preclude the sharing of data as Open Data, data should be made available through GEOSS with minimal restrictions on use and at no more than the cost of reproduction and distribution; and
3. All shared data, products and metadata will be made available through GEOSS with minimum time delay.

**2.3.1.2 Data Management Principles**

To further maximize the value and benefit from data sharing, GEO will continue to work with partners to promote the use of key data management principles, as well as common standards and interoperability arrangements. This will ensure that data and information from different origins and type are comparable and compatible, facilitating their integration into models and the development of applications to derive decision support tools. Data, as well as information, knowledge, products and services provided through GEOSS are documented in metadata in standard formats, and made available under licenses that enable their integrated use.

The GEOSS Data Management Principles focus on:

- Ensuring data are properly managed (including data citation), accessible, archived and long term preserved (when appropriate);
- Ensuring data are properly documented (metadata), quality controlled and quality assessed, delivered, and updated in ways to facilitate access and re-use of information made available through the GEOSS;
- Facilitating the link between user needs and data availability, especially with regard to the needs of users from developing countries (e.g. by identifying existing sources of requirements already approved by the relevant user community); and
- Facilitating interoperability of GEOSS data resources by promoting a progressive harmonization / standardization of content (data models, thesauri, coding list) and dissemination and usage rights in order to facilitate their re-use at global or regional scales.

*[Note: Awaiting further input from the Data Management Task Force (DMP-TF), supported by the DSWG and IIB for final number and format.]*

Finally, in order to ensure continued availability of Earth observation data, knowledge and information, GEO, through its stakeholders, advocates for the need to: improve observations of the Earth system; sustain national investments and leverage international collaborations; integrate emerging technologies as appropriate; and systematically identify user needs and observation gaps.

### 2.3.2 Engage

**Strategic Objective:**

GEO will **ENGAGE** with stakeholder communities to address global and regional challenges by deepening the understanding of Earth system processes and improving the links between scientific understanding and policy-making.

A key tenet of GEO's Vision is that publicly-acquired Earth observation data is to serve societal needs. The true value of this data is fully realized when it is transformed into useable knowledge and information, to address these needs. Given its strategic, upstream coordination position in the international community with respect to observations, data and information about the Earth system, GEO is well-positioned to actively engage with key stakeholders, including, *inter alia*, United Nations (UN) bodies, donor organizations, businesses, and other communities of intermediary- and end-users. This engagement allows the building of strategic partnerships that can inform, leverage, and optimize research and development activities, which in turn encourages user-driven global and regional initiatives for specific end-use applications to address the multitude of societal challenges.

#### 2.3.2.1 Societal Benefit Areas

The Societal Benefit Areas (SBAs) provide logical domains in which GEO can demonstrate the benefits of Earth observations to society. They provide foci for GEO to play a brokering role in the incubation and enabling of end-to-end systems and services, and fully establish GEO as an observational backbone for informing monitoring frameworks such as those supporting the United Nations post-2015 development agenda.

Namely, GEO provides Earth observations in support of:

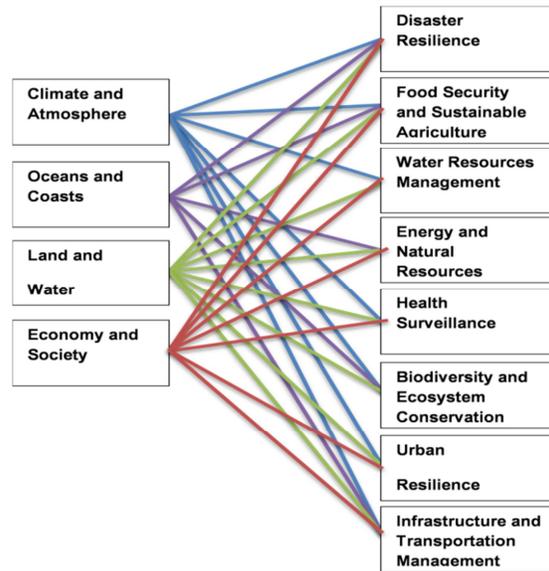
- **Disaster Resilience:** by increasing capacity to prepare, forecast, mitigate, manage and recover from disasters;
- **Food Security and Sustainable Agriculture:** by underpinning development, management and forecasting of global food and agricultural production;
- **Water Resources Management:** by improving management of finite fresh water resources for multiple uses while maintaining quality;
- **Energy and Natural Resources Management:** by enhancing the discovery, development and management of mineral, energy, renewable and non-renewable resources;
- **Health Surveillance:** by yielding insight into vector-borne and environmentally-linked disease risks;
- **Biodiversity and Ecosystem Conservation:** by providing vital information on the sustainability and health of Earth's biological systems and the delivery of key ecosystem services to society;
- **Urban Resilience:** by supplying objective information on the increasing footprint of urbanization and development, and assist in the development of sustainable cities;
- **Infrastructure and Transportation Management:** by assisting with planning, monitoring and management of infrastructure (dams, roads, rail, ports, and pipelines) and the management of transport (air, land and sea).

[Note: SBAs will be further refined following discussions by Earth observation communities, stakeholders, and decision-makers in the coming months (e.g. Work Plan Symposium, Tokyo Stakeholder Engagement Symposium, etc.)]

### 2.3.2.2 Earth Observation Domains

Solutions to user needs in these SBAs are underpinned by Earth observation domains which pool interdisciplinary data, information and knowledge resources from across communities, such as:

- **Climate and Atmosphere:** including meteorology, climate science, and atmospheric science,
- **Oceans and Coasts:** including marine biology, oceanography, and hydrography;
- **Land and Water:** including geology, forestry, landscape ecology, hydrology, geography, limnology, and aquatic science;
- **Economy and Society:** including economists, statisticians and social sciences.



**Figure 2: Relationships between Earth Observation Domains and Societal Benefit Areas**

Figure 2 illustrates how data and information from a given Earth Observation Domain can serve the needs of multiple SBAs.

### 2.3.2.3 Stakeholder Engagement

To effectively and fully engage relevant stakeholder communities, GEO works to augment its user base, broaden the involvement of stakeholders, and increase capacity in developing countries. GEO facilitates interactions among stakeholders to identify the needs in observations, and environmental and socio-economic data analyses, to yield advances across the SBAs.

**Capacity building**, as well as enhancement and retention of existing capacity, are critical for developing Members’ competencies to use Earth observations efficiently for responding to societal challenges and addressing sustainable development. To further these goals, GEO will therefore:

- promote engagement with developing countries;
- assist developing countries and regions in increasing their capacity to acquire, share, store, maintain and utilize Earth observation data and information; and
- foster regional cooperation.

In addition, **Communities of Practice** may form within GEO in response to perceived needs or shared interests with respect to the themes of the Societal Benefit Areas or Earth Observations Domains. For example, the kinds of topics Communities of Practice may consider include addressing aspects of societal challenges, or managing and developing pooled resources. Ideally, the Communities include stakeholders along the full spectrum of the data and information chain, from providers, to processors, to end users, as they focus on a central task to produce a tangible benefit or key service.

Finally, GEO will actively engage with the **private sector** at all stages of the data, information and knowledge products and services chain, not only to ultimately achieve the Strategic Objectives, but also potentially:

- enhance the added value of GEO through facilitating the use of the GEOSS by the private sector;
- improve the evidence base and implementation of environmental decision-making, both in private and public sectors; and
- help place GEO on sustainable financial footing.

### 2.3.3 Deliver

**Strategic Objective 3:**

GEO will **DELIVER** data, information and knowledge enabling stakeholders to: improve their decision-making processes; promote the exchange of best practices; enable the uptake of new technologies; and create new economic opportunities, while reducing costs to public sector budgets through innovation and collaboration.

Drawing on its engagement with stakeholders, GEO aims to ensure open, free access to data, information and knowledge, while increasingly promoting interoperability among multiple sources of data; and deliver the tools, knowledge, products and services suitable for effective exploitation by user communities.

GEO facilitates enhanced access to:

- national, regional and global Earth observation data and information (including model simulations);
- socio-economic data and information;
- information about existing data gaps;
- tools to transform a broad range of data and information, from environmental to socio-economic, into useable formats for resource management and decision-making; and
- knowledge underlying the use of data, information and tools for decision-making.

To achieve these aims, GEO will advance the evolution of the Global Earth Observation System of Systems (GEOSS).

#### 2.3.3.1 Global Earth Observation System of Systems (GEOSS)

The Global Earth Observing System of Systems (GEOSS) is a set of coordinated independent Earth observation, information and processing systems, that interact and interrelate as a unified whole. GEOSS links these systems to strengthen the monitoring of the state of the Earth. By linking to relevant socio-economic data, the GEOSS increases our understanding of Earth processes and enhances predicting capabilities, thereby underpinning sound decision-making.

GEOSS comprises both observing and information systems:

- **Observation systems** include ground-, air-, water- and space-based sensors, and citizen observatories. GEO works to coordinate the planning, sustainability and operation of these systems, aiming to maximize their added-value and use;
- **Information and processing systems** include hardware (architecture) and software tools (such as models) needed for handling, processing and delivering data from the observation systems to provide information, knowledge, services and products.

GEOSS is driven by user needs; supports a broad range of implementation options; and incorporates new technologies and approaches for data collection and analysis. Additionally, GEOSS is open to new contributions of observations, data, information products and services by the private sector and

civil society, and exploits the opportunities afforded by new technologies in ways that make GEOSS more relevant to wide segments in society, and trusted as a key source of information about our Planet.

GEOSS, collectively, supports several functions:

- acquiring observational data;
- enabling interoperability between contributing systems;
- processing data into useful products and services;
- finding, sharing, integrating and archiving data, metadata and products based on the Data Sharing, and Data Management principles.

The components of GEOSS are connected and tied together by the GEOSS architecture which has the following principles: openness; effectiveness; flexibility; adaptability; sustainability; and reliability.

