

**GLOBAL ENVIRONMENT OUTLOOK SEVENTH EDITION (GEO-7) ASSESSMENT SECOND ORDER
DRAFT REVIEWER GUIDELINES**

July 2024

General

The Global Environmental Outlook (GEO) is UNEP's flagship intergovernmental and expert-led environmental assessment. The focus of the upcoming seventh edition of the Global Environment Outlook (GEO-7) is on **action for a healthy planet**. GEO-7 will continue to assess the state and trends in the global environment, the solutions pathways to an environmentally sustainable world, as well as provide an outlook that provides useful guidance on the possible environmental and socio-economic implications of the needed transformational changes.

The Proposed solutions pathways in GEO-7 will show how the transformation of the interdependent global energy, food and materials/waste systems and their supporting economic and financing models and environmental systems can help solve the Global Environment crises.

GEO-7 will incorporate evidence from diverse knowledge systems including Indigenous knowledge and local knowledge (IK & LK), and behavioural, social and cultural sciences as common threads across chapters. Authors have also been requested to assess how the need to adapt to a changing climate will affect the various proposed solutions and outcomes. Additionally, GEO-7 will consider key elements such as equity, gender, impacts on livelihoods, etc.

The GEO-7 report contains 21 chapters split across five parts (a full list of these can be found in Annex 1).

Reviewing the seventh edition of the Global Environment Outlook global assessment (GEO-7)

As agreed during the Ad-Hoc Open-Ended Meeting that produced the Assessment Procedures and Supporting Functions for the GEO-7 in September 2022, expert reviewers should be invited to comment on the accuracy and completeness of the scientific, technical and socioeconomic content, including the overall balance of these aspects across the drafts. Expert reviewers are asked to comment on text in their individual expert capacity and within their areas of knowledge and experience. The names of all expert reviewers will be acknowledged in the final report. Consensus expressed in the publication does not imply a single view but can incorporate a range of views, based on the evidence.

United Nations Avenue, Gigiri

In reviewing the Second Order Draft of the GEO-7, expert reviewers are expected to keep in mind the theme(s) of the assessment, namely the required ‘**Actions for a Healthy Planet**’ in response to the impacts of the interlinked crises of climate change, biodiversity loss, pollution and waste, together with land degradation. Note this theme(s) should be apparent in all the chapters. UNEP through its guidelines for [Peer Reviewers](#) recommends that peer reviewers complete the [Certified Peer Reviewer course from Elsevier Academy](#).

The Second Order Draft review period runs from 1 Nov - 15 Jan 2025.

In conducting your review, we are requesting you to focus your comments based on your area of expertise. You may also provide comments on other chapters if there is a reasonable link to your area of expertise. In doing so please take note of the following:

1. Submit your review comments in English in the Global Environment Outlook Review Editing Analytical Database (GEO-READ), which will be accessible during the peer review process, following the guidelines shared by the secretariat (see below). ***Comments provided outside the GEO-READ platform via email or in any other format will not be accepted. Comments not provided in the correct way on the platform (i.e., with complete metadata for each comment) may not be addressed properly and will not be traceable.***
2. In case of general or overview comments on the entire report or chapter please clearly label the chapter(s) that these refer to by number and name or indicate if they refer to the entire report.
3. Specific comments on the material in the chapter should follow the general comments and must be labelled by page number and line number.
4. Comments that refer to a table or figure should identify the page number and the table or figure number. In the case of tables, please also identify the row and column to which the comment refers.
5. ***Please refrain from commenting on grammar, spelling, or punctuation, unless it affects the meaning or clarity of the presentation. Professional and science editing will be performed on the final draft.***
6. ***Please refrain from adding comments that simply agree with the draft; rather, please provide comments that can develop it further.***

You are encouraged to:

- suggest specific remedies for identified shortcomings of the draft report;
- point out other priority, emerging and cross-cutting issues or evidence which may not have been highlighted but would be considered a serious omission if these were left out of the final report, and include details of appropriate sources/references (references should be 2019 onwards unless seminal work) that support these findings;
- point out any errors, inconsistencies and/or contradictions of facts/data within and across different sections/chapters;

