

Early Warning and Data Analytics

Strategy, Policy and Action for People, Places and Planet






UN
environment
programme



Transforming the lives of People, Places and Planet

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Foreword

Early Warning is a powerful tool for leveraging Humanity’s ability to think about and build the future. It provides a way to think about possible, alternative, and desired futures and scenarios. By doing so, it enables individuals, organizations, and nations to prevent, prepare for, respond, and recover from events and build a better future.

In the coming decades, and possibly until the end of the 21st century, which is a time of transition of geopolitics and the environment, Humanity is likely to face significant challenges with a more complex, unstable, and uncertain Future. Exploring the capabilities of Early Warning for People, Places and Planet, is opportune in this time of dynamic change.

UNEP is building a ONE UN Common Approach for Early Warning for Environment (EWE) to tackle the triple planetary crisis of climate change, biodiversity loss and pollution, within the umbrella of Early Warning for All Initiative. To build solutions at scale contributing to accelerate Agenda 2030 and the Sustainable Development Goals (SDGs). Focus on impacting in countries, implementing the environmental dimension of early warning throughout the risk management cycle (prevention, preparedness, response, and recovery), with a particular focus on developing countries and the most vulnerable communities (such as SIDS, but groups as the elderly and youth), saving millions of lives and property, people, places, and the Planet. Adopt a multi-stakeholder approach with a user driven strategy and build on existing Partnerships across the UN system and beyond including the private sector and citizens and civil society.

This dimension will require a systematic approach and will require the cooperation of all relevant agencies and Multilateral Environmental Agreements (MEAs) – including the Kunming-Montreal Global Biodiversity Framework, the new Global Framework on Chemicals, and the upcoming deal on plastic pollution. Each agency and MEA must be a contributor and beneficiary and support the UN Common Approaches to biodiversity and pollution – with a view to boosting the achievement of the Sustainable Development Goals.

It is a novel Early Warning approach to the Science Policy interface. It adopts a novel Early Warning approach based upon “data” and a system thinking perspective. It provides a robust and solid way to do Early Warning and Impact in Countries. It contributes to accelerate Agenda 2030 and Our Common Agenda. This is a core component of **United Nations Secretary General's Our Common Agenda and a decisive Humanity's Agenda** of Our Time.

We are happy to share with you possible, alternative, and desired pathways essential for the achievement of Agenda 2030 and the Sustainable Development Goals (SDGs) and **our common future**.

A handwritten signature in black ink, appearing to read 'A. Caldas', written in a cursive style.

Alexandre Caldas

Director of the United Nations and Chair of the ECOSOC - UN Geospatial Network

United Nations Environment Programme

Chief, Early Warning and Data Analytics Branch | Early Warning and Assessment Division

Impacting on People, Places and Planet



Official Launch of the World Environment Situation Room, UNEP's Data Information and Knowledge Platform, 3 March 2022, Celebration of UNEP 50 years, UNEA 5, Nairobi, Kenya



ECOSOC UN Geospatial Network Meeting, across 40 UN Agencies, approved the Masai Nairobi Declaration, Nairobi, Kenya 13-15 June 2023



The UN Environment Programme (UNEP) and the Joint Research Centre (JRC) of the European Commission launched the World Water Quality Alliance (WWQA) in Ispra, Italy, 19 September 2019



Fourth session of the UN Environment Assembly of the UN Environment Programme 11 - 15 March 2019, United Nations Environment Programme Headquarters, Nairobi, Kenya. Ministerial Declaration for Developing a Global Environmental Data Strategy



A new initiative ("Data Driven Environmental Solutions Hub") proposed at the Stockholm+50 international meeting, which ran from 3 to 5 June, 2022, Stockholm, Sweden. Aims to help developing countries tackle environmental challenges through facilitated access to and support for digital and technological solutions.



UNEP at the World Urban Forum. Physical Situation Room on worldwide availability of Environmental Data. Abu Dhabi, UAE, 8 - 13, February 2020

Introduction

UNEP is a science-based organization, and therefore sound science-based products and services for Member States are produced across the entire organization. The 'Early Warning and Assessment' Division (EWAD) focuses on two core foundational science functions: **early warning** and scientific assessments.

Early Warning and Data Analytics

In taking stock of the current approaches, strategies, and direction of Early Warning across the UN system (e.g. Early Warnings for All), UNEP aims to lead the provision of early warning services for the nature and pollution-free actions in the UN system while enhancing the well-established work of climate information and early warning systems. This will be done through a UNEP- and UN wide co-creation process to establish environmental early warning services that ranges from source and drivers to end-of-pipe impacts, including monitoring, data collection and analysis, and timely warnings for evidence-based decisions to avoid and reduce the impacts of environmental risks and hazards. In addition, the Branch will contribute to UNEP's environmental foresight function, led by the Chief Scientist's Office. These efforts will be complemented by capacity development for an inclusive science-policy interface using environmental information and knowledge systems at regional and country levels.

Early Warning for Environment: A short definition

Early Warning for Environment strengthens the environmental dimension of Early Warning as a critical enabler for accelerating the achievement of Agenda 2030 and the implementation of the SDGs and contribute to mitigate the impacts of the triple planetary crisis. It consists of identifying, monitoring, and analysing both rapid onset multi-hazards (with a predominant focus on climate-related risks) and slow onset but continuous hazards (which include biodiversity, nature and pollution, as well as climate change risks) and their interlinkages or issuing warnings of future events that come early enough for one to prepare, respond and recover, Building Back Better. Leaving No One Behind.

The UNEP Early Warning and Data Analytics function will harness a portfolio of five critical services **across UNEP for timely decisions to identify, prepare and mitigate** risks associated with a broad range of environmental issues.

The importance of improving the availability of and access to data and statistics related to the environment was recognized through the adoption / ongoing development of a range of environment monitoring frameworks and indicator tools related to biodiversity, climate change, chemicals and waste, disasters, environmental-economics, and sustainable development goals. Early Warning and Data Analytics, including geospatial technologies, applications, and services, are key enablers to accelerate the achievement of Agenda 2030 and the Sustainable Development Goals (SDGs). This is particularly relevant when at about half the way up to 2030, only 15% of the Goals have been achieved and about 48% are off-track. The well-curated data and integrated analytics arising from this work and housed in UNEP's World Environment Situation Room (WESR), will strengthen the evidence-base to guide decision-making and anticipatory action, foster transparency, and rigorous reporting, and promote mutual accountability as a contribution to multilateralism for informed and integrated sustainable development policymaking, as well as implementation and reporting.

TRIPLE PLANETARY CRISIS



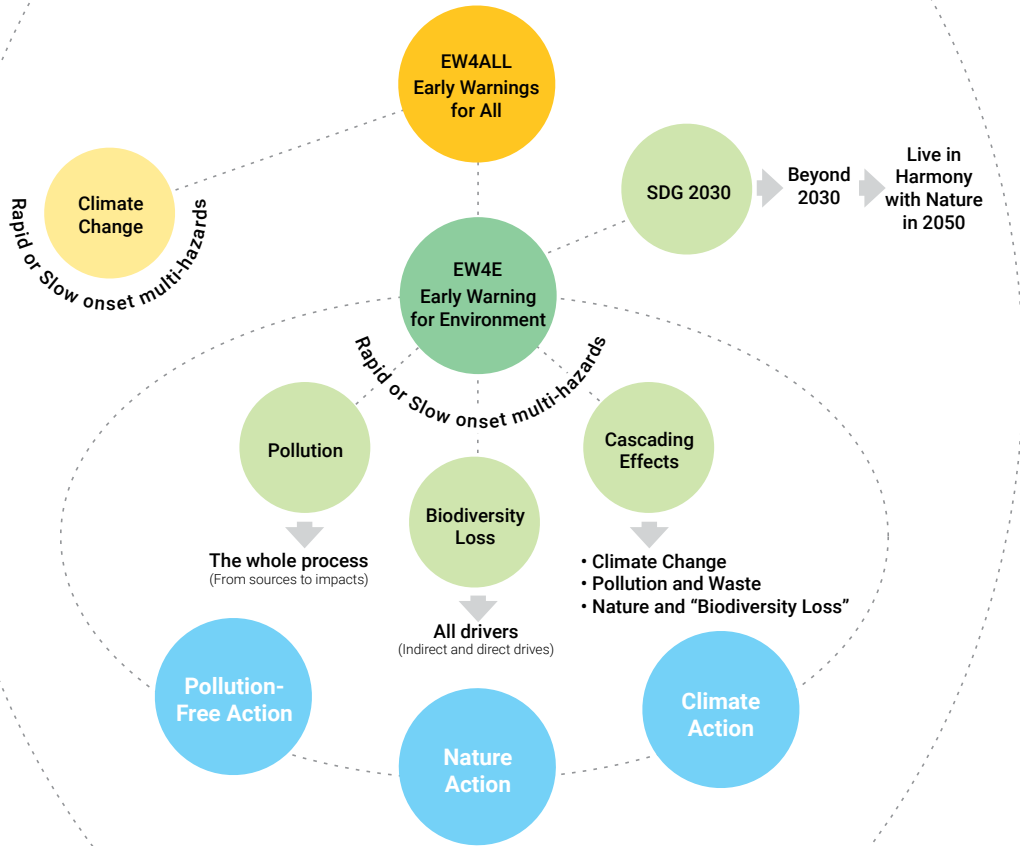
Climate Change



Biodiversity and Nature Loss



Pollution and Waste



ENVIRONMENTAL DIMENSION OF EARLY WARNING



Strategy, Policy and Action





Strategic Goals and Priorities

The **overarching strategic goal** is to strengthen the environmental dimension of Early Warning towards acceleration of the achievement of Agenda 2030 and the Sustainable Development Goals (SDGs)

- **Increase the Impact in Countries**

30 *focus* countries in EW4All; 60 CCA Countries; 100+ SOFF Countries (initial focus on SIDS and LDCs); 6 Regions with GCF Climate Information and Early Warning Systems (CIEWS) investments; 2 Regions on Air Pollution Early Warning (Africa and Asia Pacific); 1 Region on Biodiversity Early Warning (Latin America and the Caribbean); One Planet EW Global, Regional, and National Platform.