*[Placeholder for possible GEOSS Figure]*

### 3 CORE FUNCTIONS AND TARGETS

GEO will implement the following Core Functions to achieve its Strategic Objectives. These Functions are geared towards specific, measurable, and achievable targets designed to enable an effective and innovative GEOSS. The targets accompanying each of the Core Functions are outlined in Annex A of this document.

#### 3.1 Advocate

GEO provides a platform for political dialogue on the importance of continuity, coverage, and access to global Earth observation data and information by advocating robust, national data collection systems (space, airborne, terrestrial and marine) and broad, open data sharing across country and disciplinary boundaries. GEO Core Functions include advocating for:

- **Strategies for data sharing**

*Core function:* Pursue strategies to promote and expand the sharing, use and reuse of data, information and knowledge. Actively advocate and provide support to enable uptake and implementation of open data policies.

- **Best practices for data management**

*Core function:* Promote life-cycle management of data holdings shared within GEOSS through the development and maintenance of GEOSS Data Management Principles, implementation guidelines, best practice examples, and active advocacy.

- **Identifying observational gaps**

*Core function:* Undertake regular, systematic analysis of global observational requirements to identify, document, and prioritize and gaps in information-chain. Compile global perspectives on existing planning and develop common strategies and action in relation to investment planning to sustain observing systems.

- **Best practices for citizen observations**

*Core function:* Facilitate increases in geographic coverage and use of citizen observations through exchange of technology and best practice to ensure interoperability. Promote good practice and technologies / methods for harnessing the power of citizen observations. Maintain an inventory of initiatives.

- **Radio spectra protection**

*Core function:* Actively advocate for the protection of spectral domains needed for EO from competing uses, as well as assessing upcoming trends.

### 3.2 Engage

GEO acts as a unique broker, connecting users, data providers, engineers and scientists across governments, the private sector, civil society and academia to create solutions to key global challenges which cross both country and disciplinary boundaries. This role requires deep engagement with and understanding of all of these communities in both developed and developing countries. GEO Core Functions for broadening engagement include:

- **Creating frameworks for partnerships**

*Core Function:* Convene users, providers from different sectors, and experts in the domain of Earth observations and environmental information and provide tools and knowledge to facilitate use of implementation mechanisms.

- **Resource mobilization**

*Core Function:* Expand the meeting arenas for discussions on resource mobilization across disciplines, sectors, regions etc. Liaise with resource and funding agencies. Initiate and support studies that address challenges related to global resource mobilization, at all stages of the funding cycle; input to policies (relevant to EO), coordinate existing funding instruments, and contribute to the development of new adequate instruments

- **Visibility and awareness**

*Core function:* Engage with operators or coordination bodies for observing systems, demonstrate solutions and cultivate demand for integrated use of earth observation data.

- **Strengthening user bases**

*Core Function:* Strengthen user communities, document and pool use cases, document compelling application examples, design new methodologies to exploit EO data, improve exchange best practice between communities

- **Capacity building**

*Core Functions:* Disseminate best practices, organize training workshops, and develop regional and national Earth observation plans.

- **Earth observations for sustainable development**

*Core Function:* Actively promote the development of Earth observation-based information services in support of the global sustainable development agenda and evidence-based decision-making. Participate actively in the relevant preparatory activities and implement targeted pilot actions.

### 3.3 Deliver

Through the GEOSS, GEO encourages the development of and investment in the key enabling interfaces, standards and infrastructure necessary to support the creation of critical global services that will convert Earth observation data into information, knowledge, insight and foresight on key global challenges. GEO Core Functions for delivering Earth observation data and information focus on key aspects of GEOSS, namely:

- **GEOSS Infrastructure**

*Core function:* Operate the common components of the GEOSS that are required to provide access to data, information, knowledge, products and services.

- **GEOSS data quality and provenance**

*Core function:* Provide documented information on the resources in the GEOSS so that their provenance, quality characteristics, processing (methods) and potential for re-use is understood and can be communicated easily to users.

- **GEOSS usage**

*Core function:* Maintain a “GEO Knowledge Base” to support users and other actors in the earth observation domain, compiling standards, best practices, use cases, , DSPs, DMPs, documentation on observation systems and networks. Implement functionalities that offer added value from exploiting quality information and harmonized attributes as well as the wealth of data made available there.

- **GEOSS development**

*Core Function:* Further develop the GEOSS and its common components on the basis of user requirements, building on GEOSS Implementation Pilots and other relevant initiatives to-date. Enable the integration, discovery and use of different classes of data through the GEOSS information system.

- **GEOSS and decision-making**

*Core function:* Incubate and pilot regional or global initiatives that provide services (e.g. for data access, data integration, data management or applications) to meet shared information needs to monitor progress towards policy goals and support necessary transitions.

## 4 IMPLEMENTATION

### 4.1 GEO Implementation Mechanisms

GEO implements its activities through four implementation mechanisms (Figure 3). These mechanisms provide a framework that is both flexible and open, enabling the broad and diverse GEO community to work together. At the same time, they are scalable and effective, allowing substantial activities to be implemented:

- **GEO Community Activities** enable a broad variety of activities. They allow stakeholders to cooperate flexibly in a bottom-up fashion and with a low initiation cost. GEO Community Activities may, for example, define user needs, explore or demonstrate technical possibilities or agree on specific protocols.
- **GEO Initiatives** develop and implement prototype services according to GEO priorities. They allow Members and Participating Organizations to coordinate their actions and contributions towards a common objective within an agreed, yet flexible framework. GEO Initiatives may, for example, demonstrate the technical feasibility through pilot products or consolidate a user need.
- **GEO Flagships** develop and implement pilot or pre-operational services according to GEO priorities. They allow Members and Participating Organizations to spin-up an operational service serving common needs. GEO Flagships may operate for as long as they are able to generate sufficient impact to attract support for their activities. Once they reach a mature, operational stage, they may be taken up by user institutions (e.g. GEO Participating Organizations), for their continued operation over the long term.
- **GEO Foundational Tasks** enable GEO to implement selected, often enabling, tasks to achieve GEO Strategic Objectives and Targets. These include coordination actions, gap

analyses, the implementation of technical elements for accessing GEOSS, and other routine operations of the GEO Secretariat.

#### 4.2 The GEO Work Programme and Progress Report

The multi-annual **GEO Work Programme** constitutes the primary planning instrument for GEO implementation activities. It constitutes a top-down mechanism with respect to the selection and prioritization of GEO implementation activities. The Work Programme defines the GEO Foundational Tasks, which are implemented or coordinated by the GEO Secretariat. Advisory mechanisms, such as Advisory Boards, may be set up for individual Foundational Tasks, as needed. It also describes the plans of GEO Flagships and GEO Initiatives, according to their applicable planning instruments, and of GEO Community Activities according to the best knowledge of the Secretariat. The Work Programme provides a realistic planning based on committed resources, be they actual financial contributions, or in-kind, from GEO Members, Participating Organizations, 3rd Parties, or the Trust Fund. By agreeing on the Work Programme, GEO will agree on priorities for implementation at the time of its adoption.

The Work Programme is proposed by the GEO Secretariat based on input from GEO Members, Participating Organizations, and the GEO Community at large. The Work Programme strives to optimally pursue the achievement of the Strategic Objectives through the implementation of GEO's Core Functions, within the constraints of identified and committed resources. It will align with the priorities of GEO Members and Participating Organizations and identify resource commitments by GEO Members, Participating Organizations, and other third parties.

An annual **Progress Report** will be compiled by the GEO Secretariat on all activities, drawing on available reports of the GEO Flagships, GEO Initiatives, GEO Foundational Tasks, and on best knowledge of GEO Community Activities. This Progress Report should enable an evaluation of progress towards the corresponding targets.

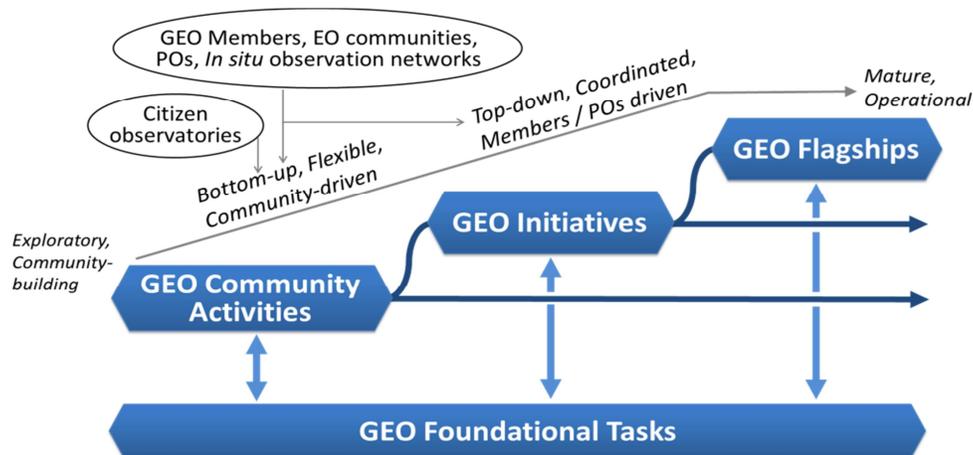


Figure 3: GEO Implementation Mechanisms

## 5 GOVERNANCE

### 5.1 Governance Principles and Organizational Structure

Sound governance and decision-making processes within GEO are required to achieve its Vision and Strategic Objectives.

#### 5.1.1 Governance principles

In order to successfully achieve its purpose and to develop all related functions, GEO implements governance arrangements consistent with Governance principles, including: voluntary, legally non-binding participation; consensus-oriented decision-making; legitimacy; accountability; transparency; responsiveness; effectiveness; efficiency; equitability; and inclusiveness.