- indicate any information which they consider might be moved to another Chapter, or which might be duplicated in another chapter or section of the document;
- indicate any information which might be particularly appropriate for graphical presentation rather than as text;
- indicate any information which you consider might be better placed in a box rather than in the main text (and vice versa);
- indicate any information which might be moved to a technical annex of the chapter;
- point out non-essential material that could be deleted, with explanations, if appropriate, about why a change needs to be made;
- indicate where additional referencing/citing or cross-referencing between sections is needed;
- ensure the methods, analysis and interpretation presented in the manuscript are appropriate and robust;
- provide additional source documents (with full reference details, references should be 2019 onwards unless seminal work), information and data, including boxes and other illustrations to enrich the chapters or to fill data gaps or update existing data, if necessary;
- provide suggestions for alternative boxes and illustrations;
- when commenting please consider the major messages of the chapter, and the report as a whole;
- assess the clarity of key messages, conclusions, and overall narrative flow;
- indicate the major policy strengths and weaknesses clearly evident from the analysis, if these are not already included.

See **Annex 1** below on the peer reviewer checklist that has questions to keep in mind while reviewing the draft.

In order to provide feedback that can be used to improve the draft, see the example below.

Unhelpful feedback: *“This section is unclear.”*

More helpful feedback: *“This section would be clearer if you gave specific examples of the ways in which microplastics negatively impact marine ecosystems.”*

The estimated time commitment for this role could be up to 2-3% of an expert’s time over the duration of the GEO-7 production. Some periods may be busier than others.

Please do not cite or quote the draft report other than in your review. Please do not represent any material in the draft report as reflecting the preliminary GEO-7 assessment findings.

Ethical Responsibilities of Reviewers

- **Competence:** Reviewers should accept responsibility for reviewing a chapter only if they have adequate expertise to provide an authoritative assessment of the chapter. It is the responsibility of the reviewer to make his/her degree of competence known to the Secretariat.

- **Confidentiality:** Draft chapters/manuscripts of the GEO-7 Assessment are confidential materials; the reviewer should not share or discuss the content of the chapters with anyone outside the review process unless necessary and approved by the Secretariat and the coordinating lead authors.
- **Conflict of interest:** A potential reviewer with a conflict of interest or risk of bias should either decline the role of reviewer or disclose the conflict of interest to the Secretariat. Where in doubt, reference should be made to the criteria for selection of reviewers coordinated by the Secretariat.
- **Constructive critique:** Reviewers are requested to provide comments that would help authors improve the contents of the chapters. Positive aspects of the material under review should be acknowledged and negative aspects identified constructively, with an indication of needed improvements. It is important to note that comments are intended to be suggestions to authors to improve the chapters; hence should be in an encouraging tone.
- **Specificity:** Reviewers should be as specific as possible in their comments. Their judgements should be explained and supported clearly, such that the editors and authors can understand the basis for the comments.
- **Integrity:** All comments should be impartial and objective, written with integrity in mind, and capable of withstanding public scrutiny.
- **Timeliness:** Reviewers are expected to respond to the request for review and submit their comments in accordance with the overall GEO-7 work plan and production schedules.

Using the GEO-READ Platform to Provide Comments on the Second Order Draft of the GEO-7 Report

To streamline and enhance the efficiency of the peer review process, we are using the online GEO-READ platform. The following instructions will guide you through providing comments on the Second Order Draft using this platform.

1. Platform Introduction:

GEO-READ is a user-friendly platform designed to improve the peer review processes for GEO and other UNEP publications.

It transparently nominates and selects peer reviewers and streamlines the process of providing and addressing comments.

Reviewers will receive system-generated emails containing their login credentials and the link to access the GEO-READ platform.

2. Logging In:

Use your provided credentials to log in to the GEO-READ platform.

3. Navigating to "About":

Once logged in, locate the top menu bar and click on "About" to learn more about the platform.

4. Accessing Module Tutorials:

On the "About" page, you will find various module tutorials that offer detailed guidance on using the platform.

These tutorials are designed to provide step-by-step instructions for seamless navigation and effective use of the platform. Should you encounter any challenges or have questions, the tutorials are a valuable resource for assistance.