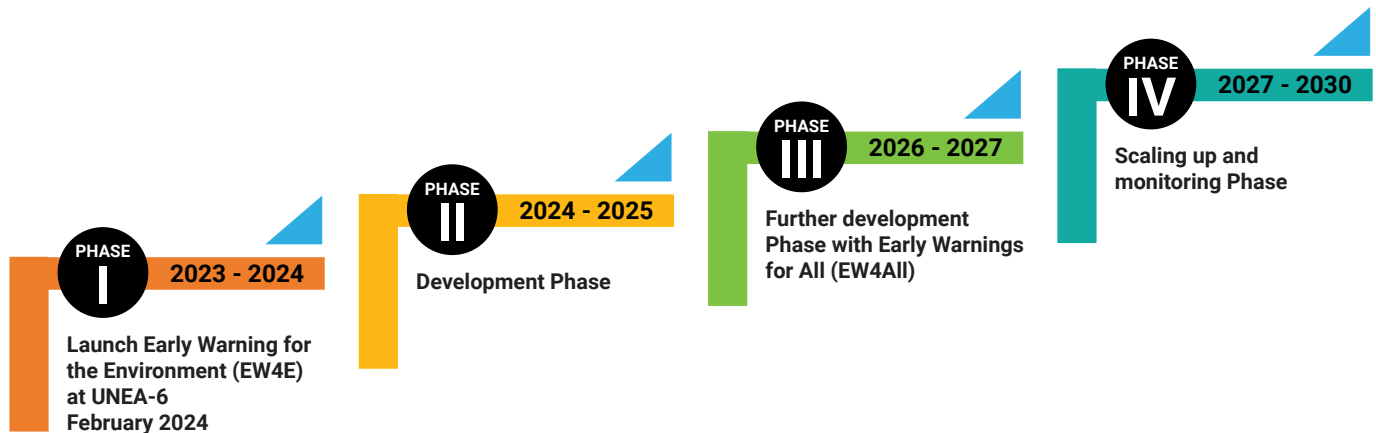
- **Accelerate the achievement of the SDGs**

Geospatial and Statistics integration and Leadership at UN level; Capacity Development on SDGs and Early Warning for Environment; Synergies on the Nexus (Development, Peace, and Humanitarian); Provision of Disaggregated Data Analytics to countries.

- **Ensure UNEP Leadership in Early Warning for Environment**

UNEP leadership on the environmental dimension of EW4All; Leadership on Geospatial Early Warning; Leadership on Statistics for Early Warning and SDGs.

Roadmap





Early Warning for Environment (EWE) will be developed in four phases within the following Roadmap and Strategy up to 2030.

Partnership and Co-creation Approach (externally and internally to UNEP)

The initiative adopts a Partnership, Co-creation approach, across 11 Agencies + 3 MEAs with one UN Common Approach to EWE.

- **11** UN Agencies: UNEP & WMO, UNDRR, ITU, IFRC, FAO, WHO, UNDP, UNSD, OICT, OCHA, and UNCT
- **3** MEAs: CBD, BRS and UNCCD
- **Across UNEP**, including Ecosystems Division, Industry and Economy Division, Policy and Programming Division, the Chief Digital Office, and Chief Scientist Office, and All 6 UNEP Regional Offices

The UNEP Early Warning and Data Analytics function leverages the reach of our initiatives building on Partnerships, Networks and Alliances adopting an Outward Looking Approach:

The One UN Geospatial Network across 43 UN Agencies; The Big Data 33 One Global Partnership Network; The OARE Online Access to Research on the Environment and UN Links – UN system librarian’s network; The World Water Quality Alliance; The IAEG on SDGs Implementation; The EW4All Inter-Agency Task Force; Alliance for Hydromet Development; Systematic Observations Financing Facility (SOFF); Risk-informed Early Action Partnership (REAP); The 11 Agencies and 3 MEAs of the Early Warning for Environment; and The HLCP Foresight Network.

An initial Scoping Workshop was held on the 6-7 July including participation of 4 UNEP Divisions (IED, PPD, Ecosystems Division and EWAD) with 4 external Agencies (WMO, FAO, WHO and UNEP) and 3 MEAs (CBD, BRS and UNCCD).

Internal consultation meetings across UNEP were held with the Chief Scientist Office, the Chief Digital Officer Office and IED and ecosystems Division as well as with 3 Regional offices (Europe, Africa and Latin America and the Caribbean).

A more strategic workshop is going to be held in Geneva, at the Regional Office for Europe, on the 20-21 November with the participation of 11 UN Agencies: UNEP & WMO, UNDRR, ITU, IFRC, FAO, WHO, UNDP, UNSD, OICT, OCHA, and UNCT and 3 MEAs: CBD, BRS AND UNCCD as well as across all UNEP Divisions and Regional Offices.

In February 2024, back-to-back to UNEA 6, Member States consultations will be held during the Science Policy Business Forum.

Co-creation workshops and other consultation initiatives will then follow the above presented Roadmap of implementation of the Early Warning for Environment initiative in complement to UNEP participation as implementing agency of 2 dimensions in the Early Warning for All Strategy and Implementation Plan, impacting directly in 13 of the 30 focused countries of the EW4All initiative.



Early Warning and Data Analytics

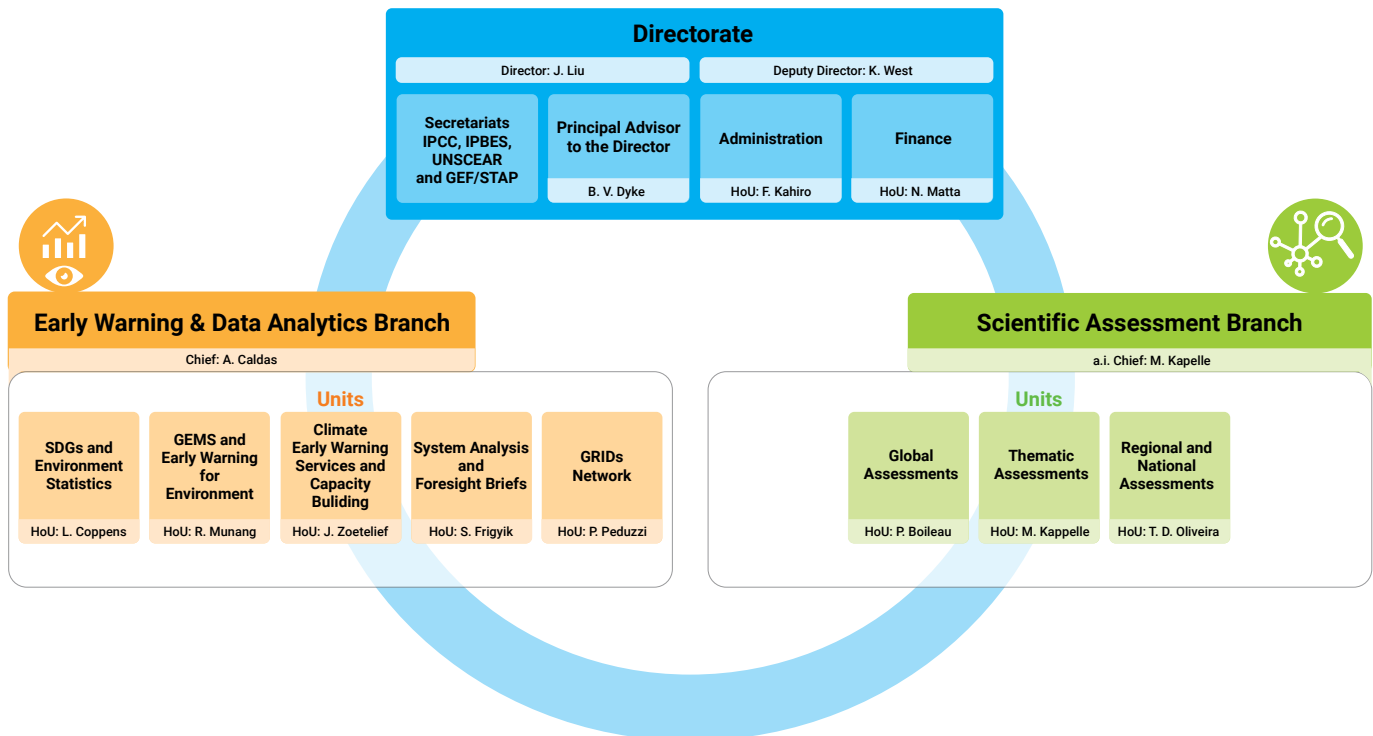


UNEP is a science-based organization, and therefore sound science-based products and services for Member States are produced across the entire organization. The 'Early Warning and Assessment' Division (EWAD) focuses on two core foundational science functions: early warning and scientific assessments. To further align the internal structure of EWAD with the evolving UNEP organizational structure, this proposal aims at streamlining and adapting the division's structure to increase efficiency and effectiveness and continue to improve UNEP's services to Member States.

Division Position

In support of UNEP's thematic action pillars on nature, climate and a pollution-free world, it is proposed to focus EWAD's key functions on a) Early Warning and Data Analytics services for timely decisions to identify, prepare and mitigate risks associated with a broad range of environmental issues; and b) Scientific Assessment as a basis for policy setting and management action to help define and address the root causes of the triple planetary crisis. The proposed new structure will focus on these two core functions, thereby ensuring a more efficient use of human and financial resources and improving the timeliness and quality of UNEP's services and products to Member States. It will also strengthen and clarify UNEP's contribution across the UN family's approaches to pollution-free action, biodiversity conservation and climate action. The proposed new divisional structure includes two substantive branches, the Early Warning and Data Analytics Branch and the Scientific Assessment Branch, which would be supported by a Directorate.

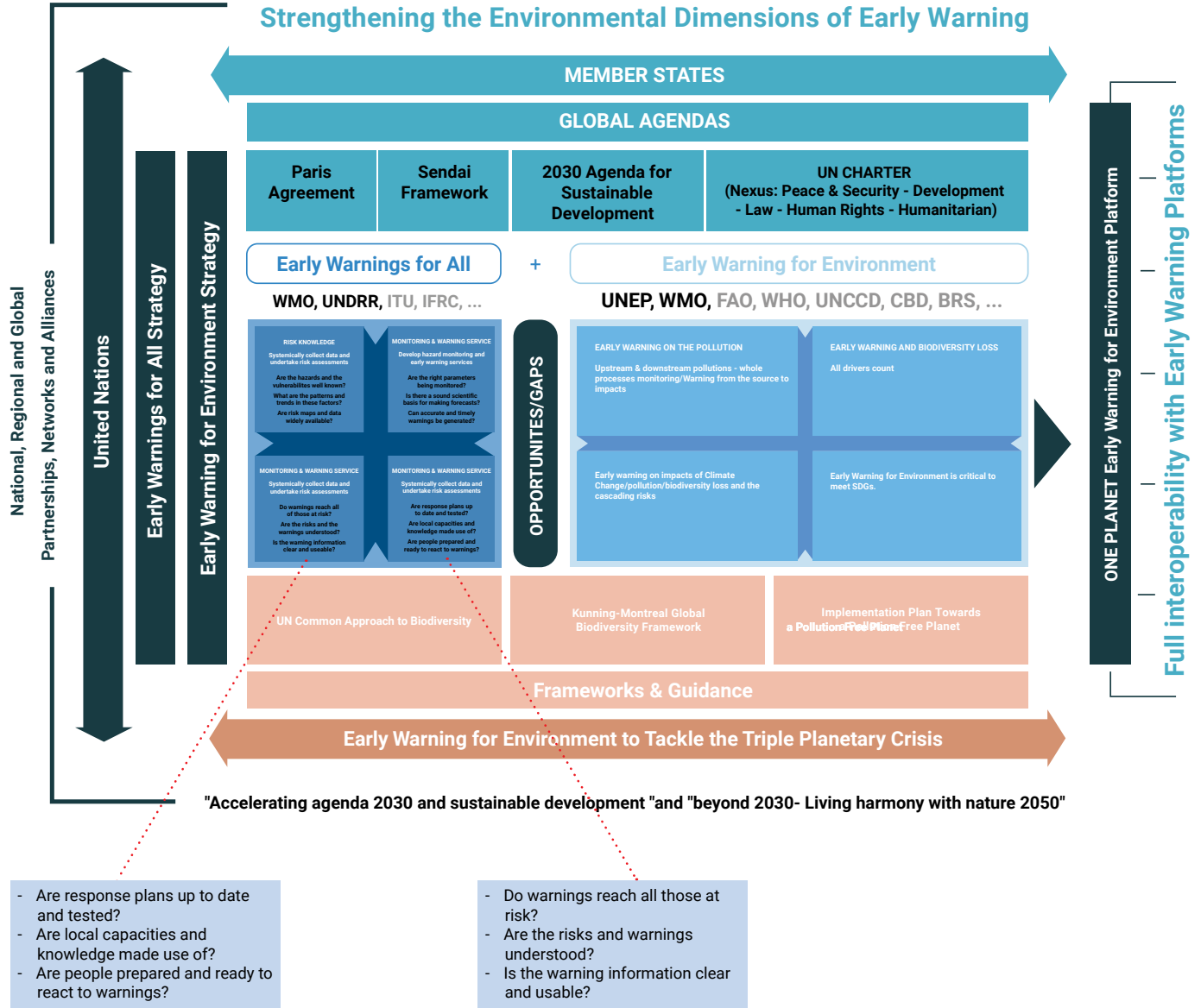
Division Structure: Two branches delivering critical foundation science