#### 5.1.2 Organizational structure

##### 5.1.2.1 Plenary

GEO will meet annually in Plenary. This main decision-making body is comprised of GEO Principals representing GEO Members and Participating Organizations, and provides the overall direction on the implementation of the Strategic Plan.

- Plenary will take decisions by consensus;
- GEO will also meet periodically at the Ministerial level.

The GEO Plenary may delegate explicitly and formally decision-making powers to other bodies of the organizational structure and/or other subsidiary bodies as appropriate, to be established in accordance with the following general criteria:

- GEO Members and Participating Organizations should be enabled to engage fully in the implementation activities of GEO; and
- Relevant stakeholders from science and technology fields as well as user groups should be engaged through appropriate advisory and stakeholder representation mechanisms.

Representation of Members will be by geographic region, or Caucus, to facilitate coordination at regional levels.

##### 5.1.2.2 Executive Committee

An elected Executive Committee, comprised of Member government representatives, will oversee GEO activities when the Plenary is not in session. Four Co-chairs will lead the discussion of the Executive Committee. The number of seats on Executive committee should be reflective of changes in GEO membership size and geographic region. Further, election procedures for the Co-chairs should ensure that developing countries are fairly represented.

In recognition of the important role of Participation Organisations and to help inform the discussions, a limited number of observer seats at the Executive Committee meetings will be granted to Participating Organizations.

##### 5.1.2.3 Programme Board

A GEO Programme Board, accountable to Plenary and comprised of representatives of Members and Participating Organizations, will oversee the development and implementation of the GEO Work Programme, while Plenary is not in session.

##### 5.1.2.4 Secretariat

A Secretariat, led by a Director and accountable to Plenary and the Executive Committee, will facilitate and support GEO activities. The Secretariat consists of co-located, well-qualified, professional and administrative staff.

### 5.1.3 Rules of Procedure

Details pertaining to nomination of GEO Principals; Caucus composition; the size of, and election procedure of government representation to, the Executive Committee; the election and rotation procedures of Executive Committee Co-chairs; the designation of Participating Organization observer seats on the Executive Committee; the election procedure for participation in the Programme Board; and the duties and responsibilities of the Secretariat are laid out in the GEO Rules of Procedure.

## 5.2 Legal Status

GEO will attain legal independence to facilitate its participation in other international bodies and its ability to undertake financial and contractual transactions. Any mechanism for achieving independent legal personality must respect the voluntary intergovernmental nature of GEO, avoid cumbersome national and international approval processes, limit the administrative burden on the part of Members, and preserve GEO's flexibility in operating.

## 6 RESOURCES THROUGH 2025

A sound, sustainable financial footing is required for GEO to be successful through to 2025. However, any mechanism to encourage contributions must respect the voluntary nature of GEO, be simple, adaptable, and applicable to GEO's unique context. It should also be coherent and cohesive across GEO, while fostering greater engagement with the private sector.

Contributions to GEO may be distinguished as: (i) contributions to GEO implementation activities; and (ii) contributions to the GEO Trust Fund supporting, where decided by Plenary, the GEO Foundational Tasks, specifically-earmarked GEO Flagships, and the operations of the Secretariat.

Contributions may be in-kind or cash contributions. In order to recognize the important work being done through the in-kind contributions provided by many members and POs, these contributions will be quantified during the budgeting process.

### 6.1 Contributions to GEO Implementation activities

GEO activities are the core of GEO and ensure that GEO is meeting its targets and objectives. In order for GEO to achieve its objectives, GEO implementation activities need to be properly funded. The implementation mechanisms set out in Section 4 adopt a resourcing model where resources committed are commensurate with the type of action (i.e. GEO Flagships, GEO Initiatives, Community activities, Foundational Tasks). This model is described below:

- **GEO Flagships** have both a clearly identified objective and an implementation plan that describes how that objective is to be achieved. Corresponding contributions by Members, Participating Organizations, private sector players and other third parties are identified at the outset. While these contributions must be sufficient to implement the initial objective of a GEO Flagship, additional contributions and partners may be added during implementation. Contributions are typically made in-kind, e.g. by observation systems operated to serve the Initiative's objectives, models, funded research projects or programmes, but may also include direct financial contributions or those that are earmarked within the Trust Fund as being in support of a particular GEO Flagship.
- **GEO Initiatives** have a clearly identified objective and an implementation plan that describes how the objective is to be achieved. Initial contributions by Members, Participating Organizations, private sector players and other third parties are identified to the extent known. Further commitments may often be sought during the implementation of the Initiative. Contributions are typically made in kind (e.g. by observation systems operated to serve the Initiative's objectives, models, funded research projects or programmes).

- **GEO Community Activities** form at the initiative of interested parties. They often will not have all necessary resources identified from the beginning and the objectives may be defined at a relatively general level.
- **GEO Foundational Tasks** contributions can be made available from the GEO Trust Fund and may be complemented by further contributions, either directly or in kind, from GEO Members, Participating Organizations, or other partners.

## **6.2 GEO Trust Fund**

GEO will encourage its Members and Participating Organizations to support the GEO Trust Fund through voluntary contributions.

To assist in the budgeting process and help achieve financial stability, the use of multi-year contribution mechanisms will be encouraged. GEO will also develop a voluntary indicative scale of contributions.

## **6.3 Private Sector**

GEO will seek to engage with the private sector and foundations, and explore opportunities for financial contributions.

## **7 GETTING INTO ACTION – TIMETABLE OF IMPLEMENTATION**

*[To be completed at time of draft v 2.0]*

## ANNEX A

### Core Functions and Targets

Within the Strategic Objectives, a series of specific targets set out how GEO will go about achieving its intended outcomes. The targets in this Annex have been designed to enable an effective and innovative GEOSS, combining top-down and bottom up processes whereby relevant communities can forge solutions to address decision-making processes where greatest added value can be delivered. These targets are also a statement of direction towards a goal with an associated (quantitative) metric of progress towards the intended result. For each target, core functions describe areas of activity that GEO must do in order to achieve the target. Core functions are not the only activity that must be done, but reflect where the focus of effort must be.

#### 3.1 Advocate

GEO provides a platform for political dialogue on the importance of continuity, coverage, and access to global Earth observation data and information by advocating robust, national data collection systems (space, airborne, terrestrial and marine) and broad, open data sharing across country and disciplinary boundaries.

- **Strategies for data sharing**

*Targets:* Further data re-use by securing free, full, and open data access. Increase awareness of the GEOSS Data Sharing Principles.

- Extend the resources in the GEOSS Data-CORE by at least [X million] records every year;
- More than ½ GEO members put in place open data policies and provide [practical] data access according to data sharing principles.

- **Best practices for data management**

*Targets:* Interoperability, re-use and retrieval of long-term archives of data is enhanced.

- The quality of provenance information in GEOSS is improved. Providers and users awareness of data available from CGI is improved. X% of the resources in the GEOSS tagged with meaningful high-quality metadata.

- **Identifying observational gaps**

*Targets:*

- Improve commitments to sustain and strengthen observation systems (space-based, airborne and particularly *in situ*) and networks of observation systems, in particular for essential variables, to support decision-making in response to global societal challenges. Regular overview of observation systems & gaps in key domains compiled;
- GEO initiatives address priority issues.

- **Best practices for citizen observations**

*Targets:* Enable development of new cost effective Earth observation technologies/methods (e.g. citizens' observatories and crowd-sourcing) as means to

strengthen and broaden *in situ* observing systems, as well as facilitating the use of data at multiple scales.

- X new citizens observatories registered in the GEOSS every 3 years to provide information about local environmental conditions;
- Y cases of the use of citizens observatories included in the GEOSS information chain by citizens and local, regional and national authorities.

- **Radio spectra protection**

*Targets:*

- Protect radio frequency spectra critical for earth observation technologies;
- Submit documents to relevant authorities and in particular the ITU World Radio Communication Conferences.

### 3.2 Engage

GEO acts as a unique broker, connecting users, data providers, engineers and scientists across governments, the private sector, civil society and academe to create solutions to key global challenges which cross both country and disciplinary boundaries. This role requires deep engagement with and understanding of all of these communities in both developed and developing countries.

- **Creating framework for partnerships**

*Targets:* Create and maintain flexible frameworks for development and implementation of partnerships which can involve stakeholders from government, international organizations, private sectors and also citizens enabling resources of members to be pooled to deliver information services in support of agreed global policy frameworks. The GEO governance structure and monitoring and evaluation framework is used to implement partnerships in xxx cases

- **Resource mobilization**

*Targets:* Identify funding gaps. Explore and leverage resources within the GEO community as well as addressing political and practical issues relating to resourcing the GEO work plan. Undertake and facilitate dialogue with funding agencies (research, innovation, etc.) and add complementary knowledge. GEOSS outputs are cited in key [x] resource agency funding plans, both for research and also for operations.

- **Visibility and awareness**

*Targets:* Improve the visibility and awareness of GEOSS resources and the value of Earth Observations in establishing baseline status, monitoring trends, assessing impacts as well as for problem solving in diverse stakeholder groups.

- **Strengthening user bases**

*Targets:* Broaden GEO user base through sustained engagement with potential user communities of EO within GEO membership as well as the private sector, foundations, and UN organizations. Design practical services that can help meet the needs. Improve documentation and understanding of user needs, missions and objectives. X new communities of practice become active in exploring the use of GEOSS to deliver information needed to accomplish their mandates. X new GEO initiatives addressing societal challenges use cases initiated. Research and innovation communities respond to identified challenges with proposals to use EO data resources in scientific publications.

- **Capacity building**

*Targets:* Strengthen the capacity to exploit and integrate GEOSS data & information into applications and solutions especially by developing countries, private, research and innovation sectors. Strengthen the relationship between GEO and member countries through building and reinforcement of regional GEO networks. In particular for developing countries, facilitate the use of earth observation data and services through pooling and exchange of best practice, technology and expertise. Developing country participation in GEO initiatives is increased. Increase in national and regional GEO offices and networks.

