

# Global Environment Outlook (GEO)

Intergovernmental and  
Expert-led Scientific Assessment Procedures



**UN**   
environment  
programme

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Assessment Procedures**

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# 1 Introduction

The United Nations Environment Assembly (UNEA) initiates GEO assessments and provides overall oversight for the GEO process. The GEO process is undertaken by the Executive director of UNEP with the guidance of the Intergovernmental and Multi-stakeholder Advisory Group (IMAG) and the Multi-disciplinary Expert Scientific Advisory Group (MESAG), while periodically consulting with the Committee of Permanent Representatives on important elements of the Global Environment Outlook process. Resolution EA.5/3:

*“Requests the Executive Director, with guidance from the intergovernmental and multi-stakeholder advisory group, to convene an intergovernmental, multi-stakeholder and expert meeting to establish a set of procedures that reflects the objectives and core function of the Global Environment Outlook process outlined above”*

The draft procedures in this document<sup>1</sup> have been reviewed and adopted by an intergovernmental, multi-stakeholder and expert meeting convened by the Executive Director of UNEP from Sept. 19 – 22 2022, pursuant to Environment Assembly resolution UNEP/EA.5/Res.3.

## 2 Overall orientation of the GEO

### 2.1 Objective

The objective of the GEO<sup>2</sup> process is to keep the world environmental situation under review in order to periodically inform and support collective and individual action by United Nations Member States and stakeholders<sup>3</sup>, while strengthening the science-policy interface of the United Nations Environment Programme.

### 2.2 Functions

As stated in UNEP/EA.5/RES.3, the core function of the Global Environment Outlook process should be to undertake, every four years, an intergovernmental, expert-led, global authoritative assessment with

regional specificities. This assessment should track trends, evaluate the effectiveness of the global policy response, evaluate future perspectives for all five environmental themes addressed in previous Global Environment Outlook assessments, and evaluate the drivers of environmental change and the interactions across these environmental themes. The assessment should benefit from but not duplicate existing assessments, and be supplemented, as needed, by Global Environment Outlook thematic assessments at the request of the Environment Assembly, to fill knowledge<sup>4</sup> gaps.

The Global Environment Outlook process should identify intergovernmentally defined needs and terms for the provision of support for capacity-building, knowledge generation and policymaking, in line with the mandate of the United Nations Environment Programme, and should provide support services for addressing those needs, in partnership with relevant institutions, as appropriate.

### 2.3 Operational principles

The GEO procedures have been drafted to ensure:

- (a) Mandate consistency and comparability across editions of GEO;
- (b) The relevance (or salience) of GEO in terms of responding flexibly to the needs of Member States and stakeholders, for example for improving the effectiveness of environmental policy;
- (c) The legitimacy of GEO, as an assessment accepted by Member States and stakeholders as authoritative, produced through unbiased, representative and defensible procedures,
- (d) The credibility of GEO as a robust and rigorous assessment based on scientifically accepted methods and analysis, from multiple official sources; To ensure team compositions that are balanced with respect to geography, gender and discipline;

1 The procedures take as a starting point that the UNEA is responsible for overall oversight and governance of the GEO process and can initiate the establishment of procedures as it deems necessary. The procedures outlined in this document are informed by the IPBES and IPCC procedures, the final report of the Steering Committee on the Future of GEO and past GEO good practice.

2 This overall orientation section reflects the objective and function set out in resolution UNEP/EA.5/Res.3 as well as a set of operational principles derived from the criteria for the design of a future GEO which are presented in the final report of the Steering Committee on the Future of GEO.

3 UNEP uses the Major Groups approach, as defined in Agenda 21, for engaging stakeholders. More information is available at <https://www.unep.org/civil-society-engagement/why-civil-society-matters/major-groups-stakeholders>

4 Knowledge gaps include data and information gaps.

- (e) The accessibility of GEO, meaning that its outputs and the underlying methodologies, knowledge base and environmental data are accessible by Member States and stakeholders to support policymaking, decision-making and strengthening of the science-policy interface;
- (f) The added value of GEO, in terms of ensuring that it responds to UNEP's mandate, that it avoids duplication with other global assessment processes, while addressing interlinkages and cross-cutting issues and identifying gaps and emerging issues;
- (g) The overall feasibility of GEO, including continuity of operations for the periodic production of the report and in terms of the implications for administrative, financial and collaborative structures and other initiatives across the UNEP science-policy interface;
- (h) Transparency of the GEO process, to support the scientific credibility and legitimacy criteria. Key tools to increase transparency can be incorporated into the process through the digital transformation efforts for GEO-7;
- (i) All assessment products are strongly evidence-based and supported by authoritative data and knowledge. Data and knowledge tools can be incorporated into the process through the digital transformation of the GEO-7 assessment; and
- (j) Active outreach and awareness raising to inform outside audiences about the key steps in the GEO process and the impact of the main findings. GEO supporting services can serve as outreach and awareness raising activities.

## 3 Definitions and Terminology

### 3.1 Deliverables

**"Reports"** means the main deliverables of GEO, including assessment reports, their summaries for policymakers, and which could include technical summaries, synthesis reports, derivative reports, , technical papers, and guidelines, if approved by UNEA.

**"Assessment reports"** are published intergovernmental and expert-led assessments of the state of knowledge of relevant scientific, technical and socioeconomic issues. They are prepared through

a collective and iterative review, synthesis, analysis, critical evaluation and judgement of policy relevance, including confidence levels in the available knowledge from peer reviewed scientific literature and other relevant knowledge sources and knowledge systems<sup>5</sup>. The preparation is undertaken by a gender, disciplinary and geographically balanced team of independent experts selected on the basis of their merits. The experts interact with representatives of Member States, observers and stakeholders at the initiation, scoping, review, consultation and endorsement stages of the assessment. Assessment reports consist of a scientifically referenced full report with several chapters which presents the state of knowledge accompanied by confidence level statements (see section 11) and a Summary for Policy Makers (see definition below). The report is attributed to the selected experts and staff who have contributed to the assessment in accordance with their role and contributions.

**"Summary for policymakers (SPM)"** is a component of GEO intergovernmental and expert-led assessment reports, providing a policy-relevant summary of that report. It highlights key messages and summarised findings either in a separate section up front or integrated in the summary of policy relevant findings. The findings are presented with formal confidence statements and references to the analysis in relevant chapters of the full assessment report. The summary is prepared by and attributed to the experts who have contributed to the summary in accordance with their role and contributions. The summary is submitted for review and approval by representatives of Member States at ad hoc open-ended meetings convened by the Executive Director upon request by UNEA.

**"Thematic assessments"** are prepared on topics deemed important by UNEA.

**"Supporting material from service-oriented activities"** is material resulting from service-oriented activities and may include proceedings, reports and electronic tools.

### 3.2 Clearance and endorsement process

**"Validation"** of the GEO reports is a process by which the Intergovernmental and Multi-stakeholder Advisory Group (IMAG) or the Multidisciplinary Expert Scientific Advisory Group (MESAG) provide their endorsement that the processes for the preparation of GEO reports have been duly followed.