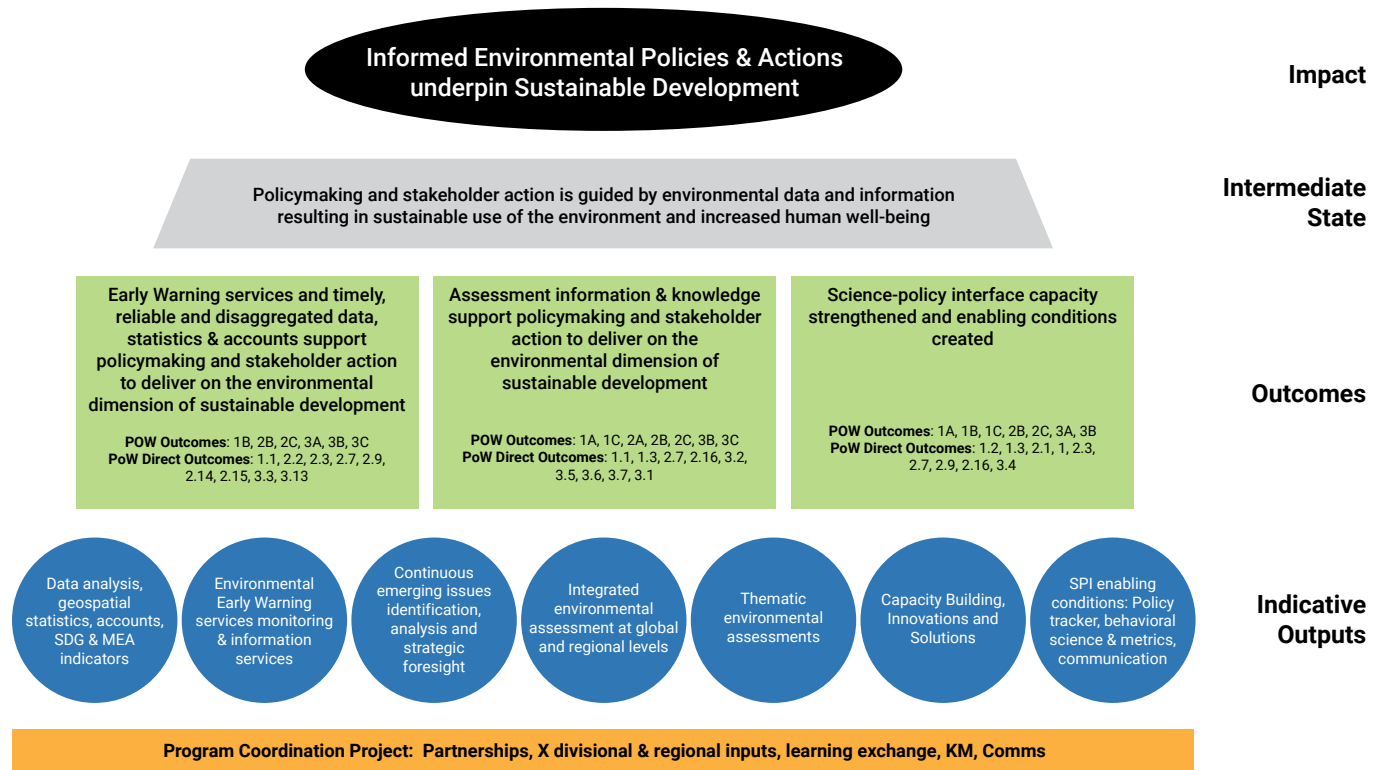
Early Warning for Environment

Strengthening the Environmental Dimensions of Early Warning





Early Warning and Assessments for Science Policy and Action Programme



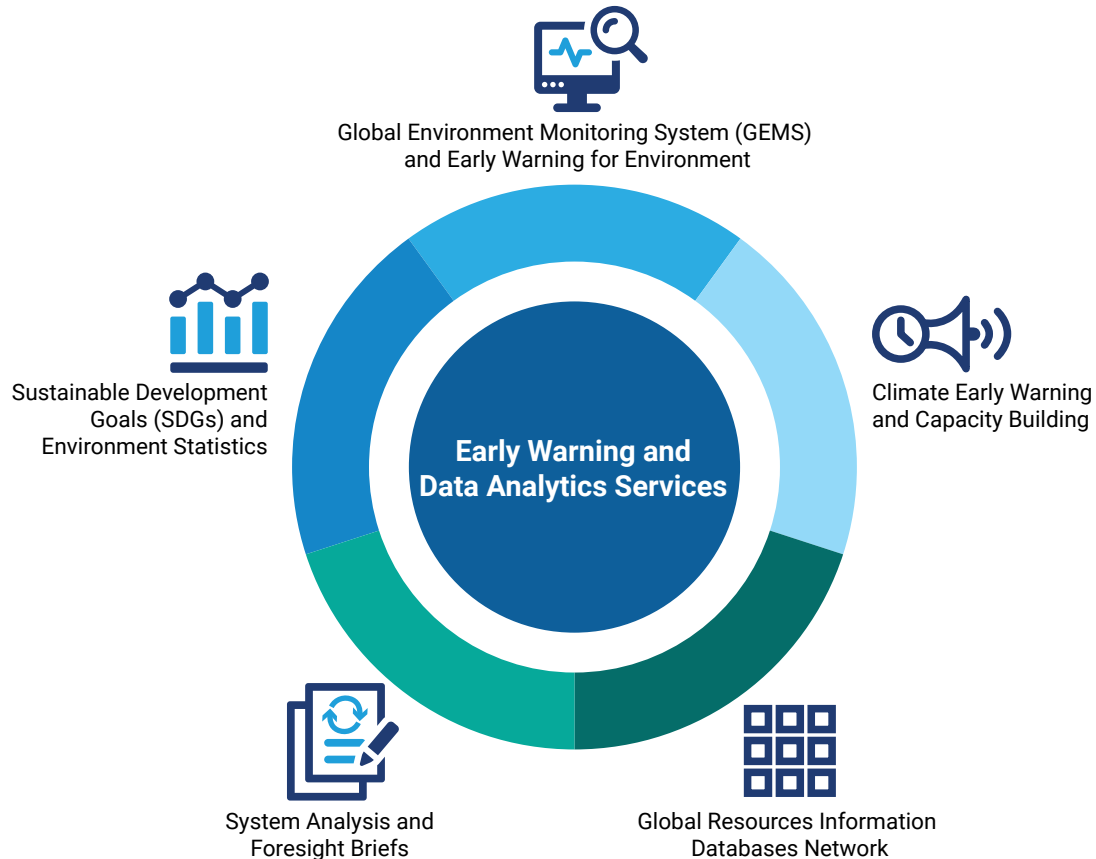
Branch Position

In taking stock of the current approaches, strategies, and direction of Early Warning across the UN system (e.g. Early Warnings for All), the Branch aims for UNEP to lead the provision of early warning services for the nature and pollution-free actions in the UN system while enhancing the well-established work of climate information and early warning systems. This will be done through a UNEP- and UN wide co-creation process to establish environmental early warning services that ranges from source and drivers to end-of-pipe impacts, including monitoring, data collection and analysis, and timely warnings for evidence-based decisions to avoid and reduce the impacts of environmental risks and hazards. In addition, the Branch will contribute to UNEP’s environmental foresight function, led by the Chief Scientist’s Office. These efforts will be complemented by capacity development for an inclusive science-policy interface by using environmental information and knowledge systems at regional and country levels.



The Early Warning and Data Analytics Branch is made up of five units:

- Sustainable Development Goals & Environmental Statistics
- Global Environmental Monitoring Systems (GEMS) & Early Warning for Environment
- Climate Early Warning and Capacity Building
- System Analysis & Foresight Briefs, and the
- Global Resources Information Database Centers (GRIDs) Network.





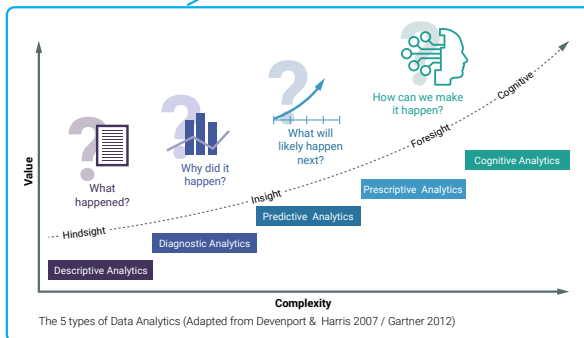
The importance of improving the availability of and access to data and statistics related to the environment was recognized through the adoption / ongoing development of a range of environment monitoring frameworks and indicator tools related to biodiversity, climate change, chemicals and waste, disasters, environmental-economics, and sustainable development goals. Early Warning and Data Analytics, including geospatial technologies, applications, and services, are key enablers to accelerate the achievement of Agenda 2030 and the Sustainable Development Goals (SDGs). This is particularly relevant when at about half the way up to 2030, only 15% of the Goals have been achieved and about 48% are off-track. The well-curated data and integrated analytics arising from this work and housed in UNEP's World Environment Situation Room (WESR), will strengthen the evidence-base to guide decision-making and anticipatory action, foster transparency, and rigorous reporting, and promote mutual accountability as a contribution to multilateralism for informed and integrated sustainable development policy-making, as well as implementation and reporting.

The purpose of Early Warning for Environment is to conduct identification and information analysis which can prepare early enough for events that impact nature, pollution and climate: It is positioned for tackling the triple planetary crisis creating thorough analytics and early warning systems that are capable of analyzing nature and pollution threats (e.g. land degradation, sea-level rise, air quality monitoring), foreseeing threatening patterns and transferring the knowledge in real time to empower decision-makers with sufficient time for preparing avoidance or mitigation pathways. It is powered by state-of-the-art analytics and the coordination through interoperation with monitoring and observation platforms in foreseeing, preventing, and mitigating environmental threats before they occur.