Annex 1: Peer Reviewer Checklist

- Is the rationale for the work clear and based on a sound foundation of science?
- Is the scientific methodology/design that underpins the publication sound (including any analysis) and has this been documented?
- Is the content current and does this work fill an identified gap?
- Does the publication build on previous research on the same topic area, and is it in line with other assessment positions and data on the same?
- Is the report concise, well written and targeted?
- Is the report logical and do the findings address the intended purpose of the report?
- Are the research materials and methods used by the author explained clearly and are they linked to the results?
- Does the discussion/conclusion clearly support the analysis and results?
- Is content appropriately referenced both in text and in the reference list with peer reviewed references?
- Are tables and figures appropriately labelled?
- In terms of scientific content and accuracy, is the report ready for publishing?

Annex 2: List of GEO-7 sections and chapters

Section and chapter	Description
Part A: Overview and Context	
Chapter 1: Introduction	This chapter will include a review of the main findings of the GEO-6, IPCC, IPBES, IRP, GSDR MPWN and other reports (including an explanation of the value-added of GEO-7), explanation of the solutions-focused approach and the rationale for why this is needed now. It will also discuss the innovative nature of this GEO including its digital transformation, the analytical approach and the assessment frameworks to be used, the wider policy context and the relative progress on environmental goals. Finally, it will discuss the likely relevance of GEO findings for other multilateral environmental agreements and processes, a description of the GEO-7 conceptual and methodological approach for the pathways analysis and finally the chapter structure.
Chapter 2: Historical, current and projected drivers and pressures of environmental change	An assessment of human-environment interactions using the DPSIR framework. The drivers include: demographic; economic and financial; urbanization; science and technology; cultural, social; political and institutions; and shocks. Examples of pressures on the environment include: land-use change; resource exploitation; emissions of GHGs; pollution (including chemicals); conflict, diseases and pandemics as well as human-made disasters and invasive alien species. This section will assess current and potential future interactions among and between the drivers and the pressures. Diverse knowledge systems, including Indigenous knowledge and local knowledge, will be used within this framework. This DPSIR framework will be applied in conjunction with other frameworks, (e.g., the United Nations Secretary General's Global Sustainable Development Report (GSDR) levers and entry points, IPCC's sustainability framework, IPBES's nature futures framework, among others) when assessing the opportunities and barriers for transformational change.
Part B: state and trends of the environment	
Global Environmental Crises Chapeau	This text explains what the planetary crises are, how they interact with each other, how the impact the environmental, social and economic systems and how the transformation of key human systems will help solve these crises.
Part B IK&LK Chapeau	These short texts (500 words for each part) will focus on the Indigenous conceptualizations of the concepts being discussed in GEO-7. They will look at how Indigenous Peoples conceptualize drivers of environmental change, impacts on key environmental systems, expected future trends, intentionally transforming key systems, regional impacts and implications. In addition to the chapeaux texts, Indigenous knowledge will be embedded into the individual chapters where it is appropriate.
Chapter 3: Air	This chapter begins with a brief chapeau about the Global Environment crises. The rest of this chapter includes knowledge of the state of the environment for Air. For example, air pollution, greenhouse gas emissions, ozone depletion, persistent organic pollutants, heavy metals and toxins. A description of how air is impacted by the Global Environment crises
Chapter 4: Land and soils	This chapter includes knowledge of the state of the environment for Land and soils. For example, land degradation, agricultural production, land use change, desertification. A description of how land and soils are impacted by the Global Environment crises considering the need to adapt to climate change.
Chapter 5: Oceans and coasts	This chapter includes knowledge of the state of the environment for Oceans. For example, fish production, ocean acidification, and waste in the ocean. A description of how oceans and coasts are impacted by the Global Environment crises.
Chapter 6: Freshwater	This chapter includes knowledge of the state of the environment for Fresh water. For example, water quantity, quality, infrastructure and ecosystems. A description of how freshwater is impacted by the Global Environment crises.