- **Earth observations for sustainable development**

*Targets:* Increase the use and relevance of the GEOSS to SDGs and decision-making. Demonstrate the use of Earth observation-based information services in support of the global sustainable development agenda in [X cases].

- Demonstrate the use of GEOSS to monitor trends in earth systems and assessing progress towards policy goals, such as through essential variables in [Y cases /flagships].

### 3.3 Deliver

Through the GEOSS, GEO encourages the development of and investment in the key enabling interfaces, standards and infrastructure necessary to support the creation of critical global services that will convert Earth observation data into information, knowledge, insight and foresight on key global challenges.

- **GEOSS infrastructure**

*Targets:* The GEOSS becomes an established and internationally recognized source of Earth observation data, information and knowledge. More than X numbers of users access the GEOSS at least once per month.

- **GEOSS data quality and provenance**

*Targets:* Progressively harmonize the attributes of GEOSS data, proceeding from a set of minimum requirements for recording quality attributes, data provenance, and processing (methods) to inter-calibration of data to, where possible, standardization of methods. X% of the resources in the GEOSS Data-CORE is tagged with data quality information according to XXX standards. At least [X%] of GEOSS data have harmonized provenance meta-data.

- **GEOSS usage**

*Targets:* Ensure the capability for users to discover and use GEOSS resources, including those accessible freely, fully, and openly as within the GEOSS Data Collection of Open Resources for Everyone (GEOSS Data-CORE). Members and Communities of Practice use GEOSS to promote and enable access to data holdings.

- **GEOSS development**

*Targets:* The successful completion of X GEOSS Implementation Pilots, with their integration into GEO Initiatives and / or GEO Flagships.

- **GEOSS and decision-making**

*Targets:* Address shared societal challenges in progressing towards sustainability by building on GEOSS implementation pilots and other initiatives that support decision-making through the provision of the required data, information, knowledge, products and services (e.g. risk decision-making processes in both private and government sector that

draw on GEOSS resources). X GEO activities are created delivering pre-operational information services, which are maintained through dedicated arrangements.

## ANNEX B

# GEO Implementation Mechanisms

GEO employs different mechanisms to implement its Core Functions. These serve to distinguish between more substantial activities with dedicated resources, and smaller-scale activities, often driven by best-effort initiatives of individuals or small groups. By implementing all actions adequately and appropriately, GEO focuses its resources on selected priorities and matches expectations with available capacity.

This Annex defines the following four GEO Implementation Mechanisms:

- GEO Flagships;
- GEO Initiatives;
- GEO Community Activities;
- GEO Foundational Tasks.

### 1 GEO FLAGSHIPS

GEO Flagships allow GEO Members and Participating Organizations to implement mature global or regional activities that are targeted towards a common objective from several, coordinated contributions. Contributions are typically made in-kind, e.g. by observation systems operated to serve the Initiative's objectives, models, funded research projects or programmes, but may also include direct financial contributions or those that are earmarked within the Trust Fund as being in support of a particular GEO Flagship.

GEO Flagships have both a clearly identified objective and an implementation plan that describes how that objective is to be achieved. Corresponding contributions by Members, Participating Organizations, and private sector players are identified at the outset. While these contributions must be sufficient to implement the initial objective of a GEO Flagship, additional contributions and partners may be added during implementation. The relevant user communities are fully engaged and assume an active steering function in the implementation.

GEO Flagships may develop a service through to maturity, whereupon it may be taken up by a Participating Organization, or to be transferred into a new organization. The GEO Flagship Implementation Plan outlines the intended perspectives.

Examples of GEO Flagships are the Global Forest Observation Initiative (GFOI) and the Global Agricultural Monitoring Initiative (GEO-GLAM).

#### 1.1 Establishing GEO Flagships

GEO Flagships will typically evolve from GEO Initiatives. They are proposed by those GEO Members and Participating Organizations interested in implementing them. The corresponding decision is based on an Implementation Plan (IP), which must clearly set out how the criteria for GEO Flagships are met. These include the pre-operational delivery of the necessary information, through products or services, to meet the needs of identified users. These users must be identified and involved in appropriate functions in the Flagship. The responsibility for further developing the Flagship IP remains with the proposing team.

Draft Flagship IP are discussed and reviewed by the GEO Programme Board, which may identify gaps in critical information to support the adequacy of the proposal vis-a-vis the criteria for Flagships.

Where Communities of Practice (CoP) can contribute to the development of the IP, they are engaged at an early stage. Their role is described in the IP. The GEO Programme Board works to establish consensus about the proposed objectives and the IP and achieve a sufficient level of contributions for its successful implementation. All contributions – in kind or otherwise – are listed, described, and valued in the IP. Contributions may include specific commitments from GEO Members, Participating Organizations, private sector partners, or other 3<sup>rd</sup> parties. If and when this can be achieved, the GEO Programme Board formally recommends the new Initiative to Plenary.

By accepting a new GEO Flagship, GEO supports its objectives and commits and/or acknowledges the resources specified in the IP.

## **1.2 Contributors**

Primary contributors to GEO Flagships are typically Participating Organizations, GEO Members (through their corresponding institutions), and interested partners from the private sector. The specific contributions and the roles of the different contributors may vary between different Flagships and are described in the IP.

## **1.3 Management and coordination**

GEO Flagships are generally managed as projects. The detailed arrangements may vary between different GEO Flagships and are defined in the IP. Typically, a project coordinator will be appointed, who should be based at the GEO Secretariat. The project coordinator is responsible for overseeing the implementation of the agreed IP and reporting to GEO on progress and issues. A sufficiently resourced project coordinator is an important criterion for accepting a new GEO Flagship.

## **1.4 Reporting to GEO**

The project coordinator is responsible for all reporting to GEO. In particular, this includes

- Progress reports in contribution to the annual GEO Activities Report. These will be reviewed by the GEO Programme Board,
- Presentations to Plenary,
- Presentations to the Executive Committee or the GEO Programme Board, as requested.

GEO Flagships will generally establish Steering or Advisory Groups. These mechanisms are defined in the IP. Also, as many of the contributions will be made in-kind, further reporting will generally be required by individual contributors within their respective contexts.

## **1.5 Monitoring and Evaluation**

The required monitoring and evaluation activities are defined in the IP. At a general level, the GEO Programme Board will monitor progress on the basis of the reports from the project coordinator and may recommend changes to the implementation, as needed.

## **2 GEO INITIATIVES**

Like Flagships, GEO Initiatives allow GEO Members and Participating Organizations to implement global or regional activities that are targeted towards a common objective from several, coordinated contributions. GEO Initiatives concern less mature activities, for which the user communities may not yet have been defined in full detail, where the products and services have not yet been consolidated, or resourcing options have not been fully analyzed. Contributions are typically made in kind, e.g. by observation systems operated to serve the Initiative's objectives, models, funded research projects or programmes.

GEO Initiatives also have a clearly identified objective and an implementation plan on how that objective is to be achieved. Initial contributions by Members, Participating Organizations, and private

sector players are identified to the extent known. Further commitments may often be sought during the implementation of the Initiative. Important stakeholders should be engaged in the development of the Initiative, with of the user community being integrated into the initiative as it develops, as their needs may not be fully understood at the outset. Clarifying these needs and consolidating communities should be amongst the objectives of GEO Initiatives.

GEO Initiatives may evolve into GEO Flagships, if and when a corresponding GEO Flagship Implementation Plan is approved by Plenary. However, the activities may also be taken up directly by a Participating Organization, or be discontinued if sufficient support for the continuation of the activity cannot be found. The GEO Initiative Implementation Plan outlines any intended perspectives.

Examples of GEO Initiatives are the Forest Carbon Tracking Initiative and the African Water Cycle Coordination Initiative).

## **2.1 Establishing GEO Initiatives**

GEO Initiatives are established in a similar fashion to GEO Flagships. The main difference is that their acceptance is delegated by Plenary to the GEO Programme Board. Any GEO Member, Participating Organization, or the GEO Secretariat may conceptualize and propose a new GEO Initiative based on a detailed Implementation Plans (IP). IP are discussed and further developed by those proposing the Initiative together with the GEO Programme Board. Where Communities of Practice (CoP) can contribute to the development of the IP, they should be engaged at an early stage. Their role is described in the IP. The GEO Programme Board works to establish consensus about the proposed objectives and the IP and to ensure that a sufficient level of contributions for its successful implementation is available. All contributions – in kind or otherwise – are listed, described, and valued in the IP. Contributions may include specific commitments from GEO Members, Participating Organizations, private sector partners, or other 3<sup>rd</sup> parties. If and when this can be achieved, the GEO Programme Board may accept the new GEO Initiative.

By accepting a new GEO Initiative, GEO supports its objectives and commits or acknowledges the resources specified in the IP.

## **2.2 Contributors**

Primary contributors to GEO Initiatives are typically Participating Organizations, GEO Members (through their corresponding institutions), and interested partners from the private sector. The specific contributions and the roles of the different contributors may vary between different Initiatives and are described in the IP.

## **2.3 Management and coordination**

GEO Initiatives are generally managed as projects. The detailed arrangements may vary between different GEO Initiatives and are defined in the Implementation Plan. Typically, a project coordinator will be identified. She/he will typically be resourced by a contributing Member or PO. In some cases, she/he might be established at the GEO Secretariat. The coordinator is responsible for implementing the agreed IP and reporting to GEO on progress and issues. A sufficiently resourced project coordinator is an important criterion for accepting a new GEO Initiative.

## **2.4 Reporting to GEO**

The project coordinator is responsible for all reporting to GEO. In particular, this includes

- Progress reports in contribution to the annual GEO Activities Report. These will be reviewed by the GEO Programme Board;
- Presentations to Plenary, the Executive Committee or the GEO Programme Board, as requested.