Early warning tackling multi-hazards: The term 'Early Warning' in the context of multi-hazards includes Identifying, monitoring and analyzing both rapid- and slow-onset hazards or issuing warnings of future events that come early enough for one to prepare, such as in deforestation, pollution, over-use/or depletion of natural resources, planetary boundaries, impacts from extractive sectors. In the climate subdomain, "Early Warning Systems" (EWS) comprise "an integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities, systems and processes that enables individuals, communities, government, businesses, and others to reduce disaster risks in advance of [climate-related] hazardous events" (UNDRR, 2020). Climate EWS tackle adaptation and resilience-building needs for both rapid- and slow-onset multi-hazards resulting from the impacts of climate change.

Data Analytics: is the systematic computational analysis of data or statistics. It is used for the discovery, interpretation, and communication of meaningful patterns in data. It also entails applying data patterns toward effective decision-making. Five main types are descriptive, diagnostic, prescriptive, predictive, and cognitive, including artificial intelligence.

Capacity Development: In the context of keeping the environment under review, "Capacity Development" encompasses the acquisition of skills and knowledge for individuals, improvements of institutional structures, mechanisms, and procedures, and strengthening of enabling conditions to develop and use environmental information and knowledge systems for data-driven environmental solutions.



Analytics
is the systematic computational analysis of data or statistics. [1] It is used for the discovery, interpretation, and communication of meaningful patterns in data. It also entails applying data patterns toward effective decision-making. 4 main types are descriptive, diagnostic, prescriptive and predictive. (and 5th cognitive).m or loss.

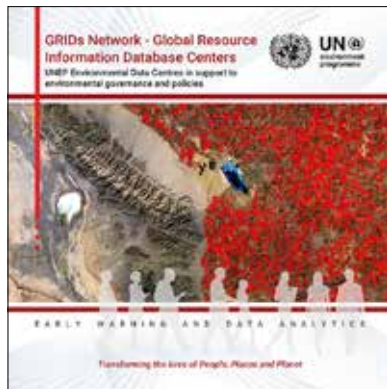
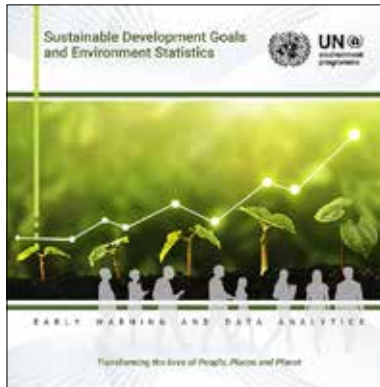
Early Warning
Warning of a future event that comes early enough for you to prepare for it.

Early Warning Systems
The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities, and organizations threatened by a hazard to prepare to act promptly and appropriately to reduce the possibility of harm or loss.

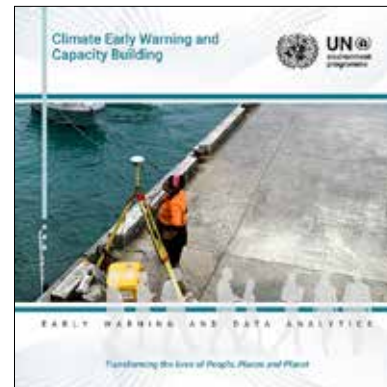
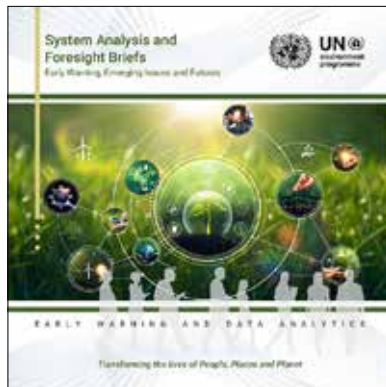
<p>RISK KNOWLEDGE Systematically collect data and undertake risk assessments</p> <p>Are the hazards and the vulnerabilities well known? What are the patterns and trends in these factors? Are risk maps and data widely available?</p>	<p>MONITORING & WARNING SERVICE Develop hazard monitoring and early warning services</p> <p>Are the right parameters being monitored? Is there a sound scientific basis for making forecasts? Can accurate and timely warnings be generated?</p>
<p>MONITORING & WARNING SERVICE Systematically collect data and undertake risk assessments</p> <p>Do warnings reach all of those at risk? Are the risks and the warnings understood?</p>	<p>MONITORING & WARNING SERVICE Systematically collect data and undertake risk assessments</p> <p>Are response plans up to date and tested? Are local capacities and knowledge made use of? Are people prepared and ready to react to warnings?</p>

Portfolio of Products and Services





Portfolio of Products and Services





Sustainable Development Goals and Environment Statistics

Introduction

The SDG and Environment Statistics Unit is responsible for improving the availability of and access to data and statistics related to biodiversity, climate change and disasters, environment-related Sustainable Development Goals (SDGs), and circular economy.

The United Nations Environment Programme (UNEP) is the Custodian Agency of 25 SDG indicators. The General Assembly resolution mandates Custodian Agencies “... to provide the methodologies used to harmonize country data for international comparability and produce estimates through transparent mechanisms ...” as well as “... to intensify their support for strengthening data collection and statistical capacity-building, including capacity-building that strengthens coordination among national statistical offices ...”.

The Unit contributes to the mandate through development of indicator methodologies, high-quality monitoring and reporting, capacity building, as well as promotion of environment statistics and analysis.

The mandate is realized by numerous partnerships within UNEP and the UN Statistical System as a whole, as well as in collaboration with academic and governmental institutions and other intergovernmental and private international organizations.

The SDG and Environment Statistics Unit actively works with various partners to promote coordination and harmonized approaches in strengthening countries’ capacity in environment statistics and SDGs, with the aim of “delivering as one”.

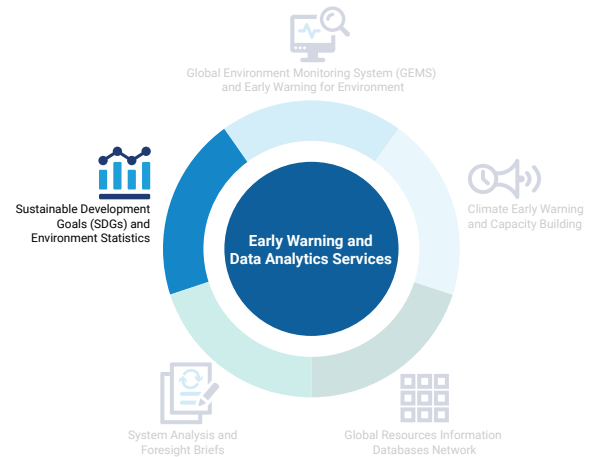


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Functions of the Unit

Developing statistical methodologies and delivering high-quality monitoring and reporting on the environmental dimension of sustainable development to relevant international bodies.

Providing data and analysis for the High-Level Political Forum report on the SDGs, and the global SDG database.

Promoting environmental analysis in the SDGs through publications such as the Measuring Progress reports, which allows a better understanding on how to achieve the environmental dimension of sustainable development through analysis of progress and interlinkages.

Delivering tools and training for capacity building in the countries, as well as direct country support, enabling them to measure, monitor and report on the environmental dimension of the Sustainable Development Goals.

Integrating the environmental dimension of the SDGs in the national action plans of the countries that the UN country teams and UN regional commissions are working in.

UNEP and UN System Engagements

Work on the SDG indicators under UNEP custodianship and environment statistics is carried out in collaboration with internal UNEP partners, as well as various working groups including academic, intergovernmental, governmental institutions, and United Nations agencies.



UNEP-wide Engagements

Internally, the SDG and Environment Statistics Unit collaborates with all the divisions of UNEP, as well as various MEAs, including the Basel Convention; the Rotterdam Convention; the Stockholm Convention; the Montreal Protocol; the Minamata Convention, the Ramsar Convention on Wetlands, the Convention on Biological Diversity, the Regional Seas, and collaborating centers such as the World Conservation and Monitoring Center (WCMC), the International Union for Conservation of Nature (IUCN), and the International Resource Panel (IRP).

UN-wide Engagements

The SDG and Environment Statistics Unit actively participates in various initiatives with other UN agencies, including:

- Development and continuous improvement of data collection quality and statistical methodology in collaboration with agencies such as UNSD, UNCTAD, UNITAR, FAO, UNESCO.
- Contribution to global reporting through the Sustainable Development Goals Report, coordinated by UN DESA in collaboration with the entire UN Statistical System.
- Collaboration with UNITAR and UN SIAP to develop training programs for professionals in environmental data management.
- Capacity building activities on various environment-related SDG indicators and environment statistics, including climate change and disasters, in collaboration with UNSD, UNDRR, UNODC, UN Regional Commissions.

Partnerships

- Conducting training workshops and providing resources to National Statistics Offices to enhance their capacity in collecting, analyzing, and reporting environmental data, thereby strengthening national statistical systems, and improving data quality.
- Collaborating with line ministries to develop relevant environmental indicators for monitoring progress on specific goals and targets within the SDGs. These initiatives help track progress and identify areas where further action is needed.
- Joining forces with Google, NASA, ESA, and the EU Joint Research Centre to collect remote sensing data on water-related ecosystems.
- Partnering with the global citizen science community to incorporate citizen science into measuring beach litter.
- Collaborating with the OECD and Eurostat through a working group dedicated to the development and improvement of statistical indicators related to recycling and domestic material consumption, as well as circular economy indicators.
- Collaborating with CSIRO on the various activities related to the Economy-Wide Material Flow Accounts.
- Engaging in academic partnerships with institutions such as the Chinese Academy of Sciences and UCL Institute for Sustainable Resources.
- Collaborating with organizations such as GEO Blue Planet, NOAA, ESRI.

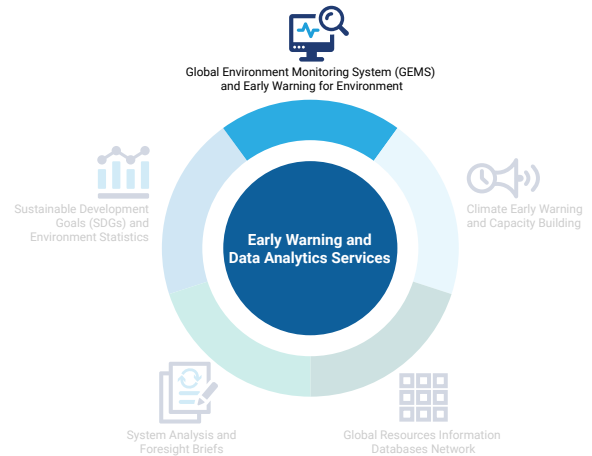


Global Environment Monitoring Systems and Early Warning for the Environment

Introduction

The Global Environment Monitoring Systems and Early Warning for the Environment Unit (GEMS-EWE) provide innovative monitoring services on the state of nature & biodiversity loss, pollution, and climate change, and their cascading risks, covering risk sources at the upstream to midstream state of the environment, and end-of-pipe monitoring of solutions and investment enablers needed to drive solutions uptake. This is to help the world community at the national, regional, and global levels access early warning data and assessments required to inform science and data-based policy decisions and investments to forestall and minimise the occurrence of rapid and slow onset risks arising from the triple planetary crisis and ensure the translation of early warning into early action.