Chapter 7: Implications of environmental change on the SDGs, and internationally agreed environmental goals	Implications of environmental change on the SDGs, including: poverty, food production and hunger and related cross-cutting issues, e.g. migration, water quantity and quality, human health and wellbeing, rehabilitating land and soil, affordable and clean energy, decent work and economic growth, gender equality and socioeconomic equity, peace and security, environmentally sustainable cities and communities.
Chapter 8: Interlinkages across environmental changes, scales and geographic regions and sub-regions	The analysis will provide the regional specificities and interlinkages across these environmental issues, including: environmental changes that are intertwined as well as the priority issues for the five UN regions and sub-regions within these.
<p>Part C: system transformation and outlooks</p> <p>The Outlooks Chapters explore the implications of a continuation of today's policies and practices, as well as two alternative transformation pathways to address the planetary crisis. Two types of scenarios are developed for GEO-7. The current trends scenario represents a continuation of current policies and practices and is used to assess the environmental and socioeconomic implications of not addressing the planetary crises. The two transformation pathways are normative scenarios that describe alternative combinations of solutions to address the planetary crisis. They are used to explore alternative routes to a desired future, including required effort and interaction across systems, defined by internationally agreed goals. These goals include limiting global warming, halting and reversing biodiversity loss, improving air quality in cities, and achieving land degradation neutrality, alongside ending hunger and achieving universal access to modern energy services and safe water and sanitation.</p> <p>The two transformation pathways outline a technology-focused transformation and a behavior-focused transformation. The transformation pathways tell different stories about needed strategies or solutions for system transformation to address the planetary crisis. The <i>technology-focused transformation pathway</i> describes a highly globalized world that relies primarily on technological development and efficiency gains. The <i>behaviour-focused transformation pathway</i> describes a world in which society transforms its core values, beliefs and norms, moving away from human exceptionalism, materialism and consumerism.</p> <p>Assessing alternative transformation pathways allow to explore the required extent of the transformation, as well as synergies and tradeoffs across measures and systems. The transformation pathways are not predictions, nor is there any likelihood attached to them. Instead, they are intended to act as illustrative archetypes, showing that there are multiple ways of achieving the desired future. They project trends and provide context for how different interrelated systems may dynamically evolve and what their environmental and socioeconomic implications are, under different sets of internally consistent assumptions. Contrasting the projections of these pathways allows to explore how different dynamics, synergies, and trade-offs are related to socio-economic and technological developments.</p>	
Part C IK&LK Chapeau	These short texts (500 words for each part) will focus on the Indigenous conceptualizations of the concepts being discussed in GEO-7. They will look at how Indigenous Peoples conceptualize drivers of environmental change, impacts on key environmental systems, expected future trends, intentionally transforming key systems, regional impacts and implications. In addition to the chapeaux texts, Indigenous knowledge will be embedded into the individual chapters where it is appropriate.
Chapter 9: Approaches, methodology and philosophy	This chapter will outline the methodological approaches supporting the GEO-7 outlooks.
Chapter 10: Staying on the path we are on – global implications	Staying on the path we are on – global implications: this chapter will present the business-as-usual scenarios, including ‘with and without policy commitments’ scenarios, including the environmental and socioeconomic impacts of inaction.
Chapter 11: Transformation pathways – global implications	This chapter will present the target-seeking scenarios and their environmental and socio-economic implications.

<p>Part D: solutions pathways towards transformation</p> <p>It focuses on “how” to achieve internationally agreed environmental goals while also being “socially sustainable”. It assesses how to transform the economic and finance (Chapter 14), material/waste/circularity (Chapter 15), energy (Chapter 16), and food (Chapter 17), systems, and how to transform the way the environment is managed (Chapter 18). Solution pathways, which are a combination of solutions and actions, are developed for each system, assessing the implications of each solution pathways on the other systems. The goal is to manage each of these inter-connected systems together, recognizing synergies and potential trade-offs</p>	
Part D IK&LK Chapeau	These short texts (500 words for each part) will focus on the Indigenous conceptualizations of the concepts being discussed in GEO-7. They will look at how Indigenous Peoples conceptualize drivers of environmental change, impacts on key environmental systems, expected future trends, intentionally transforming key systems, regional impacts and implications. In addition to the chapeaux texts, Indigenous knowledge will be embedded into the individual chapters where it is appropriate.
Chapter 12: What are the elements and levers of transformative change?	What are the elements and levers of transformative change? This chapter will introduce the concepts of levers and entry points presented in GSDR 2019 and other assessments and explain the issues involved in the transformations that are needed to implement environmentally sustainable sectoral and cross-sectoral planning and management approaches for interdependent systems of energy, food as well as materials/waste and their supporting economic and financing models, especially as they affect the global environment and other SDGs. Some actions are transformative,