As many of the contributions will be made in-kind, further reporting will generally be required by individual contributors within their respective contexts.

## **2.5 Monitoring and Evaluation**

The required monitoring and evaluation activities are defined in the IP. At a general level, the GEO Programme Board will monitor progress on the basis of the reports from the project coordinator and may recommend changes to the implementation, as needed.

## **3 GEO COMMUNITY ACTIVITIES**

GEO Community Activities allow groups of stakeholders and interested parties in the GEO Community to pursue specific objectives according to their shared interest. They serve GEO to enable a broad variety of detailed activities in support of the GEO Strategic Objectives. Community Activities are typically smaller-scale undertakings with commitments for contributions often made at the level of institutions or individuals.

GEO Community Activities may form spontaneously at the initiative of interested parties. They often will not have all necessary resources identified from the beginning and the objectives may be defined at a relatively general level.

Examples of GEO Community Activities are the Global Urban Observation and Information Task and the Global Water Quality Information Task.

### **3.1 Establishing GEO Community Activities**

Any self-formed group within the GEO Community may propose GEO Community Activities. Often, CoP may be the natural framework in which to conceptualize and mature initial ideas. The initiating groups develop a brief proposal describing the activity including its objectives, schedule, contributors and stakeholders.

The GEO Secretariat accepts proposed Community Activities based on agreed criteria, e.g. that they support the GEO Strategic Objectives. In reviewing the proposal, the GEO Secretariat must establish that the proposed Community Activity is fully aligned with GEO's objectives and direction. It may also make recommendations on a proposal, e.g. to further contributions, improve coordination with existing GEO Initiatives or other GEO Community Activities, or better support GEO's Strategic Objectives.

GEO Community Activities may evolve into GEO Initiatives, if and when they provide an Implementation Plan that is accepted by the GEO Programme Board.

By accepting a new Community Activity, GEO supports its objectives and agrees to reflect the activity in its Activities Report.

### **3.2 Contributors**

Primary contributors to GEO Community Activities are Participating Organizations, GEO Members (through their corresponding institutions or *in situ* international observation networks), and possibly further partners from the private sector. GEO Community Activities may also include contributions from individual citizens through citizen observatories.

### **3.3 Management and coordination**

GEO Community Activities are self-organized. They implement flexible arrangements defined by participants. The GEO Secretariat facilitates the communication and implementation, e.g. through limited support in organizing meetings.

A Lead should be identified for the Community Activity, who acts as an interface for the GEO Secretariat in collecting information about developments and for other interested parties.

### **3.4 Reporting to GEO**

The GEO Secretariat will seek information from GEO Community Initiatives (through the Lead) on progress and important developments. Where such information can be obtained, it will be included in the annual GEO Activities Report.

### **3.5 Monitoring and Evaluation**

The GEO Secretariat monitors the development of GEO Community Activities through regular interaction with the Lead. GEO Community Activities are not formally evaluated by GEO.

## **4 GEO FOUNDATIONAL TASKS**

GEO Foundational Tasks allow GEO Members and Participating Organizations to effectively implement enabling functions to achieve GEO Targets. Contributions are often made available from the GEO Trust Fund and may be complemented by further contributions – either directly or in kind – from GEO Members, Participating Organizations, or other partners.

The GEO Secretariat frequently plays a central role in implementing Foundational Tasks or coordination to ensure good progress towards its Target.

Examples of GEO Foundational Tasks are the operation and evolution of the GEOSS Common Infrastructure, the implementation of data sharing and management principles, or the protection of radio frequencies required for Earth observations.

### **4.1 Establishing GEO Foundational Tasks**

GEO Foundational Tasks are included in the GEO Work Programme and are accepted by GEO through acceptance of that Work Programme by Plenary. The Work Programme is proposed by the GEO Secretariat. It includes an indication of the resource contribution from the GEO Trust Fund, staff resources from the GEO Secretariat, and direct or in-kind contributions from GEO Members, Participating Organizations and other partners. Requests for additional funds that have not been made available from the Trust Fund, GEO Members, and Participating Organizations are also set out in the Work Programme. Further detailed documentation on the activity may be maintained by the GEO Secretariat.

By accepting the GEO Work Programme GEO commits to resource the activities it contains at the levels indicated in the Work Programme.

### **4.2 Contributors**

Primary contributors to GEO Foundational Tasks are GEO Members, Participating Organizations, and further partners. GEO Members and Participating Organizations also contribute through allowing the GEO Secretariat to use staff and financial resources on the Foundational Tasks.

### **4.3 Management and coordination**

Depending on the specific case, Foundational Tasks may be directly implemented by the GEO Secretariat according to its internal management or by a more engaging mechanism such as a working group coordinated by the GEO Secretariat. Advisory mechanisms, such as Advisory Boards, may be set up for individual Foundational Tasks, as needed.

#### 4.4 Reporting to GEO

The GEO Secretariat will report in annual GEO Activities Report on the activities, progress and issues in GEO Cross-cutting Tasks.

At its own initiative or at the request of GEO bodies the GEO Secretariat brings particular items to the attention of GEO, e.g. to Plenary, the Executive Committee, or the GEO Programme Board.

#### 4.5 Monitoring and Evaluation

The GEO Programme Board monitors progress towards the implementation of GEO Foundational Tasks based on the annual GEO Activities Report. The GEO Secretariats regularly arranges and independent evaluation of the Foundational Tasks.

### 5 SUMMARY

#### Overview of Implementation mechanisms

|                               | GEO Flagships   | GEO Initiatives  | GEO Community Activities   | GEO Foundational Tasks   |
|-------------------------------|---|--|--|--|
| <b>Purpose</b>                | Develop and implement a <b>pilot or pre-operational</b> service to serve priorities shared by GEO, based on coordinated contributions; top-down | Develop and implement a <b>prototype</b> service to serve priorities shared by GEO, based on coordinated contributions; top-down | Develop, test, or demonstrate applications driven by shared interests of a specified community;<br><br>bottom-up | Implement selected, often enabling functions;<br><br>top-down                      |
| <b>Initiated by</b>           | Specified Members, PO   |  | Community  | GEOSEC through Work Programme proposal   |
| <b>Developed by</b>           | Specified Members, PO, private sector partners in consultation with the GEO Programme Board and Communities of Practice, where possible         |  | Community, Communities of Practice   | Members, PO, private sector partners and GEOSEC with designated advisory mechanism |
| <b>Accepted by</b>            | Plenary   | GEO Programme Board  | GEOSEC Director  | Plenary (with Work Programme)  |
| <b>Steering and Oversight</b> | Dedicated Steering Board  |  | -  | GEO Programme Board  |
| <b>Advice</b>                 | Dedicated Advisory Board  |  | -  | GEO Advisory Board(s)  |

|                                    | <b>GEO Flagships</b>  | <b>GEO Initiatives</b>  | <b>GEO Community Activities</b>   | <b>GEO Foundational Tasks</b>   |
|------------------------------------|---|---|---|---|
| <b>Management and coordination</b> | Dedicated mechanism; coordinator preferably at GEOSEC   | Dedicated mechanism; coordinator  | Community-based, often CoP; facilitation by GEOSEC  | GEOSEC or Working Group   |
| <b>User engagement</b>             | <b>Specifically identified</b> , fully engaged, role in Steering Board                              | Target user groups <b>generally identified</b> , with at least an Advisory Board role | May vary, depending on activity   | May vary, depending on Task   |
| <b>Reporting to GEO</b>            | Coordinator; Mandatory Contributions to GEO Activities Report                                       |   | GEOSEC to best knowledge; Contributions to GEO Activities Report  | GEOSEC; Mandatory Contributions to GEO Activities Report  |
| <b>Monitoring</b>                  | GEO Programme Board   |   | GEOSEC  | GEO Programme Board   |
| <b>Evaluation</b>                  | Determined case-by-case   |   | -   | Independent evaluation arranged by GEOSEC   |
| <b>Contributions</b>               | In kind and other, committed by Members and POs at Plenary; private sector partners may contribute; |   | Generally in kind provided by Members through their institutions and/or PO; private sector partners may contribute; | Through GEO Trust Fund and other sources from Members and PO; private sector partners may contribute; |

## Criteria

### GEO Flagships

- Substantial, mature activity of global or regional scope;
- Aims to provide information service or product pre-operationally or as pilot;
- Flagship Implementation Plan, detailing:
  - Objective, shared by partners;
  - The information service or product provided;
  - Schedule;
  - Perspective(s) for operationalization;

- Quantified, itemized resources committed at highest level, including from Members, Participating Organizations, private sector partners and the GEO Secretariat. These resources should be shown to match the Flagship's ambition;
- Partners, including specifically identified users;
- Users fully engaged, as a minimum, an active role in a Steering Board,
- Governance and management mechanisms;
- Monitoring and Evaluation.
- Multi-national stakeholder group;
- Alignment with political priorities;
- Clear relevance to GEO's Strategic Objectives.

#### GEO Initiatives

- Activity of global or regional scope;
- Aims to develop or demonstrate prototype information service or product;
- Implementation Plan, detailing:
  - Objective, shared by partners,
  - The information service or product provided,
  - Schedule;
  - Perspective(s) for evolution,
  - Quantified, itemized resources, including from Members, Participating Organizations, private sector partners and the GEO Secretariat, enabling substantial progress towards objectives,
  - Partners, including target user groups;
  - User representatives engaged, often in advisory roles;
  - Governance and management mechanisms;
  - Monitoring and Evaluation.
- Multi-national stakeholder group,
- Clear relevance to GEO's Strategic Objectives.

#### GEO Community Activities

- Objective shared by a group of interested partners,
- Multi-national stakeholder group or scope,
- Relevance to GEO's Strategic Objectives.