The primary focus is on three environmental domains - air quality, freshwater quality, and ocean & coastal health, operationalised by GEMS air, GEMS water & WWQA, and the GEMS Oceans teams. In its execution, the unit leverages partnerships – both internally across the UNEP house and UN-wide, as well as with external expert partners, to deliver data, scenarios, solutions, capacity building, and strengthened monitoring efforts that can be scaled to drive transformational change at national, regional, and global levels.



Functions of the Unit

- Streamline work of GEMS water/WWQA, GEMS Oceans, and GEMS Air towards application of monitoring for early warning for the environment covering upstream risk sources, to midstream state of the environment, and end-of-pipe monitoring of solutions and their investment enablers to drive solutions uptake for restorative and protective actions.
- Targeted UNEP-wide, UN-wide, and external stakeholder partnerships towards ensuring GEMS-EWE complement the delivery of key flagship areas, including food systems, One-Health, and Global Biodiversity Framework, among key UN flagships.
- Horizon scanning on the state of global environmental monitoring and solutions to generate knowledge and thought solutions that position and raise the profile of the GEMS-EWE unit as a global thought leader on environmental monitoring and solutions in the focus domains of air, water, oceans among key areas,
- Strengthening the key operational area of citizens science and community engagement as strategic towards closing monitoring and solutions uptake gaps across all environmental domains,
- Catalyse cross-learning across teams and units towards the application of innovative, cutting-edge monitoring techniques – e.g., digital twinning, across all environmental domains,



UNEP and UN System Engagements

- UNEP-wide engagement across divisions to ensure GEMS-EWE complements achievement of key flagship areas – including One-Health, Food Systems, chemicals/waste/pollution, freshwater, CCAC (LOW-Methane), IMEO (MARS), among key areas
- UN-wide engagements towards the complementing realisation of multilateral environmental agreements related to biodiversity and pollution – specifically the Global Biodiversity Framework and Towards a Pollution-free Planet, respectively, among key ones, including UNEA decisions
- Enhanced engagements with UN Country Teams (UNCTs) towards ensuring uptake of monitoring solutions to inform the development and implementation of Common Country Analysis (CCAs) and the UN Sustainable Development Cooperation Frameworks (UNSDCFs), respectively

Partnerships

- Mobilise member states, experts, civil society, and other multilateral partners in high-level multilateral events – specifically the UNEA, towards supporting decisions that enhance uptake of the GEMS-EWE approach at national, regional, and global scales,
- Foster collaborations with expert partners to deliver data, scenarios, solutions, capacity building, and strengthened monitoring efforts that can be scaled to drive transformational change at national, regional, and global levels,
- Foster capacity enhancement of non-experts – i.e., citizen scientists, youth/informal sector to close monitoring gaps towards the GEMS-EWE approach in air, water, ocean/coastal health domains,
- UNEP-wide and UN-wide partnerships to complement the operationalisation of flagships towards addressing the triple planetary crisis and foster national-level uptake through UNCTs, CCAs and UNSDCF.

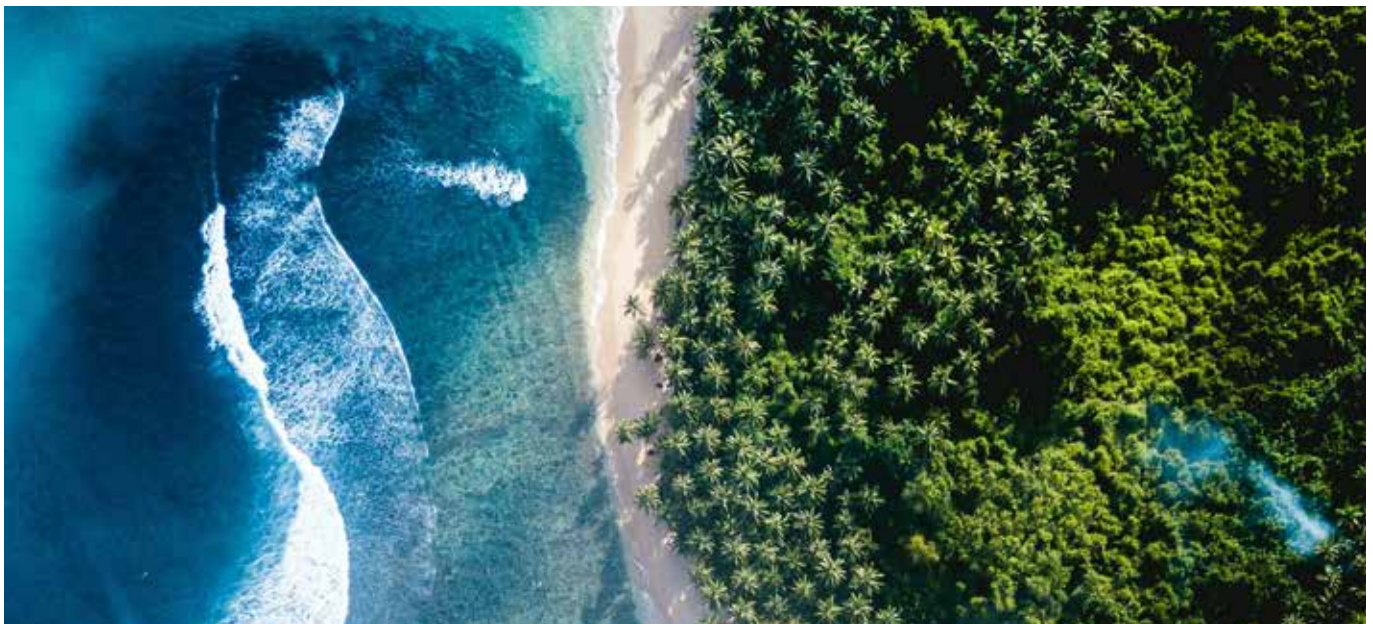


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Climate Early Warning and Capacity Building

Introduction

The Climate Early Warning and Capacity Building Unit focuses on strengthening country capacities for the collection, management, and use of climate and environmental data, information, and knowledge for data-driven climate information services, early warning systems, and evidence-based climate action. Core components of the Unit’s work include strengthening institutional frameworks for Climate Information Services and Multi-Hazard Early Warning Systems (MHEWS), enhancing capacities for monitoring, analysis and forecasting of climate and its impacts, improving dissemination and communication of risk information and early warnings, and enhancing climate risk management capacities. The Unit also works more generally to support an inclusive Science-Policy interface in countries through well-informed decisions on environmental issues supported by environmental information systems, data sharing and reporting, as well as the strengthening of regional and sub-regional networks focused on environmental information.



The Unit drives UNEP’s engagement in key initiatives and global partnerships related to Climate Information Services and MHEWS, including *Early Warnings for All (EW4All)* – an initiative launched by the UN Secretary General to ensure that early warning systems protect everyone on Earth by 2027 –, the Systematic Observations Financing Facility (SOFF), and the Risk-informed Early Action Partnership (REAP). Flagship initiatives led by the Unit include a \$49.9 million programme on *Climate Information and Knowledge Services in five Pacific Island Countries* and a \$21.7 million project to enhance *Early Warning Systems in Timor-Leste*, both supported by the Green Climate Fund (GCF).



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Functions of the Unit

- Establish, upscale, and strengthen end-to-end Climate Information Services and Multi-Hazard Early Warning Systems (MHEWS) to enhance resilience and adaptive capacity, helping to avert disaster risk and minimize loss and damage due to climate-related hazards.
- Support the most vulnerable countries to close critical weather and climate data gaps, which enables the development of better national and global weather forecasts, Climate Information Services, and MHEWS.
- Strengthen capacities for an inclusive Science-Policy Interface by supporting countries to develop and use environmental information and knowledge systems for more effective policymaking processes and action.

UNEP and UN System Engagements

Within UNEP, the Climate Early Warning and Capacity Building Unit works closely with all six [Regional Offices](#) to develop and implement tailored and demand-driven initiatives in line with national and regional priorities. The Unit also collaborates with other units and divisions leveraging our respective expertise to maximise country-level impact.

Working across the **wider UN system**, the Unit engages with UN Country Teams ([UNCTs](#)) and other UN entities – including the Food and Agriculture Organization ([FAO](#)), the UN Office for Disaster Risk Reduction ([UNDRR](#)), the UN Office for Project Services ([UNOPS](#)), and the World Meteorological Organization ([WMO](#)) – to ensure strategic alignment and coordinated country-level support.

Partnerships, Networks and Alliances

UNEP's work on Climate Information and Early Warning Systems is anchored in a coalition of partners from national to regional to international level.

Moreover, the Unit's portfolio contributes to and engages with other entities within global partnerships of which UNEP is part of; other than the previously mentioned partnerships – EW4All, SOFF, and REAP – the Unit drives UNEP's involvement in the Alliance for Hydromet Development, and works closely with the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), amongst others.



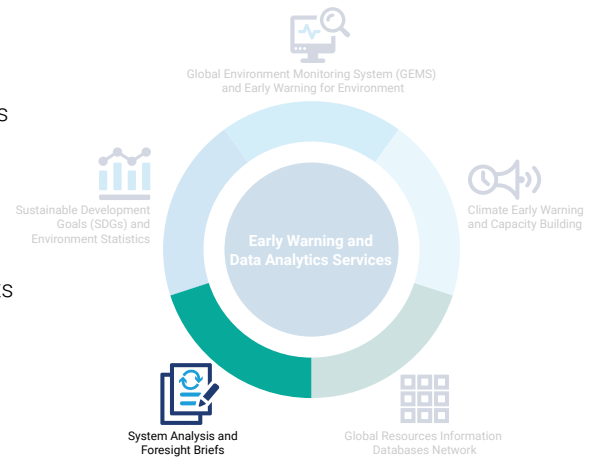
Photo credit: Carmine Savarese | Unsplash



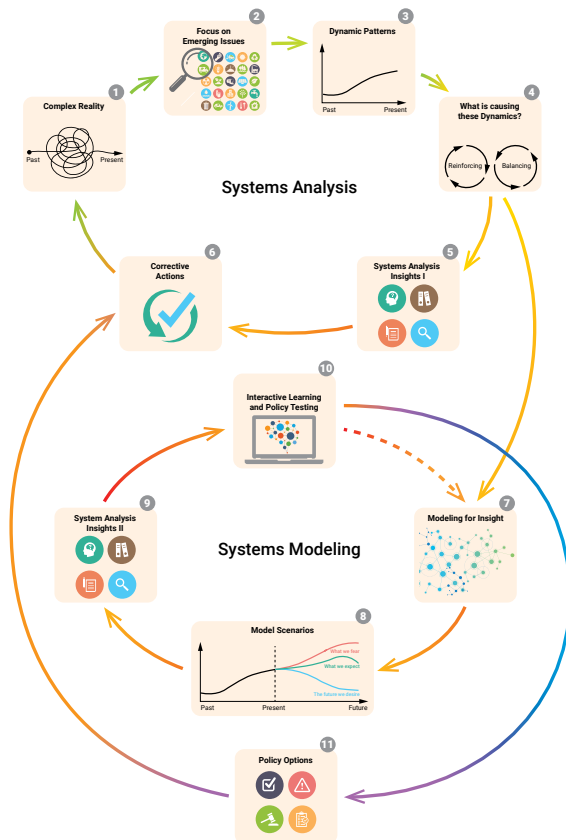
System Analysis and Foresight Briefs

Introduction

The System Analysis and Foresight Briefs Unit publishes science-based Foresight Briefs that highlight hotspots of environmental change, features emerging science topics, or discusses contemporary environmental issues. The Unit also carries out system analysis activities that can help with the exploration and understanding complex and dynamic systems and policy options under the Triple Planetary crisis, such as the global food system, the climate system, and the biodiversity system. The Unit contributes to the synthesis and enhancement of UNEP's collective efforts towards environmental early warning as one and delivering on UNEP's Early Warning for the Environment and through collaboration with the United Nations Strategic Foresight Community of Practice.