<sup>5</sup> Including Indigenous and local knowledge as well as citizen science.

“**Acceptance**” of the GEO assessment reports signifies that the material has not been subjected to section-by-section or line-by-line discussion and agreement by Member States, but nevertheless presents a comprehensive and balanced view of the subject matter.

“**Adoption**” of the procedures document and the scoping document is a process of section-by-section (and not line-by-line) endorsement by the ad hoc open-ended meetings convened by the Executive Director.

“**Approval**” of the GEO’s summaries for policymakers signifies that the material has been subject to detailed, line-by-line discussion and agreement by consensus among representatives of authors and Member States at ad hoc open-ended meetings convened by the Executive Director. The aim of the discussion is to ensure that findings in the summary are factual and presented in ways that make them relevant and easily accessible to a wide range of policymakers and users. The representation from authors is necessary to ensure that formulations in the summary are supported by the scientific evidence presented in the chapters of the full report. Final approval is provided by Member States only.

## 4 Governance and implementation structures

### 4.1 Ad Hoc Open-Ended Meeting of Member States, stakeholders and experts<sup>6</sup>

The Environment Assembly has requested the Executive Director to convene Ad Hoc Open-Ended Meetings of Member States and an intergovernmental multi-stakeholder and expert meeting, to undertake specific functions in the GEO assessment cycle. The meetings will be governed by the rules of procedure of the Environment Assembly.

**(a) Composition.** The ad hoc open-ended meetings are open to Member States of UNEA and members of specialized agencies. To facilitate communication, intra and interregional cooperation, nomination of experts and review of reports and other material, Member States and members of specialized agencies are invited to designate UNEP national focal points responsible for liaising with the Secretariat. Any accredited



Opening plenary of UNEA 5.2 on 28 February 2022.  
CREDIT: UNEP/Cyril Villemain

observer of UNEA who is qualified in matters covered by the authorising body, and which has informed the Secretariat of its wish to be represented at the meetings, may participate as an observer. Experts deemed relevant to the GEO process may also attend.

**(b) Functions** The first ad hoc open-ended meeting will undertake the following functions as directed by UNEA:

- (i) Electing two Co-Chairs and two Vice-Chairs and a Rapporteur who will serve for the length of a GEO assessment cycle, taking due account of the principles of disciplinary, gender and geographical balance across the five United Nations regions. They will serve as the officers of the meetings and will preside over the meeting proceedings and preparation of outcomes documents.
- (ii) Reviewing and adopting procedures for conducting the GEO process.

The other ad hoc open-ended meetings will undertake the following functions:

- (i) Reviewing and adopting the scoping document of GEO assessments; and
- (ii) Reviewing and approving the summary for policy makers of GEO assessments.

<sup>6</sup> The draft procedures take as a starting point that the UNEA is responsible for overall oversight and governance of the GEO process and can establish the subsidiary governance and implementation structures that it deems necessary. The structure set out below reflects resolution UNEP/EA.5/Res.3.

## 4.2 The Intergovernmental and Multi-stakeholder Advisory Group (IMAG)

The Environment Assembly has requested the Executive Director to establish *An Intergovernmental and Multi-stakeholder Advisory Group (IMAG)* governed by the rules of procedure (RoP) of the Environment Assembly to undertake specific functions in the GEO assessment cycle.

- (a) **Nomination.** The members of the IMAG may be nominated by Member States, members of specialised agencies, and UNEP-accredited Major Groups and Stakeholders. The IMAG will select its own officers, under rule 63 of UNEA RoP.
- (b) **Composition.** The Executive Director will appoint a limited number of geographic, disciplinary and gender balanced representatives of Member States, members of specialized agencies and stakeholders. The IMAG Bureau, elected in line with rule 63 of UNEA Rules of Procedure, will be composed of two co-chairs, two vice chairs and a rapporteur. Members of the IMAG will serve for the length of a GEO assessment cycle.
- (c) **Functions.** IMAG will provide policy guidance for the functions undertaken by the Executive Director as directed by UNEA, including:
  - (i) Providing advice to experts and the Secretariat in the drafting of the scope of GEO assessments;
  - (ii) Provide advice in conducting nomination and selection processes for external experts who will contribute to the Global Environment Outlook process, including members of advisory groups, authors, fellows, peer reviewers and review editors, ensuring geographic balance across all UN regions, as well as disciplinary and gender balance;
  - (iii) Providing advice on the identification of intergovernmentally defined needs and terms for the provision of support for capacity-building, knowledge generation and support for policymaking, in line with the mandate of the United Nations Environment Programme, and the provision of support services for addressing those needs, in partnership with relevant institutions as appropriate;

- (iv) Providing advice on the development of a flexible, multi-year workplan and time-bound budget, setting out a programme of activities, such as assessments and support services, according to the needs identified by the Environment Assembly in the present resolution; and
- (v) Interacting with assessment authors and the Multi-disciplinary Expert Scientific Advisory Group (MESAG) in ensuring reliable and relevant advice is provided to the Executive Director throughout the GEO process.

(d) **Guidelines for the nomination and selection of members of the IMAG.** The following guidelines will be taken into account in the processes for nomination and selection of the officers that will serve as Members of the IMAG:

- (i) Availability to participate actively in the GEO process;
- (ii) Significant documented professional experience with international environmental affairs and/or international sustainable development;
- (iii) Comprehensive understanding of global environmental assessment processes and their role in informing policymakers;
- (iv) Extensive documented expertise with the international environmental policy agenda and assessment work; and
- (v) Demonstrated previous experience with intergovernmental processes in relation to environmental policy and sustainable development.

## 4.3 The Multidisciplinary Expert Scientific Advisory Group (MESAG)

The Environment Assembly have requested the Executive Director, with guidance from the Intergovernmental and Multi stakeholder Advisory Group (IMAG), to establish *The Multidisciplinary Expert Scientific Advisory Group (MESAG)*.

- (a) **Nomination.** The members of the MESAG may be nominated by Member States, members of specialised agencies, UNEP-accredited Major Groups and Stakeholders, specialized institutions and groups of assessment experts.

**(b) Composition.** The MESAG will comprise 25 to 30 members and be composed of two co-chairs, two vice chairs and a rapporteur<sup>7</sup> and other nominated experts so as to ensure disciplinary and gender balance as well as balanced geographical representation across the five United Nations regions, while taking into account the guidance on selection of MESAG experts set out in subparagraph (c) below. Members of the MESAG will act in their individual capacity and serve for the length of a GEO assessment cycle. The MESAG will elect its own co-chairs, vice-chairs and rapporteur, in line with rule 63 of UNEA Rules of Procedure.