#### GEO Foundational Activity

- Implements or supports the implementation of a GEO Core Function;
- Description in the GEO Work Programme detailing:

- Objective and Target to be addressed;
- Specific deliverable to be produced;
- The activities planned over the period covered by the Work Programme;
- Schedule;
- Cost and resources, including from the GEO Trust Fund, Members, Participating Organizations, and private sector partners;
- Requests for additional resources linked to specific activities;
- Role of the GEO Secretariat and other actors;
- Clear relevance to GEO's Strategic Objectives.

## ANNEX C

### GEO Work Programme structure and Development guidelines

#### Note:

*This draft proposes a structure for the GEO Work Programme and guidelines for its development and approval. It is presented for discussion at the 33<sup>rd</sup> meeting of the Executive Committee.*

*It is proposed that, to ensure seamless transition from the first to the second GEO decade, a Work Programme of transitional nature be developed for 2016 and this draft provides an initial proposal on how to develop it, together with some examples on how the activities should be described.*

*It is also proposed that the subsequent Work Programmes will cover a three-year time period, namely 2017-2019, 2020-2022 and 2023-2025*

#### INTRODUCTION

The GEO Work Programme presents the activities that GEO undertakes to implement its Strategic Objectives. It describes GEO Flagships, GEO Initiatives and GEO Community activities, and defines GEO Foundational Tasks. The GEO Work Programme serves two functions:

- It is used by GEO Members and Participating Organizations to agree on priorities and activities, including with respect to the use of the resources made available through the GEO Trust Fund and the GEO Secretariat. By quantifying resources needed for the activities including and valuating the contributions committed, the Work Programme provides a tool to match the ambitions with available resources;
- The Work Programme also provides an overview of what GEO plans to undertake towards achieving its Strategic Objectives. Thus, it provides an information resource helping stakeholders to align their contributions. The Work Programme is complemented by annual GEO Activities Reports on the developments within GEO Flagships, GEO Initiatives, GEO Community Activities, and GEO Foundational Tasks, as well as on the results of Monitoring and Evaluation activities.

A Work Programme Reference Document is maintained by the GEO Secretariat, complementing the Work Programme itself. It contains important background information on overarching objectives of the actions in the Work Programme, their link to GEO Targets and Strategic Objectives, and on monitoring and evaluation activities. Thus, it represents a compilation of the relevant Implementation Plans of GEO Flagships, GEO Initiatives and other relevant documents.

The Strategic Plan, its Annexes and the Work Programme are intended to provide all GEO Members and Participating Organizations with a complete overview of the information required to reach decisions on GEO activities in support of GEO's Strategic Objectives and the implementation of the GEOSS.

The Work Programme is proposed by the GEO Secretariat based on input from GEO Members, Participating Organizations, and the GEO Community at large. It strives to optimally pursue the achievement of the Strategic Objectives through implementation of GEO's Core Functions constrained by the identifiable resources. It is further developed by the **GEO Programme Board**, which

- ensures alignment with the priorities of GEO Members and Participating Organizations and
- identifies resource commitments by GEO Members and Participating Organizations;

- Recommends it to Plenary for approval.

Thus, the GEO Work Programme implements a top-down mechanism towards the selection of GEO activities. It should be noted that this Work Programme does not, in itself, guarantee that the activities it contains are sufficient or effective in implementing GEO Core Functions or realizing GEO's objectives. This needs to be analyzed in dedicated actions for monitoring progress and evaluation of the activities undertaken.

The Work Programme is presented for acceptance by **GEO Plenary**. By accepting this Work Programme GEO

- Accepts that the GEO Foundational Tasks should be implemented with the resources indicated ;and
- Takes note that the GEO Flagships, GEO Initiatives and GEO Community Activities are expected to be implemented with the corresponding indicative resources.

## 1 IMPLEMENTATION MECHANISMS

GEO implements its activities through four different implementation mechanisms. These mechanisms provide a framework that is both flexible and open, engaging a broad and diverse community to work together, and at the same time reliable and effective, allowing substantial activities to be implemented. The mechanisms differ in the level of resources, the management, steering and advisory mechanisms, the effort expected to be expended on monitoring and reporting, and the roles of GEO governance bodies and the GEO Secretariat.

**GEO Community Activities** enable a broad variety of activities. They allow stakeholders to cooperate very flexibly in a bottom-up fashion and with a low initiation cost. Community Activities may define user needs, explore or demonstrate technical possibilities or agree on specific protocols.

**GEO Initiatives** develop and implement prototype services according to GEO priorities. They allow Members and Participating Organizations to coordinate their actions and contributions towards a common objective within an agreed, yet flexible framework. GEO Initiatives may demonstrate the technical feasibility through pilot products or consolidate a user need.

**GEO Flagships** develop and implement pilot or pre-operational services according to GEO priorities. They allow Members and Participating Organizations to spin-up an operational service serving common needs. GEO Flagships may operate for as long as they are able to generate sufficient impact to attract support for their activities. They may be taken up by user institutions, e.g. GEO Participating Organizations, for their operation over the long term.

**GEO Foundational Tasks** enable GEO to implement selected, often enabling tasks to achieve GEO Strategic Objectives and Targets. These include coordinative actions, gap analyses, the implementation of technical elements for accessing GEOSS, and other routine operation of the GEO Secretariat.

Details on these four implementation mechanisms are described in an Annex to the Strategic Plan.

## 2 2016-2025 WORK PROGRAMMES

The Work Programme for 2016 represents a transitional Work Programme, serving as a bridge from the first 10 years of GEO (2005-2015) to the next ten years and it is developed by the GEO Secretariat in consultation with the GEO Community under the guidance of the IPWG during 2015.

The next Work Programmes will cover three-year time periods. This will allow implementing longer-term activities coherently. The following Work Programmes are currently envisioned:

Work Programme 2017-2019 – developed by the GEO Secretariat, in consultation with the GEO Community, together with the GEO Programme Board during 2016.

Work Programme 2020-2022 – developed by the GEO Secretariat in consultation with the GEO Community, together with the GEO Programme Board during 2018-19.

Work Programme 2023-2025 – developed by the GEO Secretariat in consultation with the GEO Community, together with the GEO Programme Board during 2021-2022.

### 3 DEVELOPMENT OF THE 2016 WORK PROGRAMME: PROCESS AND EXAMPLES

*The initial draft of the 2016 Work Programme will be developed and substantiated prior to a discussion at the Work Plan Symposium (May 5-7, 2015), where the objective will be to kick-off the transition of current activities into the post-2015 period though mapping them into the appropriate places of the Work Programme, to identify additional activities and to evaluate their priority and relevance to implement GEO core functions and to achieve related Targets.*

*Proposed process*

*The IPWG intends to develop this Work Programme in the following way:*

- *The GEO Secretariat will develop a proposed mapping of existing activities from the current GEO Work Plan towards this Work Programme. This may involve proposals to disaggregate current Tasks and Components and proposals to discontinue specific activities. This work needs to happen well before the Work Plan Symposium (WPS);*
- *IPWG will work to identify proposed changes to existing Tasks or new activities that are necessary to implement all Core Functions. This work will begin following stabilization of the GEO Targets and Core Functions and prior to the WPS;*
- *The **Executive Committee and all GEO Principals (Mar 2015)** are invited to identify elements they would like to see included in the Work Programme. These requests would also inform the work of the MinWG. **Feedback from GEO Principals should be brought forward between March and July 2015 (34<sup>th</sup> Executive Committee)**, allowing consolidation of the Work Programme for Plenary;*
- *The Work Plan Symposium (WPS) will be used for:*
  - *Communicating the concept of the Work Programme;*
  - *Discuss, potentially modify, and finally validate the mapping of current Work Plan activities into the Work Programme;*
  - *Discuss and potentially complement suggestions for necessary top-down elements (i.e. those necessary to fully implement all Core Functions / reach all GEO Targets).*
- *GEOSEC with IPWG to consolidate input from ExCom, Principals, WPS by ExCom in July 2015.*
- *Under the guidance of ExCom, consolidate the Work Programme aiming to match Actions and resources. This involves seeking contribution commitments (to be added leading up to GEO Plenary 2015) and prioritization/selection/de-selection of elements.*

### 4 EXAMPLES ON HOW TO INCLUDE TASKS IN THE WORK PROGRAMME

Note:

This draft only includes one *example* under each heading for illustration purposes only.

#### 4.1 GEO Foundational Tasks

2016-GFT-01 – Data Sharing Working Group (*indicative only!*)

##### Description

Advances in data sharing and broadening acceptance of the GEO Data Sharing Principles (DSP) have been an important success of GEO to date. Promoting the continued adoption of free, full, open and timely data access as a societal benefit remains one of GEO's Core Functions. The Data Sharing Working Group continues to maintain the DSPs and implementation guidelines, as well as a set of examples for the benefit of data sharing. These are made available through the GEO Portal to serve data owners in implementing the GEO DSPs.

The GEO Secretariat support the DSWG through advocating the benefit of DSPs in appropriate venues and seeking a dialogue with GEO Members and Participating Organizations that have not yet fully implemented the DSPs.

The GEO Secretariat also supports regular teleconferences of the DSWG.

During 2016 ...

##### Implementation mechanism

The activity is implemented as a GEO Foundational Task, implemented by the Members of the DSWG with support from the GEO Secretariat.

##### Resources

The activity is resourced from the Members of the DSWG. Some support is provided by the GEO Secretariat. In particular, the GEO Secretariat will assign a full-time IT professional to implement measures that enhance the use and uptake of GEOSS data.

| Source                      | 2016   | 2017-2019* |  |
|-----------------------------|--------|------------|--|
| GEO Secretariat             | 25000  | 75000      | Staff time                               |
| European Commission         | 25000  |            | Staff time                               |
| United States               | 25000  |            | Staff time                               |
| [Trust Fund and/or in-kind] | 100000 | 300000     | IT expert to support the GEOSS Data-CORE |

\*budgets beyond 2016 are purely indicative.