System Analysis for Early Action



Foresight Briefs 2017-2023

- Publication of Foresight Briefs that provide guidance and inspiration for policy and action, by exploring a range of plausible, alternative futures and their implications. They help to identify emerging environmental issues and trends that need to be monitored and assessed for early warning.
- To provide unique insights using systems thinking based analysis and system dynamics modelling of emerging issues. Development of online simulators and scenario generators that enable policymakers to better understand structural issues and explore different policy interventions and their potential outcomes. These tools assist in understanding the long-term implications of policy decisions and in making informed decisions.
- Collaboration on Foresight initiatives in the UN system through the Strategic Foresight Community of Practice.



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Foresight Briefs 2017-2023



Saving Lake Faguibine



Marine plastics litter and microplastics



The changing Aral Sea



Lake Urmia: Signs of recovery



Emerging sponge cities



Hacking economics for people and planet



Smoke-haze: A trans-boundary air pollution issue in Southeast Asia



Faith for earth



Revisiting ocean acidification, food security and our earth system



Alternatives for the use of glyphosate



We are losing the "Little things that run the world"



Environment, climate change and security



Putting carbon back where it belongs - the potential of carbon sequestration in the soil



Building a digital ecosystem for the planet



Growing popularity of alternate food systems for environment and health
French



Seagrasses, the forgotten ecosystems
French



Challenges for the growth of the electric vehicle market
Chinese | French | Spanish



Unveiling plastic pollution in oceans
French



Blockchain technology and environmental sustainability
Chinese | French | Spanish



Food loss and waste in the Sustainable Development Goals' nexus
French



The need to eliminate lead paint globally
French



Desert locusts' upsurges: A harbinger of emerging climate change induced crises?
Arabic | French



Nature-based solutions for urban challenges
Arabic | Chinese | French | Spanish



Sargassum: Brown tide or golden jewel?
French



Working with plants, soils and water to cool the climate and rehydrate earth's landscapes
Arabic | Chinese | French | Russian | Spanish



People's livelihood and cities - building back greener
French



The growing footprint of digitalisation
Arabic | Chinese | French | Russian | Spanish



The shrinking Arctic Sea Ice
French



Plastics in agriculture - an environmental challenge
French



Charcoal as a global commodity: is it sustainable?



Sustainable production and consumption: Design for disassembly as a circular economy



The role of remote sensing and social research in monitoring the environmental impact of refugee/ Internally Displaced Persons camps



Water as a Circular Economy Resource

To view current and previous issues online and download UNEP Foresight Briefs <https://data.unep.org/earlywarning/foresightbriefs>



UNEP and UN System Engagements

- The Unit engages closely with internal partners on producing Foresight Briefs, the key engagements being with the Ecosystems Division, Economy Division, Communications Division, and the Chief Scientist Office. On Systems Analysis, the Unit has collaborated closely with MIKE (Monitoring the Illegal Killing of Elephants) and the Disasters & Conflicts Branch. New partnerships are commencing with Climate Adaptation Unit.
- Other engagements include the GRID Centres, GRID-Geneva, GRID-Warsaw and GRID Arendal.
- UN System engagements include with UNESCO, UNDCO, OCHA, UNDRR and the UNRC Mozambique.



Photo credit: Shutterstock.com / Jef Wodniack

Partnerships

- Partnerships in place with GRID-Geneva, GRID-Arendal, GRID-Warsaw. Collaboration on future partnerships with UNDCO, OCHA, UNDRR and Chatham House.



GRIDs Network - Global Resource Information Database Centres

Introduction

One of UNEP's key roles is to keep the World Environment under review for enhancing the science-policy interface and endorsement of the Global Environment Outlook. In this context, a resolution asked UNEP to upscale its data strategy during the 4th United Nations Environment Assembly in Nairobi (11 - 15 March 2019). This is where the **UNEP network of GRID Centres** comes into play for transforming data into information and support UNEP with analytics since their creation in 1985. The Global Resource Information Database (GRID) is a worldwide network of environmental data centres created by UNEP in the mid-1980s.

GRID-Centres are made of a team of data scientists who on top of their technical expertise also fully understand the UNEP mandates, thus helping to bring the most relevant data and information. The main functions of a GRID-Centre are to acquire data, transforming them into information and knowledge about the state of the world's environment in a timely and understandable manner, before disseminating these to support environmental governance and policies. GRID-Centres handle and analyse geospatial and statistical data on environmental and natural resource issues through Geographic Information Systems (GIS), remotely sensed imagery, in situ or statistical data. They process, integrate, disseminate and communicate geographic information via interoperable data platforms (web services and APIs), through other on-line technologies including interactive graphs or maps as well as via contributions to reports on various topic related to the environment. In short, GRID-Centres provide reliable environmental knowledge based on evidence.



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There are 8 formal GRID centres, namely GRID-Geneva, GRID-Arendal, GRID-Warsaw, GRID-Sioux Falls, RAD (The Institute of Remote Sensing and Digital Earth), GRID-Nairobi, GRID-Abu Dhabi Global Environmental Data Initiative, and the Atlantic International Research Centre (AiR Centre) as most recent GRID center at UNEP, while several others are under discussion.



These centres may have different institutional organization: GRID-Geneva is within the UNEP Science Division, other are foundations or NGOs. Despite their different structure or legal status, all of them are working together with several other partners, forming the spine of the “One Global Partnership”, supporting UNEP to transform big data into information and knowledge for sustainable development and humanitarian action at the global, regional and national levels.

UNEP and UN System Engagements

- UNEP/GRID-Geneva is supporting several UNEP divisions, mainly Economy Division, Ecosystem Division and Early Warning and Assessment Division. It works with all UNEP regions, including two regional seas (Caribbeans and Mediteranea), it supports several MEAs (Ramsar, Minamata, Stockholm, UNCCD, Barcelona and Cartagena Conventions). It also supports other UN agencies, such as UNDP, UNDRR and is part of the UN Geospatial Network including 40 UN entities.

Partnerships

- GRID-Geneva is a partnership with the Swiss Federal Office for the Environment and the University of Geneva. GRID-Geneva has multiple partners for accessing data.

Network of GRID-Centres





GRID-Geneva

Established in 1985, GRID-Geneva is formally a partnership between the United Nations Environment Programme (UNEP), the Swiss Federal Office for the Environment (FOEN) and the University of Geneva (UNIGE). To fulfil its mandate of supporting UNEP with most relevant and up to date environmental data, information and knowledge, GRID-Geneva uses its geospatial competencies. Remote sensing, [data cubes](#), GIS modeling, data platforms design and development, are used as supporting tools for on-line interactive data visualization (e.g. [Marine Sand Watch](#), [MapX](#), [Essential Climate Variables](#)), publications (e.g. [Foresights](#), [GEO](#), [Sand](#)), International Agreed Environmental Goals (e.g. [Minamata Convention](#)) or online reporting (e.g. [MedQSR](#)).



Photo credit: Shutterstock.com / Henryk Sadura

GRID-Arendal

GRID-Arendal is a non-profit environmental communications centre based in Norway. We transform environmental data into innovative, science-based information products and provide capacity-building services that enable better environmental governance. We aim to inform and activate a global audience and motivate decision-makers to effect positive change. Our vision is a society that understands, values, and protects the environment on which it depends.

GRID-Arendal was established in 1989 by the Norwegian Ministry of the Environment to support environmentally sustainable development by collaborating with the United Nations Environment Programme and other partners. The launch of GRID-Arendal was an outgrowth of the World Commission on Environment and Development, also known as the Brundtland Commission.



Shutterstock.com / Patnaree Asavacharnitich



We work closely with UN agencies, regional organizations, national governments, and other strategic partners to create positive environmental outcomes and impact, particularly in developing countries. A major focus for GRID-Arendal is supporting fulfilment of the Sustainable Development Goals, the Paris climate agreement, and other regional and international commitments. Our work is organized into programmes on Polar & Climate, Marine Environment, Waste & Marine Litter, and Transboundary Governance & Environmental Crime, supported by a Communications, Technology & Innovation team.

GRID-Warsaw

The UNEP/GRID-Warsaw Centre, established on 17 September 1991, is a member of the GRID (Global Resource Information Database) network, established by the UN Environment (United Nations Environment Programme – UNEP) to foster sustainable management of natural resources. We are one of the few specialised centres in charge of collecting, processing, and facilitating access to data and information about the natural environment, as well as promoting application of spatial data and GIS (Geographic Information Systems).

Officially registered as an NGO (the branch of the National Foundation for the Environmental Protection in Poland), we cooperate with many national and international partners – local authorities, educational entities and companies implementing CSR (Corporate Social Responsibility) policies.

The screenshot shows the GRID-Warsaw website homepage. At the top, there is a navigation bar with 'Home' and 'Team' links, and the UNEP logo. The main header features the GRID logo and the text 'In partnership with UN Environment'. Below this, there are two columns of content. The left column is titled 'NEWS' and contains three article teasers: 'Eco-Miasto' (a green city initiative), 'Ecolcraft' (a publication for citizens), and 'STOP FOOD LOSS & WASTE' (a campaign to reduce food waste). The right column is titled 'GET INVOLVED' and features a large image of a trash bin overflowing with food waste, with the text 'STOP FOOD LOSS & WASTE'. Below this, there is a 'WATCH & LISTEN' section with three video thumbnails. At the bottom, there is a 'STAY CONNECTED' section with a newsletter sign-up form and a 'AREAS OF COMPETENCE (A-Z)' section listing various programs such as 'Digital Skills', 'Climate Change', 'Coastal Programme', 'RESPIRE Initiative', 'GIS training', 'GADE Program in Poland', 'Natura 2000 network', and 'Open Source GeoLAB Social Campaigns'. The footer includes social media icons, contact information for the UNEP/GRID-Warsaw Centre, and a 'Privacy Policy' link.