**(c) Functions.** The MESAG will undertake the following functions as directed by the Executive Director, with the advice of the IMAG:

- (i) Oversee the scientific integrity of the entire Global Environment Outlook process, provide scientific oversight and advice on the selection of authors, fellows and review editors and represent the Global Environment Outlook process at key science events;
- (ii) Develop recommendations to promote approaches that help ensure the scientific credibility of GEO as a robust and rigorous assessment based on scientifically accepted methods and analysis from multiple sources, including grey literature, Indigenous and local knowledge and citizen science and science published in other languages than English;
- (iii) Provide validation of the GEO process by issuing a final opinion to UNEP's Chief Scientist on the overall scientific credibility of each GEO process; and
- (iv) Develop recommendations to help ensure the conceptual, analytical and scientific consistency and rigour in the development and implementation of the multi-year work plan and programme of activities, such as assessments and supporting services;

**(d) Guidelines for the nomination and selection of MESAG members.** The following guidelines will be taken into account in the process for nominating and selecting the MESAG:

- (i) Ability to carry out the functions set out in subparagraph (c) above;
- (ii) Scientific and environmental expertise with regard to both natural and social sciences across the members of the MESAG;
- (iii) Scientific, technical or policy expertise and knowledge of the main elements of the work of the Global Environment Outlook process;
- (iv) Experience in communicating science, promoting it, and incorporating it into policy development processes;
- (v) Ability to both lead and work in international scientific and policy processes; and
- (vi) Ability to communicate science and scientific findings to multiple stakeholders, including youth.<sup>8</sup>

#### 4.4 Author Teams and Task Forces

Geographic, disciplinary and gender balanced as well as time-bound Expert Author Teams for Global Environment Outlook global or thematic assessments requested by the Environment Assembly can be established. Task forces, advisory groups and workshops in support of activities under the GEO process can also be established. Nomination and selection of experts will follow Section 8 of these procedures. Expert Teams may include:

- a) Author Teams** are normally constituted for the undertaking of time-bound assessments in accordance with the adopted scope (design). Teams will normally consist of two co-chairs, two vice-chairs, a rapporteur, a number of coordinating lead authors, lead authors, contributing authors and fellows. Their selection is decided on by the Executive Director with the advice of the IMAG.<sup>9</sup>
- b) Task Forces** can guide the development and implementation of methodologies and the undertaking of functions other than assessments, such as capacity building. Their establishment will be decided on by the Executive Director with the advice of the IMAG<sup>10</sup> and MESAG.

<sup>7</sup> The role of the rapporteur is to monitor the discussions and record the main decisions at each meeting. This allows the group to move forward without having to revisit key decisions in the past.

<sup>8</sup> Additional groups include, among others, women, Indigenous Peoples, local communities, ethnic minorities.

<sup>9</sup> The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment, through the coordination group.

<sup>10</sup> The IMAG is encouraged to consult with the MESAG, through the coordination group.



## 4.5 Secretariat

The Executive Director of UNEP will provide the Secretariat for the GEO process as part of UNEP's science-policy interface. The Secretariat will include expertise from across UNEP and will provide the administrative and technical support needed for the governance and implementation structures set out in the GEO procedures. This includes for the day-to-day management and administration of processes, budgets and funds needed for the implementation of the GEO procedures.

**Technical support units (TSUs)** – could be provided by partner institutions outside UNEP in support of specified time-bound expert driven tasks. TSUs would work under contract with the nominating Member State and under the supervision of the UNEP Secretariat. TSUs would provide in-kind support to the process but could also receive agreed financial support.

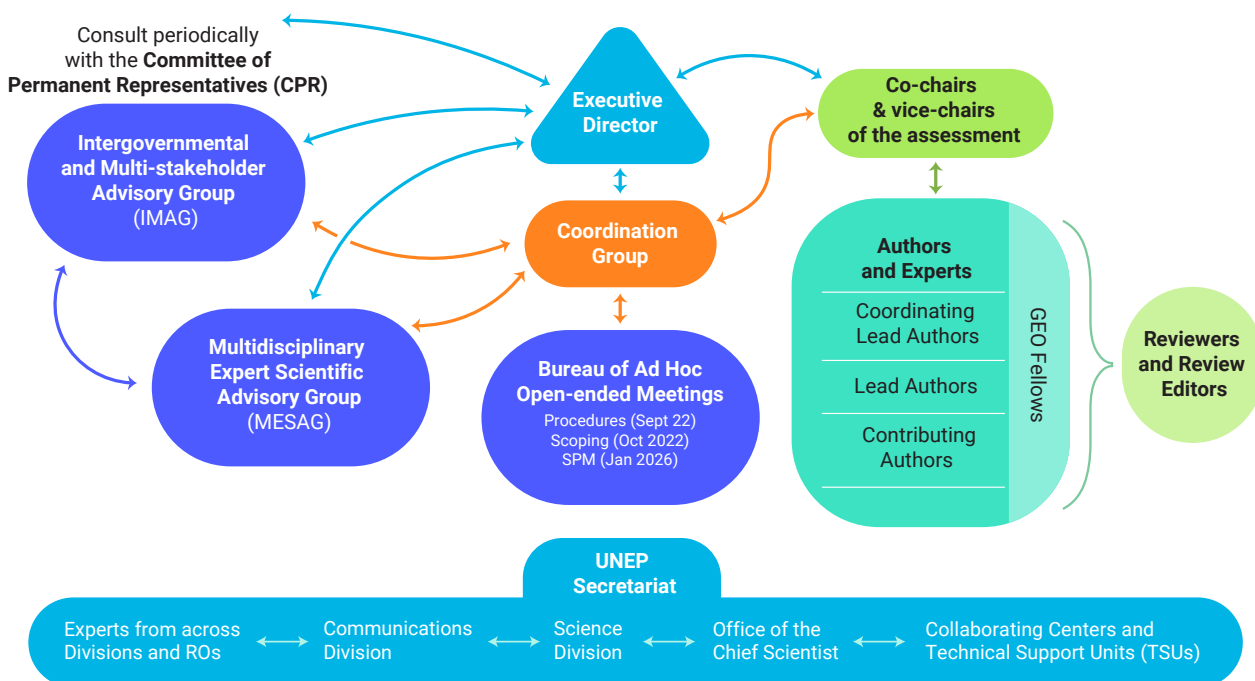
Nomination and selection of institutions would follow these procedures and standardised terms.

**Collaborating Centres<sup>11</sup>** – could also partner with the Secretariat to support various enabling functions such as capacity building, knowledge generation and support for policymaking. These centres will also provide expert support needed that may not be available within the Secretariat (e.g., translations, identifying emerging issues, outreach, providing regionally relevant data).

Nomination and selection of institutions would follow these procedures and standardised terms of operation, likely defined in an MOU with UNEP.

A coordination group of the co-chairs and vice-chairs of the Ad hoc Open-ended Meetings, co-chairs and vice-chairs of the assessment, the IMAG, MESAG and the Executive Director/Secretariat should be formed and should meet periodically to ensure overall coordination of the GEO process as well as agreement on goals and objectives for key phases of the GEO process. This information sharing group will develop a terms of reference and a workplan at the first meeting and operate under a rotating chair.