2016-GFT-02 – Support to Communities of Practice (*indicative only!*)

##### Description

Communities of Practice (CoP) are self-organized groups sharing a common interest within the scope of GEO's Societal Benefit Areas. They serve an important function in engaging stakeholders from different domains, different regions, and different roles – including users and providers.

Because of their importance for achieving GEO's Strategic Objectives, the GEO Secretariat fosters the development and exchange within the Communities of Practice and works to create the relevant linkages to GEO activities.

Currently, GEO CoP include:

- ...

During 2016 ...

Implementation mechanism

The activity is implemented as a GEO Foundational Task, implemented by the GEO Secretariat.

Resources

The activity is resourced from the GEO Secretariat.

| Source          | 2016  | 2017-2019* |                 |
|-----------------|-------|------------|-----------------|
| GEO Secretariat | 10000 | 30000      | Meeting support |
|                 | 50000 | 50000      | Staff time      |

\*budgets beyond 2016 are purely indicative.

2016-GFT-03 – Operating the central components of GEOSS (*indicative only!*)

Description

To provide access to GEOSS data and information resources including data archives of observational data, documented best practices and standards, and a collection of examples for the use of earth observations in decision-making, GEO maintains a [GEO Common Infrastructure (GCI)]. The GCI implements the following functionalities:

- A GEO Portal as an attractive and functional access point to GEOSS resources. The GEO Portal provides client functionality for searching, displaying, and downloading earth observation data and documentation on earth observation systems, services, and applications;
- A search function to render GEOSS data, systems and knowledge discoverable,
- Broker functions to discover and access GEOSS resources in an interoperable fashion;
- *Further required functionalities may be identified during 2015.*

The GCI is currently operated by ESA. During 2016 ...

Implementation mechanism

The activity is implemented as a GEO Foundational Task, implemented by the GEO Secretariat.

Resources

The activity is resourced from the GEO Secretariat. Developments towards the evolution and enhancement of the GCI are contributed by other partners.

| Source              | 2016    | 2017-2019* |                  |
|---------------------|---------|------------|------------------|
| GEO Secretariat     | 100000  | 310000     | Contracts        |
|                     | 200000  | 620000     | Staff time       |
| European Commission | 3 Mio € |            | Research Project |

\*budgets beyond 2016 are purely indicative.



## ANNEX D

### Proposed modifications to current Rules of Procedure

In line with the governance principles mentioned above, the Executive Committee will be enlarged from 13 to 15 members. Accordingly, the African Caucus and the CIS Caucus representation will be increased by 1 to better reflect their geographical size and number of member countries. The amended rules of procedure are presented below.

With the proposed changes to the allocation of seats on the Executive Committee, the composition of the Executive Committee would be as follows:

| Caucuses            | 2016-2025 membership | Previous Membership |
|---------------------|----------------------|---------------------|
| Asia-Oceania Caucus | 4                    | 4                   |
| Americas Caucus     | 3                    | 3                   |
| CIS Caucus          | 2                    | 1                   |
| African Caucus      | 3                    | 2                   |
| European Caucus     | 3                    | 3                   |
| Total               | 15                   | 13                  |

#### **Executive Committee Co-Chairs**

Four (4) GEO Members will co-chair meetings of the Plenary and the Executive Committee. Between Executive Committee meetings, the Co-Chairs will act on behalf of the Executive Committee to provide guidance to the Secretariat and will report to the Executive Committee on actions taken.

The selection of these co-Chairs will be determined under rules 3.3 and 3.4 of the rules of procedure (RoP) for the Executive Committee. Consistent with the governance principles mentioned above, the rule 3.3 will be slightly modified to better allow for the rotation of co-chairs such that it now reads as follows:

**3.3 Composition:** The Executive Committee will consist of 15 GEO Members based on the following geographic distribution: Africa (3), Americas (3), Asia and Oceania (4), CIS (2), and Europe (3). Four Executive Committee Members will serve collectively as Co-Chairs of the Plenary and the Executive Committee, **with at least one** Co-Chair representing developed countries and **at least one** Co-Chair representing developing countries. One Co-Chair will serve as lead to guide the discussion for each meeting. The lead Co-Chair will rotate among the Co-Chairs as agreed by the Co-Chairs. Individuals serving on the Executive Committee do not serve in their individual capacity but as Member representatives. Three (3) additional seats at meetings of the Executive Committee will be allocated to Observers representing the GEO Participating Organisations.

This modification would offer a number of advantages, including:

- Achieving greater inclusivity, diversity and better representativeness within GEO's leadership;
- Fostering greater ownership/involvement of members;

- Ensuring better reflection of regional needs and deepen regional involvements,
- Creating a climate favourable for the generation of fresh perspectives and new ideas.

## ANNEX E

### **Foundational and Supporting Documents**

#### **Foundational Documents**

- Global Earth Observation System of Systems 10-Year Implementation Plan, GEO, 2005;
- Global Earth Observation System of Systems 10-Year Implementation Plan Reference Document, GEO, 2005;
- GEOSS Strategic Targets, GEO, 2009;
- Vision for GEO 2025, GEO, 2014;
- Rules of Procedure, GEO, 2014.

#### **Supporting Documents**

- Analysis of international governance and funding models;
- Analysis of legal status;
- GEO Report on Progress: Observe, Share, Inform, GEO, 2010;
- GEO Report on Progress 2011-2013, GEO, 2014,
- GEO 2012-2015 Work Plan, GEO, 2015;
- GEOSS Monitoring and Evaluation, GEO, 2009;
- GEOSS Summative Evaluation Interim Report, GEO, 2015;
- Highlights Fact Sheet, GEO, 2014;
- Ministerial Guidance on the Evolution of GEOSS, GEO, 2014;
- Preliminary Guidance for GEO 2025, GEO, 2014;
- Progress in the Implementation of Recommendations of GEOSS Evaluations, GEO. 2014;
- Statements of GEO Delegations at GEO Plenary, Nov. 2014.

## **APPENDIX**

*(for information only)*

### **INDICATIVE SCALE FOR GEO TRUST FUND CONTRIBUTIONS**

The IPWG has researched options for an indicative scale of contributions for the Trust Fund. This example uses the GDP figures from the World Bank so as to provide an indicative percentage for the contributions to the trust fund. This scale is based on a budget of CHF 5 Million, a slight increase from previous decisions of Plenary and the Executive Committee which set the optimum budget for the Secretariat at CHF 4.5 Million.

Note that an aggregate figure for the European Countries that are part of the European Union has been provided.