Photo credit: Shutterstock.com / udmurd

UNITED NATIONS DECAD ON ECOSYSTEM RESTORATION 2021-2030

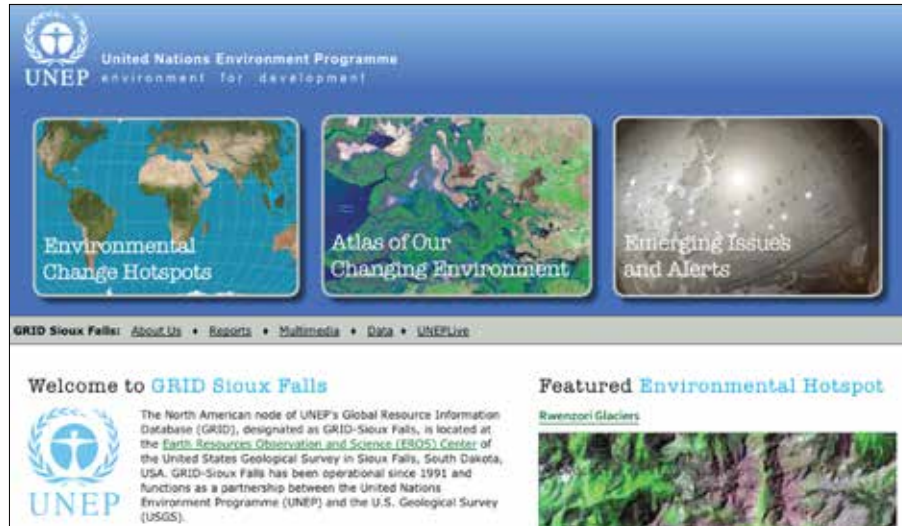
2021-2030 UN Decade on Ecosystem Restoration

<https://www.grida.no/>



GRID-Sioux Falls

The North American node of UNEP's Global Resource Information Database (GRID), designated as GRID-Sioux Falls, is located at the [Earth Resources Observation and Science \(EROS\)](#) Center of the United States Geological Survey in Sioux Falls, South Dakota, USA. GRID-Sioux Falls has been operational since 1991 and functions as a partnership between the United Nations Environment Programme (UNEP) and the U.S. Geological Survey (USGS).



<https://na.unep.net/>

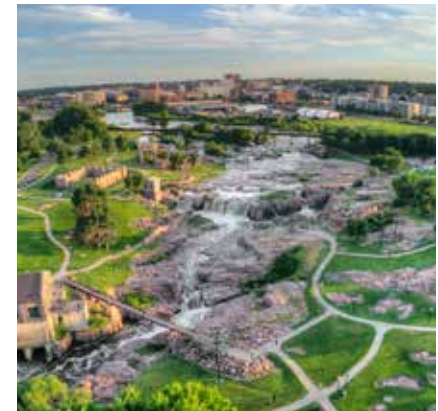


Photo credit: iStock.com / James Boomsma

GRID-Sioux Falls has supported the creation of 1) environmental change hotspots, an interactive OpenStreetMap presentation of satellite change pairs and storylines, 2) the “Atlas of Our Changing Environment” publications (12), ranging from “One Planet, Many People” to “Africa Mountains Atlas”, and 3) a series of “Alerts” on emerging global environmental issues.

International Research Center of Big Data for Sustainable Development Goals (CBAS)

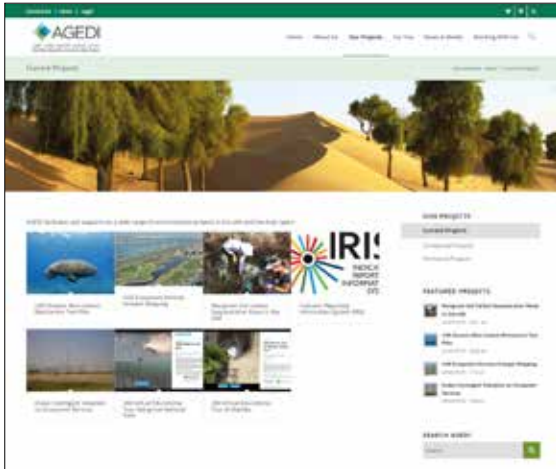
The International Research Center of Big Data for Sustainable Development Goals (CBAS) aims to support the implementation of the 2030 Agenda for Sustainable Development by coordinating global efforts in utilizing science, technology, and innovation to achieve the Sustainable Development Goals (SDGs). Operating within a “science for sustainability” framework, CBAS will create scientific solutions and technologies on a global scale to ensure universal access to up-to-date and reliable information on SDG indicators. The center will also facilitate the analysis and visualization of data for informed decision-making and policy development, ensuring equitable access for all stakeholders. CBAS is committed to fostering inclusive development by establishing a Big Earth Data platform and deploying scientific satellites dedicated to monitoring SDG progress. Additionally, it will offer educational programs and establish a think tank to support capacity building and skill development in line with global initiatives. Through regional and global partnerships, CBAS aims to promote multi-stakeholder engagement on shared interests and strengthen collaboration on data and technology within the United Nations framework.



Photo credit: Unsplash / Nakaharu Line



GRID-AGEDI (Abu Dhabi Global Environmental Data Initiative)



<https://agedi.org/current-projects/>

The Abu Dhabi Global Environmental Data Initiative (AGEDI), headquartered in Abu Dhabi, was launched by the Environment Agency – Abu Dhabi and United Nations Environment Programme at the UN World Summit on Sustainable Development in 2002. AGEDI's mission is to facilitate the access to quality environmental data that equips policymakers with actionable, timely information to inform and guide critical decisions towards a sustainable future. Recent initiatives include:

- 1) The Indicator Reporting Information System (IRIS) is an AGEDI programme that is being implemented by the AGEDI partners EAD and UNEP's Science Division Technical teams at Nairobi. IRIS has been deployed around the work in several applications and use cases;
- 2) The 'Eye on Earth' initiative which has mobilized a worldwide community of more than 5,000 members by means of three international Summits and through hosting 50 pioneering international online seminars.

GRID-Nairobi

GRID-Nairobi was one of the two first GRID-Centers created by UNEP in 1985. It is being re-established and currently comprise five UNEP staff within the Early Warning and Data Analytics Branch of the UNEP's Early Warning and Assessment Division at UNEP headquarters in Nairobi.

GRID Nairobi has 3 staff members with Geospatial capabilities and skills and 2 other staff members with programming and environmental data management experience. The Regional Office for Africa has 2 staff members with Geospatial capabilities and skills and 2 more staff members with Environmental Data analyses competences and experience.



Photo credit: iStock.com / Bank215

The current mandate of GRID-Nairobi is to support the overall management of the GRIDs Network, the establishment of the Early Warning for the Environment, the 'Geospatial clearance' function of UNEP across the Organization and ensuring the SOP for Geospatial standards of the UN Secretariat, and the work of the ECOSOC UN Geospatial network, across 40 Entities of the UN system

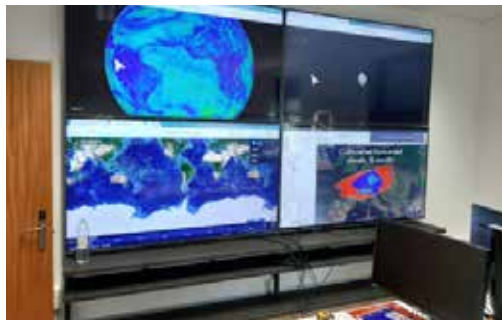
In collaboration with the Early Warning and Assessment Division, the Regional Office for Africa of UNEP has been collaborating in several initiatives such as The Africa Atlas, the implementation of the WESR Common Country Analysis project supporting the UN Reform and the UN Development Cooperation Framework, and the implementation of Science Policy advice to Africa Countries.



Atlantic International Research Centre (AIR Centre) as new GRID Node at UNEP

The Atlantic International Research Centre (AIR Centre) is an international non-profit organization for the development of scientific and technological applications in the Atlantic region, paying special attention to the study of ocean-space interactions and the development of sustainability solutions. The AIR Centre, headquartered on Terceira Island - Azores, is established as a distributed network which already includes several countries in the Americas (Brazil, Colombia, Mexico, United States), Europe (Portugal, Spain, United Kingdom, Norway), and Africa (South Africa, Nigeria, Angola, Namibia, Cape Verde, São Tomé and Príncipe).

The AIR Centre's mission includes activities in areas of enormous scientific, economic and social impact, such as coastal erosion, protection of bays and estuaries, or mitigation of natural disasters. To carry out its mission, the AIR Centre has deployed an Earth Observation Laboratory at its headquarters on Terceira Island. Thanks to a Memorandum of Collaboration with the European Space Agency, signed in 2019, the AIR Centre hosts the ESA Lab@Azores, an open platform of collaboration which is embedded within ESA as part of its ESA Lab@Initiative.



The AIR Centre EO Lab has already started more than 20 projects in consortium with entities from associated countries (companies, Universities, Research Centres), won in international competitions (national, European and intercontinental programs) on issues related to the oceans such as desalination, off-shore renewable energy, protection of marine ecosystems, detection of plastics in the oceans from satellite, ports of the future, coastal cities, aquaculture, etc.



The AIR Centre EO Lab is using extensively Copernicus data, but in addition a Direct Receiving Station has been deployed at its premises for real time acquisition of data from direct broadcast satellites like Terra, Aqua, Suomi-NPP, JPSS-1 (NOAA 20) and FengYun3A/B/C/D. In addition, the AIR Centre is also one of the shareholders of the Earth Observation satellite operator GEOSAT, which operates the satellites GEOSAT 1 and GEOSAT 2 providing unique very high resolution (down to 75 cm spatial resolution) images of the planet to help developing scientific projects and technological applications towards sustainability and help solving the global challenges that we are facing. An EO Data Centre has been deployed at AIR Centre to store the received EO data and to make it available to all the network in real time and to UNEP as a new node of its GRID.



Knowledge bases for Early Warning and Data Analytics





Big Data and Analytics, Early Warning and Science Foresight for Action

Science and research is fundamental for United Nations Environment Programme's role as a global United Nations agency for policy and action on the Environment and its foundational mandate to keep the Environment under review. In today's times of transition from industrial societies to knowledge societies, policy and action on the environment is dependent upon the capacity of countries, regions and globally, to collect, manage and deliver Big Data and Analytics. The United Nations Secretary-General raises, at the highest level, in his latest report of 2021, on progress towards the Sustainable Development Goals, "... The availability of high-quality, timely and disaggregated data is vital for evidence-based decision-making and to ensure accountability for implementation of the 2030 Agenda..."

The Big Data Initiative builds Environmental Strategic Foresight and insights for policy through analysis of data, mapping trends, creating scenarios and identifying emerging issues on a permanent basis, at the frontier of environmental knowledge. Foresight provides a systemic process, to highlight a hotspot of environmental change, to feature an emerging science topic or provide early warning for identifying the future environmental trends. The Big Data revolution for achieving the Sustainable Development Goals can only be realized by Big Science.

Tackling Big Data and Analytics, Science and Research requires innovative partnerships with private sector (technology), and active engagement of our Global Resource Information Database (GRID) networks as well as scientific collaborating United Nations Environment Programme (UNEP) centres of excellence worldwide (capacity and human capital). The provision of Big Data and Big Science, create the foundation for Green Solutions, with impact on billions of people, on the ground, effective solutions for big challenges and priorities on the Environment, from Pollution to Biodiversity and Climate Change.





Global Environmental Data Strategy and World Environment Situation Room (WESR)

A UNEP@50 Initiative for the next 50 years. A 'Situation Room' to support Countries tackling the environmental emergency and achieving Agenda 2030 for Sustainable Development.

Mission

- Empowering science-based multilateralism
- A gateway to informed decisions for People, Places and Planet
- Science-policy in action. Take action!