Figure 4.1: Roles and Relationships of different advisory bodies of GEO-7



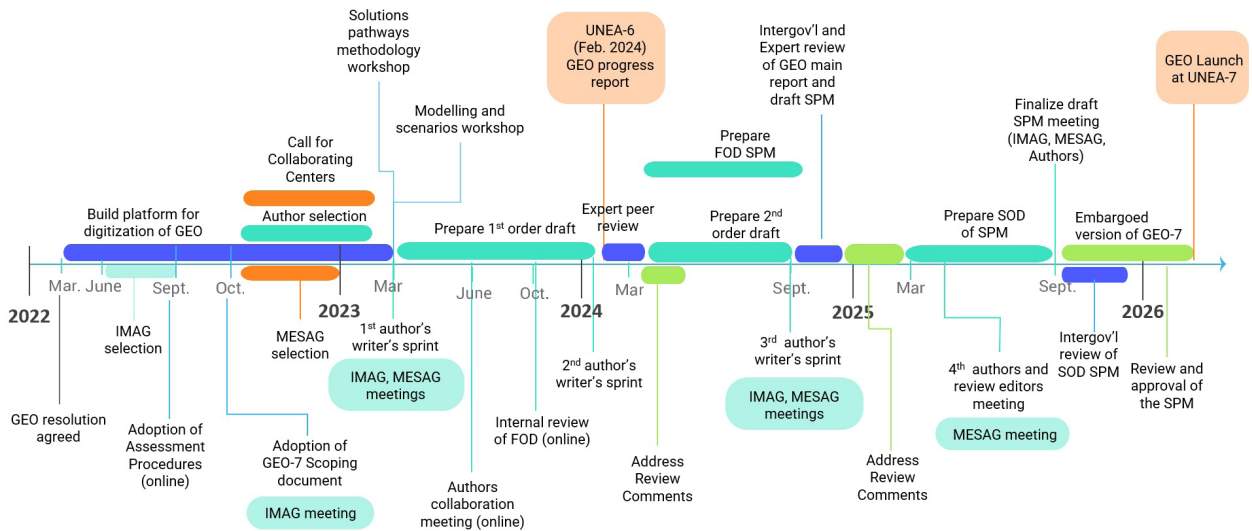
11 Collaborating centres could include the UNEP-GRID centres, educational institutions, national or regional research institutions, among others.

## 5 Overview of process for conducting comprehensive and thematic assessments

experts, government representatives, partners and stakeholders as indicated in Figure 4.1.

The various deliverables in the GEO process are prepared through steps that constitute key elements in the iterative and interactive process involving

Figure 5.1: Typical timeline and process for GEO deliverables. Higher resolution version is available here



IMAG = Intergovernmental and multi-stakeholder advisory group, MESAG = Multidisciplinary expert scientific advisory group, SPM = Summary for policy makers, FOD= First order draft, SOD = Second order draft, AHOM = Adhoc Open-ended Meeting



Presentation by Prof. Paul Ekins, GEO-6 co-chair during the Third Author's meeting of GEO-6 in China, October 2017. Credit: UNEP

## 6 Requests, prioritization and planning of additional functions of the GEO process

At the request of UNEA, the Executive Director may at regular intervals initiate the following process for receiving requests and undertaking prioritization and planning of GEO additional GEO functions::

- (a) The Secretariat invites submissions from Member States, experts and stakeholders on requests for environmental issues to be assessed or undertaken as part of the GEO process;
- (b) The secretariat administers physical or virtual consultations overseen by the Executive Director, with advice from the IMAG, with Member States, experts and stakeholders to facilitate submissions and prioritisations; and
- (c) The Executive Director, with advice from the IMAG,<sup>12</sup> will compile submissions and prepare a justified sequence for prioritisation of assessments in the form of a multi- year workplan.

The prioritization of supporting services to be provided by GEO will be conducted in a similar but separate way.

## 7 Scoping and design of GEO comprehensive and thematic assessments

Scoping and design is the process which defines a GEO assessment and the information and human and financial requirements needed for its preparation. It consists of the following steps:

- (a) **Scoping and design:** The scoping and design process is overseen by the Executive Director, with advice from the IMAG,<sup>13</sup> for policy relevance issues as well as the co-chairs and vice-chairs of the assessment, for overall feasibility. The process involves the preparation of a first draft scoping document to be considered by a physical, virtual or hybrid scoping workshop with the experts selected by the Executive Director, with the advice of the IMAG.<sup>14</sup> The draft scoping document is then submitted to Member States and stakeholders for

review. The scoping document should include the following scientific and technical elements:

- (i) Main environmental issues to be covered by the assessment or other activities in relation to the GEO functions;
- (ii) Main policy questions and users that might be addressed through the assessment or other activities;
- (iii) Scale and scope of the outlooks and scenarios to be presented in the assessment.
- (iv) Rationale and timeliness of the activity and how it will contribute to other processes or decisions;
- (v) Possible constituent chapters for any assessment report and the scope of each chapter;
- (vi) Any known significant limitations in the existing knowledge that will hinder undertaking the assessment;
- (vii) Potential additional activities and outputs that could be derived from an assessment and undertaken to support other functions of the GEO (e.g., capacity-building, policy support, and knowledge generation);
- (viii) Methodologies to be used;
- (ix) Geographic boundaries of the assessment; and
- (x) List of scientific disciplines, types of expertise and knowledge needed to carry out the assessment.

- (b) **Procedural or administrative elements** which might be included in the scoping document:

- (i) Overall activity schedule and milestones;
- (ii) Operational structures that might be necessary, and the roles and responsibilities of the various entities to be involved, including the identification of strategic partners in delivering the activity, and the

<sup>12</sup> The IMAG is encouraged to consult with the MESAG, specifically on matters related to scientific credibility, through the coordination group.

<sup>13</sup> The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment, through the coordination group.

<sup>14</sup> The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment, through the coordination group.

means by which the procedures for the implementation of the work programme will be carried out to ensure effective peer review, quality assurance and transparency;

- (iii) Estimated costs of the activity and potential sources of funding, including from UNEP core funding and other sources, as appropriate;
  - (iv) Capacity-building interventions that may be required to deliver the activity, which might be included as activities in the multi-year workplan;
  - (v) Communications and outreach activities that might be appropriate for the specific deliverable, including the identification of gaps in knowledge and required policy support; and
  - (vi) Consideration of data and information collection, processing, management, access, confidentiality and sharing for assessments, including local knowledge, citizen science, and Indigenous knowledge and data.<sup>15</sup>
- (c) Adoption:** The scoping document is considered for review and endorsement by representatives of Member States through adoption at ad hoc open-ended meetings. In case of rejection, which is only possible due to matters of scientific integrity, the representatives of Member States could request a re-scoping. If adopted, the scoping document would guide the preparation of the assessment as initiated by UNEA.