	<p>while other enabling actions are not in themselves transformative but lead to transformation, for example incentivizing innovations and development of new technologies. This section will also highlight the opportunities and barriers for transformative change, the transformative potential of the concepts embedded in a circular economy, and address issues such as lock-ins and the various levers, synergies and trade-offs identified in different reports, including:</p> <ul style="list-style-type: none"> • Economic and financial: e.g., identifying and eliminating, phasing out or reforming environmentally harmful subsidies embedded in current economic models, alignment of investments of financial institutions and the private sector with principles of environmental sustainability, use of inclusive wealth in decision making (built, human and the diverse values of nature), internalization of externalities, embracing a circular economy, international trade, and transitioning to an environmentally sustainable green and blue economy, e.g., payment for ecosystem services, • Scientific and technological: e.g., technologies that facilitate the transition to a low-carbon economy, environmentally sustainable practices in natural resources use and agriculture, nature-based solutions, digital transformation and circular economy and accessibility to promote their use in low- and middle-income countries, • Institutional and political: e.g., polycentric governance and inclusiveness, • Social, cultural and behavioural: e.g., poverty, demography, employment, consumption patterns, gender, equity, justice, preferences and lifestyles, <p>Diverse knowledge systems: e.g., Indigenous knowledge and local knowledge, citizen science, as well as other scientific and business data and information sources and avoidance of greenwashing.</p>
<p>Chapter 13: Methodological approach to solutions-focused pathways</p>	<p>This chapter will describe the methodology that GEO-7 will use for assessing policy gaps in meeting internationally agreed environmental goals, potential successful policy approaches, with examples of how scarce resources can be mobilized, policy coherence, identifying synergies and trade-offs, aligning commitments to meet multiple policy drivers, policy development in different political/development contexts, i.e., adapting policies, technologies and behaviour changes to regional / national context, and applicability at sub-national scales for different sectors.</p>
<p>Chapter 14: Solutions pathways for transformation of economic systems</p>	<p>This chapter will present solutions pathways that consider economic and financial risks associated with environmental change and policies to address them, including, but not limited to: addressing vested interests, considering shareholder activism and the flexibility afforded to state-owned enterprises, incorporating natural capital in decision-making, embracing a circular economy which promotes environmentally sustainable consumption and production patterns, internalizing externalities in the prices of goods and services, removing environmentally harmful subsidies, shifting investments towards environmentally sustainable structures and practices.</p>
<p>Chapter 15: Solution pathways for transformation towards circularity</p>	<p>This chapter will assess links between resource extraction and waste and explore solutions pathways for transforming linear economic models to circular ones, including, but not limited to: shifting resource extraction to resource recovery, systems and operations for tracking and recovering resources. The chapter will also assess to shift economic and financing incentives towards resource recovery and environmentally sustainable chemistry, re-designing products for extended life or disassembly, produce stewardship and extended producer responsibility, use and reuse of wastewater, rethinking ownership and moving towards service provision as well as the need to adapt to a changing climate. The chapter will also assess the socioeconomic and health co-benefits from circular economy practices, including: geopolitical stability, ending the 'resource curse' and conflict minerals.</p>
<p>Chapter 16: Solution pathways for transformation of energy systems</p>	<p>This chapter will present solutions pathways for transitioning to a net-zero-carbon economy in the production and use of energy, while considering availability, accessibility and affordability, including the required technological transitions and their possible trade-offs and benefits, e.g. renewable energy, electrification and clean fuels, end-use efficiency in transportation, industry and buildings and supporting communities in their efforts to decarbonize, as well as the need for energy systems to adapt to a changing climate. Different policy approaches such as the circular economy, carbon pricing and carbon trading will likely also be explored. The chapter will also explore end-of-pipe approaches such as carbon dioxide capture and storage and other negative emissions technologies (e.g. direct air capture), while also assessing the socio-economic transformations that are needed in different regional contexts, including, but not limited to: shifting fossil fuel, mining, agricultural and transportation subsidies to less environmentally harmful practices, fostering the jobs transition, shifting finance to low-carbon economy activities.</p>