**DRAFT for ILLUSTRATIVE Purposes - Voluntary Indicative Scale**

Based on World Bank GDP 2013

| Ranking | Economy | (millions of<br>US dollars) | Indicative<br>scale | Indicative budget |                          |    |    |            |
|---------|---------|-----------------------------|---------------------|-------------------|--------------------------|----|----|------------|
| USA     | 1       | United States               | 16,768,100          | 23.79576%         | United States            | 1  | -  | 1189788    |
| CHN     | 2       | China                       | 9,240,270           | 13.11295%         | China                    | 1  | -  | 655648     |
| JPN     | 3       | Japan                       | 4,919,563           | 6.98140%          | Japan                    | 1  | -  | 349070     |
| DEU     | 4       | Germany                     | 3,730,261           | 5.29365%          | Germany                  | 1  | 1  | 3,730,261  |
| FRA     | 5       | France                      | 2,806,428           | 3.98263%          | France                   | 1  | 1  | 2,806,428  |
| GBR     | 6       | United Kingdom              | 2,678,455           | 3.80102%          | United Kingdom           | 1  | 1  | 2,678,455  |
| BRA     | 7       | Brazil                      | 2,245,673           | 3.18685%          | Brazil                   | 1  | -  | 159343     |
| ITA     | 8       | Italy                       | 2,149,485           | 3.05035%          | Italy                    | 1  | 1  | 2,149,485  |
| RUS     | 9       | Russian Federation          | 2,096,777           | 2.97556%          | Russian                  | 1  | -  | 148778     |
| IND     | 10      | India                       | 1,876,797           | 2.66338%          | India                    | 1  | -  | 133169     |
| CAN     | 11      | Canada                      | 1,826,769           | 2.59238%          | Canada                   | 1  | -  | 129619     |
| AUS     | 12      | Australia                   | 1,560,372           | 2.21434%          | Australia                | 1  | -  | 110717     |
| ESP     | 13      | Spain                       | 1,393,040           | 1.97688%          | Spain                    | 1  | 1  | 1,393,040  |
| KOR     | 14      | Korea, Rep.                 | 1,304,554           | 1.85130%          | Korea, Republic of       | 1  | -  | 92565      |
| MEX     | 15      | Mexico                      | 1,260,915           | 1.78938%          | Mexico                   | 1  | -  | 89469      |
| IDN     | 16      | Indonesia                   | 868,346             | 1.23228%          | Indonesia                | 1  | -  | 61614      |
| NLD     | 17      | Netherlands                 | 853,539             | 1.21127%          | Netherlands              | 1  | 1  | 853,539    |
| TUR     | 18      | Turkey                      | 822,135             | 1.16670%          | Turkey                   | 1  | -  | 58335      |
| CHE     | 20      | Switzerland                 | 685,434             | 0.97271%          | Switzerland              | 1  | -  | 48635      |
| ARG     | 21      | Argentina                   | 609,889             | 0.86550%          | Argentina                | 1  | -  | 43275      |
| SWE     | 22      | Sweden                      | 579,680             | 0.82263%          | Sweden                   | 1  | 1  | 579,680    |
| POL     | 23      | Poland                      | 525,866             | 0.74626%          | Poland                   | 1  | 1  | 525,866    |
| BEL     | 24      | Belgium                     | 524,806             | 0.74476%          | Belgium                  | 1  | 1  | 524,806    |
| NGA     | 25      | Nigeria                     | 521,803             | 0.74050%          | Nigeria                  | 1  | -  | 37025      |
| NOR     | 26      | Norway                      | 512,580             | 0.72741%          | Norway                   | 1  | -  | 36370      |
| AUT     | 28      | Austria                     | 428,322             | 0.60784%          | Austria                  | 1  | 1  | 428,322    |
| THA     | 30      | Thailand                    | 387,252             | 0.54955%          | Thailand                 | 1  | -  | 27478      |
| COL     | 31      | Colombia                    | 378,415             | 0.53701%          | Colombia                 | 1  | -  | 26851      |
| IRN     | 32      | Iran, Islamic Rep.          | 368,904             | 0.52352%          | Iran                     | 1  | -  | 26176      |
| ZAF     | 33      | South Africa                | 350,630             | 0.49758%          | South Africa             | 1  | -  | 24879      |
| DNK     | 34      | Denmark                     | 335,878             | 0.47665%          | Denmark                  | 1  | 1  | 335,878    |
| MYS     | 35      | Malaysia                    | 313,159             | 0.44441%          | Malaysia                 | 1  | -  | 22220      |
| ISR     | 37      | Israel                      | 290,551             | 0.41232%          | Israel                   | 1  | -  | 20616      |
| CHL     | 38      | Chile                       | 277,199             | 0.39338%          | Chile                    | 1  | -  | 19669      |
| PHL     | 40      | Philippines                 | 272,067             | 0.38609%          | Philippines              | 1  | -  | 19305      |
| EGY     | 41      | Egypt, Arab Rep.            | 271,973             | 0.38596%          | Egypt                    | 1  | -  | 19298      |
| FIN     | 42      | Finland                     | 267,329             | 0.37937%          | Finland                  | 1  | 1  | 267,329    |
| GRC     | 43      | Greece                      | 242,230             | 0.34375%          | Greece                   | 1  | 1  | 242,230    |
| PAK     | 44      | Pakistan                    | 232,287             | 0.32964%          | Pakistan                 | 1  | -  | 16482      |
| IRL     | 45      | Ireland                     | 232,077             | 0.32934%          | Ireland                  | 1  | 1  | 232,077    |
| KAZ     | 46      | Kazakhstan                  | 231,876             | 0.32906%          | Kazakhstan               | 1  | -  | 16453      |
| PRT     | 48      | Portugal                    | 227,324             | 0.32260%          | Portugal                 | 1  | 1  | 227,324    |
| DZA     | 49      | Algeria                     | 210,183             | 0.29827%          | Algeria                  | 1  | -  | 14914      |
| CZE     | 50      | Czech Republic              | 208,796             | 0.29630%          | Czech Republic           | 1  | 1  | 208,796    |
| PER     | 52      | Peru                        | 202,350             | 0.28716%          | Peru                     | 1  | -  | 14358      |
| ROM     | 53      | Romania                     | 189,638             | 0.26912%          | Romania                  | 1  | 1  | 189,638    |
| NZL     | 54      | New Zealand                 | 185,788             | 0.26365%          | New Zealand              | 1  | -  | 13183      |
| UKR     | 55      | Ukraine                     | 177,431             | 0.25179%          | Ukraine                  | 1  | -  | 12590      |
| VNM     | 57      | Vietnam                     | 171,390             | 0.24322%          | Vietnam                  | 1  | -  | 12161      |
| BGD     | 58      | Bangladesh                  | 149,990             | 0.21285%          | Bangladesh               | 1  | -  | 10643      |
| HUN     | 59      | Hungary                     | 133,424             | 0.18934%          | Hungary                  | 1  | 1  | 133,424    |
| MAR     | 61      | Morocco                     | 103,836             | 0.14735%          | Morocco                  | 1  | -  | 7368       |
| SVK     | 63      | Slovak Republic             | 97,707              | 0.13866%          | Slovakia                 | 1  | 1  | 97,707     |
| ECU     | 64      | Ecuador                     | 94,473              | 0.13407%          | Ecuador                  | 1  | -  | 6703       |
| SDN     | 71      | Sudan                       | 66,566              | 0.09446%          | Sudan                    | 1  | -  | 4723       |
| LUX     | 73      | Luxembourg                  | 60,131              | 0.08533%          | Luxembourg               | 1  | 1  | 60,131     |
| HRV     | 74      | Croatia                     | 57,869              | 0.08212%          | Croatia                  | 1  | 1  | 57,869     |
| UZB     | 75      | Uzbekistan                  | 56,796              | 0.08060%          | Uzbekistan               | 1  | -  | 4030       |
| BGR     | 78      | Bulgaria                    | 54,480              | 0.07731%          | Bulgaria                 | 1  | 1  | 54,480     |
| CRI     | 81      | Costa Rica                  | 49,621              | 0.07042%          | Costa Rica               | 1  | -  | 3521       |
| GHA     | 82      | Ghana                       | 48,137              | 0.06831%          | Ghana                    | 1  | -  | 3416       |
| SVN     | 83      | Slovenia                    | 47,987              | 0.06810%          | Slovenia                 | 1  | 1  | 47,987     |
| ETH     | 84      | Ethiopia                    | 47,525              | 0.06744%          | Ethiopia                 | 1  | -  | 3372       |
| TUN     | 85      | Tunisia                     | 46,994              | 0.06669%          | Tunisia                  | 1  | -  | 3334       |
| SRB     | 87      | Serbia                      | 45,520              | 0.06460%          | Serbia                   | 1  | -  | 3230       |
| PAN     | 89      | Panama                      | 42,648              | 0.06052%          | Panama                   | 1  | -  | 3026       |
| BHR     | 94      | Bahrain                     | 32,890              | 0.04667%          | Bahrain                  | 1  | -  | 2334       |
| CVL     | 96      | Côte d'Ivoire               | 31,062              | 0.04408%          | Cote d'Ivoire            | 1  | -  | 2204       |
| LVA     | 97      | Latvia                      | 30,957              | 0.04393%          | Latvia                   | 1  | 1  | 30,957     |
| CMR     | 99      | Cameroon                    | 29,568              | 0.04196%          | Cameroon                 | 1  | -  | 2098       |
| PRY     | 100     | Paraguay                    | 29,009              | 0.04117%          | Paraguay                 | 1  | -  | 2058       |
| EST     | 102     | Estonia                     | 24,880              | 0.03531%          | Estonia                  | 1  | 1  | 24,880     |
| CYP     | 105     | Cyprus                      | 21,911              | 0.03109%          | Cyprus                   | 1  | 1  | 21,911     |
| UGA     | 106     | Uganda                      | 21,494              | 0.03050%          | Uganda                   | 1  | -  | 1525       |
| GAB     | 108     | Gabon                       | 19,344              | 0.02745%          | Gabon                    | 1  | -  | 1373       |
| NPL     | 109     | Nepal                       | 19,294              | 0.02738%          | Nepal                    | 1  | -  | 1369       |
| HND     | 110     | Honduras                    | 18,550              | 0.02632%          | Honduras                 | 1  | -  | 1316       |
| GEO     | 112     | Georgia                     | 16,140              | 0.02290%          | Georgia                  | 1  | -  | 1145       |
| ISL     | 116     | Iceland                     | 15,330              | 0.02176%          | Iceland                  | 1  | 1  | 15,330     |
| SEN     | 119     | Senegal                     | 14,792              | 0.02099%          | Senegal                  | 1  | -  | 1050       |
| COG     | 122     | Congo, Rep.                 | 14,086              | 0.01999%          | Congo, Republic          | 1  | -  | 999        |
| MUS     | 127     | Mauritius                   | 11,929              | 0.01693%          | Mauritius                | 1  | -  | 846        |
| BFA     | 129     | Burkina Faso                | 11,583              | 0.01644%          | Burkina Faso             | 1  | -  | 822        |
| MLI     | 134     | Mali                        | 10,943              | 0.01533%          | Mali                     | 1  | -  | 776        |
| MDG     | 135     | Madagascar                  | 10,613              | 0.01506%          | Madagascar               | 1  | -  | 753        |
| ARM     | 136     | Armenia                     | 10,432              | 0.01480%          | Armenia                  | 1  | -  | 740        |
| MLT     | 138     | Malta                       | 9,642               | 0.01368%          | Malta                    | 1  | 1  | 9,642      |
| TJK     | 139     | Tajikistan                  | 8,508               | 0.01207%          | Tajikistan               | 1  | -  | 604        |
| BHS     | 141     | Bahamas, The                | 8,420               | 0.01195%          | Bahamas                  | 1  | -  | 597        |
| MDA     | 143     | Moldova                     | 7,970               | 0.01131%          | Moldova                  | 1  | -  | 565        |
| NER     | 145     | Niger                       | 7,407               | 0.01051%          | Niger                    | 1  | -  | 526        |
| GIN     | 148     | Guinea                      | 6,144               | 0.00872%          | Guinea                   | 1  | -  | 436        |
| BLZ     | 169     | Belize                      | 1,624               | 0.00231%          | Belize                   | 1  | -  | 115        |
| CAF     | 170     | Central African Rep         | 1,538               | 0.00218%          | Central African          | 1  | -  | 109        |
| SYC     | 172     | Seychelles                  | 1,443               | 0.00205%          | Seychelles               | 1  | -  | 102        |
| GNB     | 177     | Guinea-Bissau               | 961                 | 0.00136%          | Guinea-Bissau            | 1  | -  | 68         |
|         |         |                             | 70,466,753          |                   | TOTAL members            | 96 | 28 | 17,927,471 |
|         |         |                             |                     |                   | European Union aggregate |    |    | 1272052    |
|         |         |                             | 17,927,471          | 25.44103%         |                          |    |    | 500000     |