## 8 Nomination and selection of experts

### 8.1 Nomination and selection of co-chairs and vice-chairs of the assessment

The Executive Director will nominate, invite and select appropriate co-chairs, vice-chairs of the assessment and a rapporteur from the available assessment

experts, ensuring disciplinary, gender and geographic balance. Co-chairs, vice-chairs and rapporteurs of the assessment will be selected at a point in the GEO process that allows their input into key planning documents, such as assessment procedures and scoping documents as well as selection of authors for the assessment. Roles and responsibilities of the co-chairs and vice-chairs are provided [here](#)<sup>16</sup>.

### 8.2 Selection of coordinating lead authors, lead authors, fellows, and review editors

The Executive Director, with the advice of the IMAG<sup>17</sup>, through the GEO Secretariat, will request nominations from Member States, expert institutions and individuals to present names of experts to act as potential coordinating lead authors, lead authors, contributing authors, fellows, reviewers or review editors to participate in the preparation of reports.

The tasks and responsibilities of coordinating lead authors, lead authors, contributing authors, fellows, review editors and government-designated national focal points are outlined [here](#)<sup>18</sup>.

Coordinating lead authors, lead authors, fellows, reviewers and review editors are selected by the Executive Director, with advice from the IMAG and the co-chairs and vice-chairs of the assessment, from the lists of nominations. As part of its functions (see section 4.3), the MESAG will provide scientific oversight and advice on the selection of authors, fellows and review editors.

The composition of the group of coordinating lead authors, lead authors and fellows for a given chapter, report or summary should reflect the range of scientific, technical and socioeconomic views and expertise; geographical representation, with appropriate representation of experts from developing and developed countries and countries with economies in transition; the diversity of languages and knowledge systems<sup>19</sup> that exist; and gender balance.

Advice from the IMAG<sup>20</sup> and the co-chairs and vice-chairs of the assessment should, in the process, identify gaps in expertise, gender and geographical representation. The Executive Director, with advice

<sup>15</sup> Indigenous knowledge and data are subject to governance and sovereignty issues.

<sup>16</sup> [https://wedocs.unep.org/bitstream/handle/20.500.11822/40759/GEO\\_chairs\\_TOR.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40759/GEO_chairs_TOR.pdf?sequence=1&isAllowed=y)

<sup>17</sup> The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment through the coordination group.

<sup>18</sup> [https://wedocs.unep.org/bitstream/handle/20.500.11822/40472/GEO\\_TORs.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40472/GEO_TORs.pdf?sequence=1&isAllowed=y)

<sup>19</sup> Including Indigenous and local knowledge as well as citizen science.

<sup>20</sup> The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment, through the coordination group.



Group Photo during the Third Author's meeting of GEO-6 in China, October 2017.  
Credit: UNEP

from the IMAG<sup>24</sup> and the co-chairs and vice-chairs of the assessment, can subsequently identify and select additional expertise that has not been nominated in order to fill these gaps. As part of its functions (see section 4.3), the MESAG will provide scientific oversight during this gap filling exercise for selection of appropriate expertise in author teams, review editors and fellows.

The Executive Director, with advice from the IMAG<sup>24</sup> through the GEO Secretariat, will inform the representatives of Member States on the outcome of the selection process and the extent to which the above-mentioned considerations were achieved therein, and on the persons appointed to the positions of coordinating lead authors, lead authors, fellows and review editors for the various chapters. Every effort should be made to engage experts from the relevant regions on the author teams for chapters that deal with specific regions, but experts from other regions may be engaged when they can provide an important contribution to an assessment.

The co-chairs and vice-chairs of the assessment and selected coordinating lead authors and lead authors may enlist other experts as contributing authors to assist with the assessment work.

### 8.3 Nomination and selection processes for task forces, advisory groups and workshops

When appropriate, the Executive Director, through the GEO Secretariat, will request nominations from Member States, expert institutions and individuals to present names of experts to participate in task forces, advisory groups and workshops. The Secretariat will compile lists of such nominations, which will be made available to the Executive Director, who will, with the advice of the IMAG and MESAG, in their specific roles and responsibilities, then select experts from the lists of nominations

## 9 Preparation of comprehensive and thematic assessments

Intergovernmental and expert-led scientific assessment reports are prepared through a collective and iterative process as defined in these procedures. They could have a comprehensive scope and cover state, trends, policy options and outlooks or scenarios for all aspects of the human relationship with the environment, or they could have a thematic scope and cover only certain aspects of that relationship.

Co-chairs/vice-chairs of the assessment, coordinating lead authors, lead authors, contributing authors, fellows, reviewers and review editors of chapter teams

21 On advice and consultation with the MESAG, guidance on selection and inclusion of citizen science in GEO assessments will be developed.

22 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40473/GEO\\_Ind\\_know.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40473/GEO_Ind_know.pdf?sequence=1&isAllowed=y)

23 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40474/GEO\\_Lit.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40474/GEO_Lit.pdf?sequence=1&isAllowed=y)

24 The IMAG is encouraged to consult with the MESAG and the co-chairs and vice-chairs of the assessment, through the coordination group.

are required to deliver technically and scientifically credible and balanced assessments. Authors should use language that expresses the diversity of the scientific, technical and socioeconomic evidence, based on the strength of the evidence and the level of agreement on its interpretation and implications in the literature. Assessments should be based on publicly available and peer-reviewed literature, evidence and data in different languages, as well as reports and other authoritative and authenticated materials, including Indigenous and local knowledge, which may not be published in the peer-reviewed literature but is available to experts and reviewers. Guidance on the use of Indigenous and local knowledge, citizen science,<sup>21</sup> as well as grey literature can be found [here](#)<sup>22</sup> and [here](#)<sup>23</sup>. The authors should use confidence statements (discussed in Section 11 of these procedures) to communicate the level of confidence in the individual or collective findings of the assessment.

The working language of assessment meetings will normally be English. Subregional and regional components of the assessment reports may be produced in the most relevant of the six official languages of the United Nations. All summaries for policymakers presented to UNEA will be translated and made available in the six official languages of the United Nations and checked for accuracy by the experts involved in the assessments, prior to distribution by the GEO Secretariat.