<p>Chapter 17: Solution pathways for transformation of food systems</p>	<p>This chapter will explore solutions pathways, from food production to consumption (farm to fork). It will explore food production transformations (crops, livestock, and fisheries), including, but not limited to: regenerative agriculture, agroforestry, animal husbandry transformations, including pastoralism / small holders, environmentally sustainable fisheries and aquaculture, permaculture and indigenous food systems, circular economy, food distribution and marketing as well as the need to adapt to environmental change. The subsection will also explore the expected socioeconomic transformations, including, but not limited to: shifting agricultural and fisheries subsidies and their impacts on natural resources, fostering the jobs transition, shifting finance to environmentally sustainable agriculture and fisheries practices, and reducing food loss and waste through policies, technologies and behavioural changes. The subsection will also assess the potential for transformational change related to food consumption, for example through dietary changes, including, but not limited to: shifting to plant-based protein or cultured meat and seafood, thus promoting health and nutrition co-benefits, food security co-benefits, and greater geopolitical stability.</p>
<p>Chapter 18: Solution pathways for transformation of environmental systems</p>	<p>This chapter will explore solutions pathways where efforts to improve or restore environmental systems can be used to solve Global Environment crises including, but not limited to: addressing the need for adaptation to climate change as well as conservation and restoration of biodiversity in terrestrial, marine and freshwater systems, harnessing nature to achieve mutually beneficial outcomes, land-based carbon sequestration (soils, reforestation and afforestation), restoration of degraded lands and freshwater systems and rehabilitation of ecosystem services. In addition, the subsection will look at solutions pathways for restoration of marine and freshwater ecosystems, oceans and coasts, air, land and soils, site remediation, environmentally sound management of chemicals and waste¹⁴, micro- application technologies, use of eco-friendly materials (e.g., to replace single-use plastics).</p>
<p>Part E: implications for regions and groups of countries driving the transformations</p>	
<p>Part E IK&LK Chapeau</p>	<p>These short texts (500 words for each part) will focus on the Indigenous conceptualizations of the concepts being discussed in GEO-7. They will look at how Indigenous Peoples conceptualize drivers of environmental change, impacts on key environmental systems, expected future trends, intentionally transforming key systems, regional impacts and implications. In addition to the chapeaux texts, Indigenous knowledge will be embedded into the individual chapters where it is appropriate.</p>
<p>Chapter 19: Implications for different economic development context</p>	<p>This chapter will present the solutions pathways for countries with different economic, resource and environmental situations.</p>
<p>Chapter 20: Regional similarities and differences</p>	<p>This chapter will assess the likely regional and sub-regional implications of the different solutions pathways. There will be five sub-sections with sub-regional analysis where possible.</p>
<p>Chapter 21: Driving the transformations</p>	<p>This final chapter will bring together insights from the Outlooks (pathway analyses) and the policy response sections to discuss ‘how’ these transformations could happen and also the role of different stakeholders in the transformations, explaining ‘the who’.</p>

Annex 2: Areas of expertise required for GEO-7

Areas of expertise required for GEO-7	
State of the Environment and Outlooks	
Environmental themes	<ul style="list-style-type: none"> • Air (atmosphere) • Biodiversity • Land and soil • Oceans and coasts • Freshwater
Global Environment crises	<ul style="list-style-type: none"> • Climate change • Biodiversity and nature loss • Pollution and waste • Land degradation
Outlooks and scenarios	<ul style="list-style-type: none"> • Modelling transformational pathways in energy, food and circularity • Environmental and socioeconomic impacts of business-as-usual scenarios • Environmental and socioeconomic impacts of with commitments scenarios • Environmental and socioeconomic impacts of target-seeking scenarios • Regional and sub-regional outlooks • Scenarios based on literature reviews
Data and Knowledge sources	<ul style="list-style-type: none"> • Digital data management and display • Mapping and geographical information systems • Citizen science • Indigenous, traditional, and local knowledge
Policy, technology and behaviour change	
Solutions pathways	<ul style="list-style-type: none"> • Policy and political economy analysis • Policy development • Policy effectiveness • State and evolution of technological change • State and evolution of behavioural change
Transformational solutions pathways	<ul style="list-style-type: none"> • Economic and financial systems • Energy systems • Food systems • Materials/waste/circularity systems • Environmental change adaptation (including Climate Change) as it applies to these systems
Analysis of solutions pathways	<ul style="list-style-type: none"> • Economic impacts of solutions pathways • Social impacts of solutions pathways • Impacts on indigenous peoples of solutions pathways • Cost-benefit analysis
Sustainable development goals	<ul style="list-style-type: none"> • Equity impacts of solutions pathways • Gender impacts of solutions pathways • Impacts on poverty and hunger • Impacts on human well-being