The Executive Director, with the advice of the IMAG,<sup>24</sup> the MESAG, and the co-chairs and vice-chairs of the assessment, in their respective roles and responsibilities, will ensure that the reports are scoped, prepared and peer reviewed in accordance with the present procedures. All drafts are provided in confidence to participants in the process and are not considered to be for public distribution, quotation or citation. A form for requesting confidentiality from the participants in an assessment process is available [here](#)<sup>25</sup>. The process for preparation of a comprehensive global assessment includes the following stages:

## 9.1 Preparation and review of first order draft report

- (a) **Preparation of first order draft report.** The co-chairs/vice-chairs of the assessment, coordinating lead authors, lead authors and contributing authors prepare the first order draft of the report. The co-chairs/vice-chairs of the assessment, through the secretariat, should make available information to authors on the topics to be covered by the assessment and the time frame for contributing materials, which is informed by the scoping document:
- (i) Author contributions should be supported with references from other authoritative assessments, the peer-reviewed and internationally available literature as well as with copies of any unpublished material cited and outputs deriving from grey literature, Indigenous and local knowledge, and citizen science<sup>26</sup>. Guidance on the use of Indigenous and local knowledge as well as grey literature can be found [here](#)<sup>27</sup> and [here](#)<sup>28</sup>. Clear indications of how to access such material should be included in the contributions. For material available in electronic format only, the location where such material may be accessed, the date when it was accessed, and a soft copy of such material should be sent to the Secretariat for archiving.
  - (ii) Coordinating lead authors and lead authors will work on the basis of these contributions as well as other authoritative assessments, the peer-reviewed and internationally available literature. Unpublished material, outputs deriving from Indigenous and local knowledge, citizen science and grey literature, may be used in assessments, provided that their origin is fully authenticated, and their inclusion is fully justified in the context of the GEO's assessment process and that their unpublished status is specified. Such materials will need to be made available for the review process and their sources identified by the co-chairs and vice-chairs of the assessment, who will ensure that appropriate knowledge and data safeguards are in place<sup>29</sup>.

25 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7\\_conf\\_%20form.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7_conf_%20form.pdf?sequence=1&isAllowed=y)

26 On advice of MESAG, guidance to be developed.

27 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40473/GEO\\_Ind\\_know.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40473/GEO_Ind_know.pdf?sequence=1&isAllowed=y)

28 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40474/GEO\\_Lit.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40474/GEO_Lit.pdf?sequence=1&isAllowed=y)

29 Including, among others considerations, honoring Indigenous data governance and sovereignty

(iii) In preparing the first order draft of a report and at subsequent stages of revision after review, lead authors should clearly identify disparate views for which there is significant scientific, technical or socioeconomic support, together with the relevant arguments. Sources of uncertainty should be clearly identified, listed and quantified, where possible. The implications for decision-making using these findings, including knowledge gaps, contrasting evidence and minority opinions, should be explicitly discussed.

**(b) Review of first order draft report.** The first order draft of the report is peer reviewed by experts in an open and transparent process using established peer review guidelines. Expert review should normally be allocated up to eight weeks, but not less than six weeks, except by a decision of the Executive Director, with advice from the IMAG and the MESAG; in their specific roles and responsibilities.

## 9.2 Preparation and review of the second order and subsequent drafts of assessment reports and the first order and subsequent drafts of the summary for policymakers

- (a) The co-chairs/vice-chairs of the assessment, coordinating lead authors, lead authors and contributing authors shall prepare the second order and subsequent drafts of the report under the guidance of the Executive Director, with advice from review editors, MESAG and the IMAG, in their specific roles and responsibilities;
- (b) Quality assurance steps such as plagiarism checking, citations and reference checking, science and copy editing will be conducted in parallel with the final intergovernmental and expert peer review of the main report and be the responsibility of the Secretariat. Authors will be expected to work with the Secretariat to make the required changes to the text to ensure the highest level of quality of the publication.
- (c) The co-chairs/vice-chairs of the assessment and coordinating lead authors should prepare the first order and subsequent drafts of the summary for policymakers under the guidance of the Executive Director, with advice from the MESAG and the

IMAG, in their specific roles and responsibilities, who will assist the authors to ensure that the summary includes the appropriate policy-relevant materials;

- (d) The second order and subsequent drafts of the assessment report and the first order and subsequent drafts of the summary for policymakers are reviewed by both Governments and experts in an open and transparent process. Government and expert reviewers should not be allocated less than eight weeks, except by decision of the Executive Director, with advice from the IMAG and the MESAG, in their specific roles and responsibilities;
- (e) The co-chairs/vice-chairs of the assessment, coordinating lead authors, lead authors and contributing authors shall prepare final drafts of the scientifically referenced report which presents the state of knowledge accompanied by confidence level statements under the guidance of the Executive Director, with advice from review editors, the MESAG and the IMAG, in their specific roles and responsibilities. The text of the main report is attributed to the experts who have contributed to the assessment in accordance with their roles, affiliations and contributions;
- (f) The co-chairs/vice-chairs of the assessment as well as coordinating lead authors prepare final drafts of the summary for policymakers which highlight key messages and summarised findings with confidence statements and references to the analysis in relevant sub-chapters of the full report under the guidance of the Executive Director, with advice from the MESAG and the IMAG, in their specific roles and responsibilities. The summary is attributed to the experts and staff who have contributed to the summary in accordance with their roles, affiliations and contributions; and
- (g) The summary for policymakers is translated into the six official languages of the United Nations and prior to distribution is checked for accuracy by the experts involved in the preparation of the assessment.

All contributors to the report, including peer reviewers, should be acknowledged through the acknowledgements section, as required in the UNEP Publishing Guidelines.

Additional guidance on drafting Executive Summaries for individual chapters and preparing Summaries for Policymakers is provided [here](#)<sup>30</sup>.

### 9.3 Acceptance of the assessment report and approval of the summary for policymakers

- (a) The embargoed version of the final main assessment report, as a reference document, and the second-order draft of the summary for policymakers, are sent to Governments in preparation for the for final review meeting ;
- (b) Governments are strongly encouraged to submit written comments to the Secretariat on the second-order draft of the summary for policymakers at least two weeks prior to any ad hoc open-ended meetings. These comments will assist the co-chairs/vice-chairs of the assessment and coordinating lead authors in preparing for the detailed consideration of the summary for policymakers at an ad hoc open-ended meeting pursuant to article 10(f) of Resolution 5/3. No revised draft will be presented, but the co-chairs/vice-chairs of the assessment may be invited by the representatives of Member States to table responses to received comments at the session;
- (c) The Ad hoc Open Ended meeting, while taking note of the validation provided for the IMAG and MESAG for the GEO process and as a matter of formality and without discussion of content, will accept the full report, if the validation indicates that all procedures have been followed;
- (d) The ad-hoc open-ended meeting will review and Member States may approve through a line-by-line discussion, the summary for policymakers as set out in section 4 of these procedures (see definitions of endorsement processes in section 3); and
- (e) The following will be made available on the GEO's website as soon as possible after endorsement by the representatives of Member States and the finalization of a report or technical paper:
  - (i) Drafts of GEO reports, in digital format, and the associated technical papers that have been submitted for formal expert and/or government review;

- (ii) Government and expert review comments; and
- (iii) Authors responses to those comments.
- (iv) Final accepted report and approved summary for policymakers

### 9.4 Preparation of thematic assessments

Thematic assessments are prepared on scientific, technical and socioeconomic issues that are deemed appropriate and requested by the United Nations Environment Assembly. Such reports are prepared in the same way and subject to the same acceptance and approval procedures as comprehensive global assessment reports.

## 10 Outreach and awareness raising

The Executive Director, with the assistance of the Secretariat, shall be responsible for planning, funding and organizing outreach and awareness-raising activities during the assessment process and after the publication of the assessment to ensure maximum understanding of the process for developing the assessment as well as take-up of the findings by the intended audiences.

These outreach and awareness-raising activities could include, among others:

- Organising outreach events at specific meetings during the GEO process;
- Producing outreach, awareness-raising, educational and information materials that can be delivered by virtual means;
- Organising science-policy seminars that can be delivered for Member States and other actors to help in the understanding of the implications of the GEO findings; and
- Outreach and awareness-raising to the media and UNEP national focal points, without releasing preliminary results.



## 11 Assessment of confidence

### 11.1 Qualitative assessment of confidence

Assessments and their summary for policymakers include a qualitative assessment of confidence associated with their main findings. The following factors will be considered to evaluate the validity of the message or finding: the type, quantity, quality and consistency of evidence (e.g. the existing peer reviewed literature and grey literature), as well as the level of agreement (the level of concurrence in the data, literature and amongst experts, not just across the author team). The author team's expert judgement on the level of evidence and agreement will then be used to apply a confidence term as described below and in Figure 11.1:

- (a) **Inconclusive** – existing as or based on a suggestion or speculation; no or limited evidence. Will typically be used infrequently but is intended to provide authors with the flexibility to emphasize issues that are not established in science but that are important to policymakers or might have been highlighted by a different audience.
- (b) **Unresolved** – multiple independent studies exist but conclusions do not agree.
- (c) **Established but incomplete** – general agreement although only a limited number of studies exist but with no comprehensive synthesis, or the studies that do exist imprecisely address the question.

- (d) **Well established** – comprehensive meta-analysis or other syntheses/multiple independent studies that agree. The 'well-established' box in Figure 11.1 may be further subdivided in order to give author teams the flexibility to emphasize key messages and findings that the author team has very high confidence in:

- (i) **Very well established** – very comprehensive evidence base and very low amount of disagreement.
- (ii) **Virtually certain** – very robust data covering multiple temporal and spatial scales and almost no disagreement.

The qualitative confidence terms discussed in this section should not be interpreted probabilistically and are distinct from "statistical significance". The degree of confidence in findings that are conditional on other findings should be evaluated and reported separately.

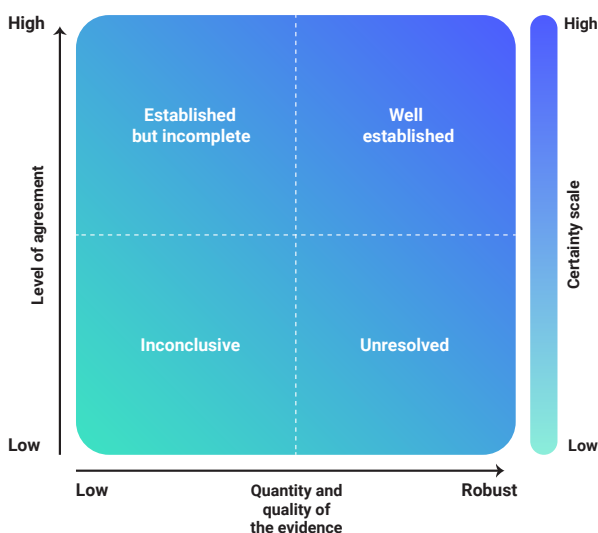
### 11.2 Quantitative assessment of confidence

Where possible, quantitative assessments of confidence will be communicated as likelihoods. Likelihood expresses a probabilistic estimate of the occurrence of a single event or of an outcome within a given range. Probabilistic estimates are based on statistical analyses of observations or model results, or both, combined with expert judgment.

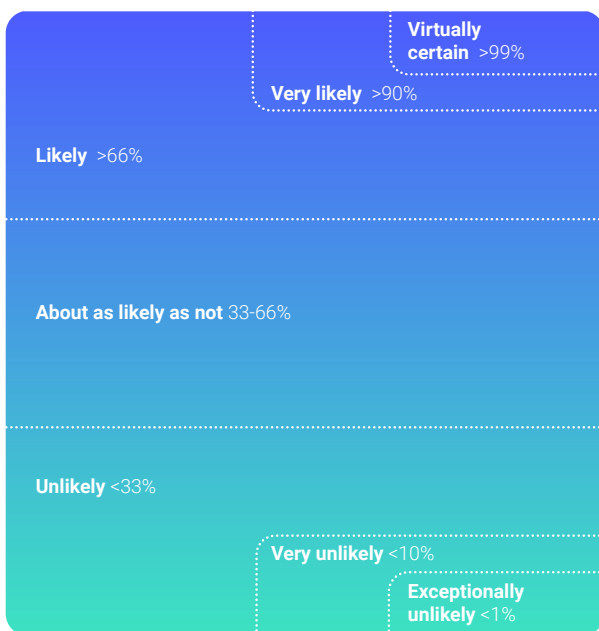
When sufficient probabilistic information is available, consider ranges of outcomes and their associated probabilities with attention to outcomes of potentially high consequence. The author team's expert judgement on the magnitude of the probability should then be used to apply a likelihood term (see Figure 11.2).

Categories in Figure 11.2 can be considered to have nested boundaries. For example, describing an outcome as *likely* or *very likely* conveys in both cases that the probability of this outcome could fall within the range of >90% probability. However, in the case of *likely*, the larger range (66-100%) indicates a higher degree of confidence than *very likely* (>90%). In making their expert judgement, author teams should start at *about as likely as not* and consider whether there is sufficient quantitative information available to assign either a *likely* or *unlikely* probability range. Only after considering this initial range should the author teams consider whether there is sufficient evidence

Figure 11.1: Qualitative Assessment of Confidence Statements



**Figure 11.2: Quantitative Assessment of Confidence Statements**



to move to more extreme levels of probability. Author teams should note that using a likelihood term for a specific outcome implies that alternative outcomes have the inverse likelihood, e.g. if an outcome is **likely** (a range of >66%) then that would imply that other outcomes are **unlikely** (<33% probability).

## 12 Addressing possible errors following the publication of an assessment

The peer and intergovernmental review processes described above should ensure that errors are eliminated well before the publication of GEO reports. However, if a reader of an accepted GEO report, approved Summary for Policymakers or finalized thematic assessment finds a possible error (e.g., a miscalculation or a factual inaccuracy) the issue should be brought to the attention of the Secretariat, which will implement the following process for error correction.

The Secretariat will in the first instance ask the co-chairs/vice-chairs of the assessment to investigate and rectify the possible error in a timely manner, reporting back to the Secretariat on the conclusion. If the co-chairs/vice-chairs find that an error has been made, the Secretariat will notify the Executive Director who, after consultation with the IMAG and MESAG, in their specific roles and responsibilities, will decide on the appropriate remedial action in consultation with the co-chairs/vice-chairs. This remedial action

may include an assessment of the implications of the error and the publication of a provisional correction and an accompanying assessment of the impact of the error on the main GEO report and/or its summary for policymakers, to be made available on the GEO website. The correction would be subject to consideration and ratification by the Executive Director. If the error concerns a passage subject to the approval of Member States, the correction should also be subject to the review of representative Member States via a silence procedure conducted by e-mail. Any correction to the report that is required must be made without undue delay. If no remedial action is deemed necessary, a written justification from the Executive Director and the co-chairs/vice-chairs of the assessment (upon advice from the IMAG and MESAG, in their specific roles and responsibilities) must be provided to the claimant and/or the representatives from Member States.

## 13 Conflict of interest

This procedure applies to the senior leadership of the GEO process, namely, members of the IMAG, the MESAG and any other subsidiary bodies contributing to the development of deliverables, authors with responsibility for report content (including co-chairs/vice-chairs of the assessment, coordinating lead authors, lead authors and contributing authors), review editors, collaborating centres and the professional staff to be hired to work in a collaborating centre or technical support unit established by the GEO process. The procedure applies to the development of any and all deliverables of the GEO. The application of the conflict-of-interest policy to persons elected to or selected for positions in the GEO process should reflect their specific responsibilities.

For the purposes of this procedure, any circumstances that could lead a reasonable person to question either an individual's objectivity, or whether an unfair advantage has been created, constitute a potential conflict of interest. A "conflict of interest" refers to any current interest of an individual that could:

- Significantly impair the individual's objectivity in carrying out his or her duties and responsibilities for the GEO process; and
- Create an unfair advantage for any person or organization.

Significant and relevant interests to be disclosed may include but are not limited to: membership

of advisory groups associated with private sector organizations and of the boards of non-profit or advocacy groups. Such associations do not necessarily constitute a conflict of interest, however, financial interests should be disclosed if significant and relevant, and may include, but are not limited to: employment relationships, consulting relationships, financial investments, intellectual property interests, commercial interests and sources of research support. Individuals should also disclose the significant and relevant financial interests of any person with whom the individual has a substantial business or relevant shared interest, such as close family members.

In order to prevent situations in which a conflict of interest may arise, individuals directly involved in or leading the preparation of deliverables of the GEO process should avoid being in a position in which they are required to approve, adopt or accept, on behalf of any Member State, the text that he or she was directly involved in drafting.

Nominees for senior leadership positions of the GEO process, as defined above, should all submit the conflict-of-interest disclosure form which can be found [here](#)<sup>31</sup>, prior to their appointment. At the same time as conflict of interest is disclosed, agreement on the copyright and confidentiality provisions of the GEO process can also be provided, in the same form. The Secretariat will review the forms and may request additional information and advice as appropriate. If the Secretariat determines that a nominee has a conflict of interest that cannot be resolved, the nominee will not be eligible for appointment.

Everyone holding senior leadership positions in GEO process should inform the Secretariat of any changes in the information provided in their previously submitted conflict of interest disclosure forms as they arise. The Secretariat will review the updated information and together with the Executive Director, with the advice of the IMAG and MESAG, in their specific roles and responsibilities, determine whether the relevant individual has a conflict of interest that cannot be resolved, in which case the individual will no longer be eligible for the position.

All [conflict-of-interest forms](#) will be submitted to the Secretariat, which will securely archive such forms, together with any records of the deliberations and/or decisions of the Secretariat, the Executive Director and the IMAG or MESAG and retain them for a period of five years after the end of the individual's participation in the role that required the review, after which such information will be destroyed. Subject to the requirement to notify the existence of a conflict of interest to others, the forms will be considered confidential and will not be disclosed or used for any purpose other than the consideration of conflict-of-interest issues under the current procedures without the express consent of the individual providing the information and a decision of the Secretariat, the Executive Director and the IMAG or MESAG.

An example of a conflict of interest declaration form can be found [here](#)<sup>32</sup>.

31 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7\\_conf\\_%20form.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7_conf_%20form.pdf?sequence=1&isAllowed=y) . This form also included copyright and confidentiality provisions.

32 [https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7\\_conf\\_%20form.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/40471/GEO-7_conf_%20form.pdf?sequence=1&isAllowed=y)

## **Annex I: Procedural guidance for interaction with authors**

This document provides guidance on how the advisory bodies of the Global Environment Outlook should interact with the authors or author teams during the drafting process of the report. The Global Environment Outlook process has been designed to ensure robust interaction between the advisory bodies of the process and the other participants in the process, mainly the authors drafting the report. In order to ensure that scientific credibility of the process is maintained, some basic rules must be observed during these interactions.

### **Avoiding undue influence**

Authors are asked to contribute to the Global Environment Outlook in their professional capacity as experts in their field. They are meant to provide a balanced view of the issues they have been asked to assess. The perception that no undue influence has been applied to the authors, thereby potentially distorting this balanced view, is extremely important to the scientific credibility of the Global Environment Outlook and the expectations of Member States.

For this reason, all interactions between the authors and the Global Environment Outlook advisory bodies must occur in a group setting. Individual, one on one, interaction between advisory body members and individual authors is discouraged due to the perception of undue influence that this may bring to the Global Environment Outlook process.

### **Types of guidance to be provided to authors**

Advisory bodies can offer a wide range of guidance to authors which may or may not be beneficial to the drafting process. Each advisory body is guided by a Terms of Reference and a scope of responsibility. This is due to the areas of expertise and responsibility that each member of the advisory bodies was first selected to provide to the body.

For this reason advice and guidance from the advisory bodies to authors or author teams should remain within the bounds of the Terms of Reference of that particular advisory body. The type of advice provided should be guided by the respective areas of expertise and responsibility that have been given to particular advisory bodies and its members.

## **Interactions with the co-chairs and vice-chairs of the assessment of the Global Environment Outlook**

The co-chairs and vice-chairs of the assessment of the Global Environment Outlook have been selected for their managerial and coordination competencies as well as their areas of technical and scientific expertise. They have been tasked to act as a communication bridge between the more technical/scientific author teams and the advisory bodies and their members. This is meant to facilitate communication and understanding of the issues that are presented to authors or advisory body members.

For this reason, co-chairs and vice-chairs are encouraged to interact with advisory body members in order to obtain their advice and guidance. These interactions can be one on one or as a group. Co-chairs and vice-chairs should synthesize and consolidate this information for the author teams in order to improve the efficiency and effectiveness of this communication.

### **Communication of undue influence**

Although every effort may be made by advisory body members to minimize perceived or actual undue influence, situations may arise where authors feel that this behaviour has occurred. It is important that authors feel free to communicate to the co-chairs and vice-chairs of the assessment about these situations and that they feel action will be taken to address the situation.

For this reason, authors should communicate to the co-chairs or vice-chairs of the assessment about any situation where they perceive that undue influence may be occurring. Authors should not fear reprisal for informing the co-chairs or vice-chairs of the assessment of these situations. Co-chairs and vice-chairs of the assessment should communicate these situations to the Secretariat for appropriate action.