Goals

To provide a federated data system of the best openly accessible environmental data, information and knowledge with adequate analytical capacity, to support decision making, policy setting, and action at the global, regional, national and local levels for the environment and sustainable development.

- Providing credible and independent data on the state-of-the-environment and provide policy-relevant analysis
- Using digital tools to accelerate action on climate change, biodiversity and pollution bringing more transparency

At your fingertips:
 Common Country Analysis & Interactive Tools
 Risk Assessment & Foresight
 Real-time Data on the World Environment
 Measuring Progress SDGs and MEAs
 In 6 UN Languages



Science-policy for action

WESR provides integrated, flexible, and coherent access to scientific information and publications, geospatial data, environmental assessments, and foresight analyses.



Tackling the environment crisis

WESR will provide the data backbone to support scientific assessments including the Global Environment Outlook (GEO) process.



Build partnerships

WESR is being implemented in coordination and collaboration with other UN system entities and in partnership with other international organizations, governments, academic and research institutions, private sector and civil society organizations.



Strengthen governance and data standards

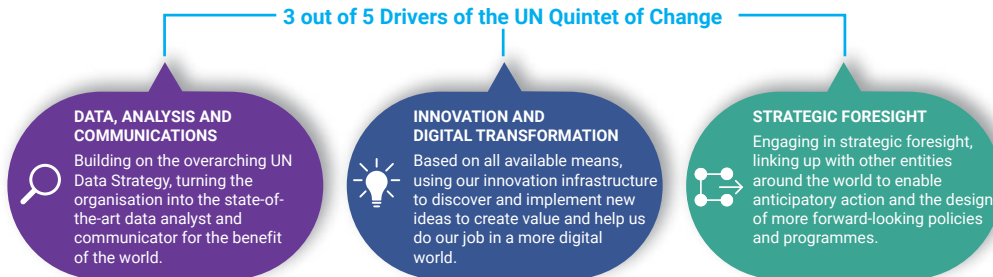
UNEP will build on WESR's existing governance mechanisms (Data Governance Group) to strengthen leadership, transparency and accountability.

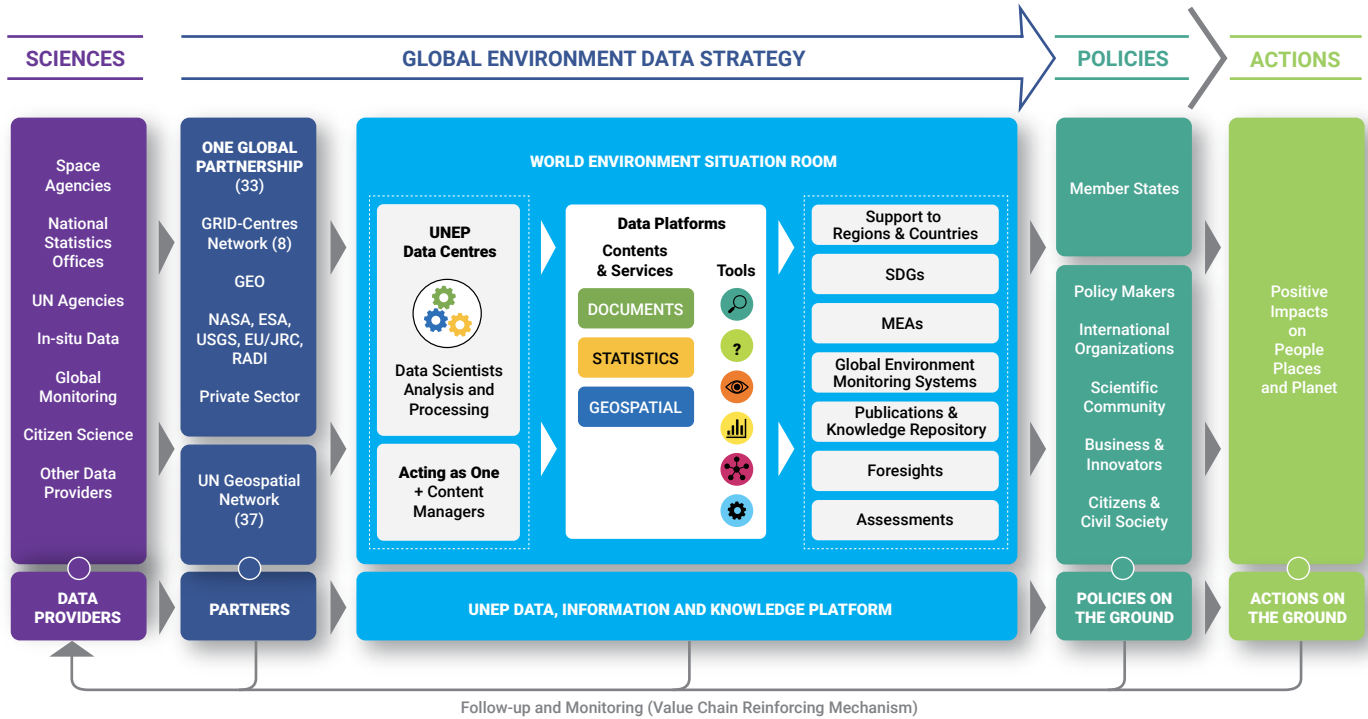
Strategic Goals

Means of Implementation

Strategic Alignment with the UN System

UNEP's Global Environmental Data Strategy is fully aligned with the UN Secretary General' report 'Common Agenda', the UN Data Strategy, Strategy on New Technologies and the Roadmap for Digital Cooperation.





2022-2023

Setting the Foundation



The goal of Phase I is for UNEP to leverage the work to date on the WESR and build a solid foundation that allows WESR to become fully operational federated data system focusing on design and data integration while scaling up the ongoing use cases.

2024-2025

Increasing Capacity, Uptake and Engagement



The goal of Phase II is to further develop the Early Warning and Data Analytics infrastructure, products and services, but focus on engagement, building trust and capacity to ensure uptake and usage.

2026-2030

A full-fledged Federated Data System



The goal of Phase III is to have the network of data, users, applications and knowledge in place where data flows bidirectionally across organizations, data providers and platforms, to transform the WESR to a federated data system.



33 Worldwide Partners in a 'One Global Partnership' for the Environment



World Environment Situation Room and Indicator Reporting Information System

The Big Data, Information and Knowledge Platform for Environment Action

The World Environment Situation Room (WESR), situated in the Big Data Branch of UNEP's Science Division, provides the UN Member States open access to information and knowledge on the environment at the global, regional and national levels. It supports Environmental Policy through Foresight, Outlooks and Assessments and providing Capacity Building for countries to achieve the Goals of Agenda 2030 and Sustainable Development, supporting the capacity building services of UNEP. The World Environment Situation Room provides up-to-date information for citizen science, communities of practice and impact stories and case studies on the environment and people with the impact felt by people and livelihoods across countries, regions and the world.

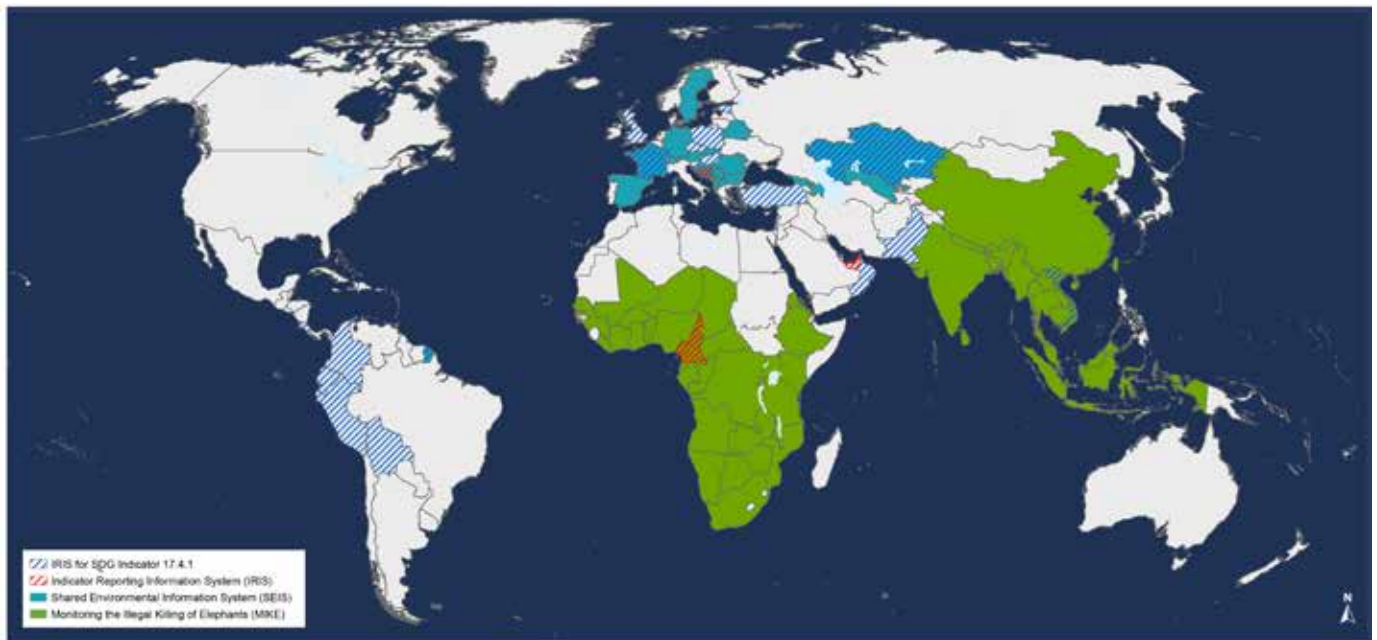
The use of the World Environment Situation Room as UNEPs Data and Knowledge platform on Environmental Data supporting member States on the Common Country Analysis (CCA), the overall UN Development Cooperation Framework (UNDCF) and overall complementary areas of States of Environment Reporting (SER) and Voluntary Reporting of members states. In addition, the platforms integrate Global Environment Monitoring Systems for water quality, air pollution, biota ecosystems and land as well as the oceans. The different types of data are integrated within a conceptual data framework which can be broad enough to work across environmental topics, priorities and the overall achievement of Agenda 2030 and the Sustainable Development Goals.



Indicator Reporting Information System

Indicator Reporting Information System (IRIS), a reporting system developed within the World Environment Situation Room, works to fast track reporting process at any given scale through workflow automation, linkages with databases and production of both Human and Machine readable reports. It provides efficiency and capacity building on the reporting process supporting the member countries in meeting their reporting obligations at the regional and global level. Currently, IRIS is supporting SDG reporting on select environmental indicators i.e. 17.14.1, 12. C.1, 12.2.1, 12.2.2, etc. through collaborations with SDG unit. IRIS for Shared Environmental information system, a collaboration with UN Economic commission for Europe member countries, supports their environment assessments.

Worldwide projects utilizing the Indicator Reporting Information System (IRIS)



IRIS for Monitoring Illegal Killing of Elephants with Cites have been implemented and deployed to the Elephant range countries successfully. At the sub-national level IRIS is in use in the Environment Agency - Abu Dhabi (EAD) in preparation of their SoE report. IRIS as a service is used to link partners databases with the World Environment Situation Room for ease of reporting.

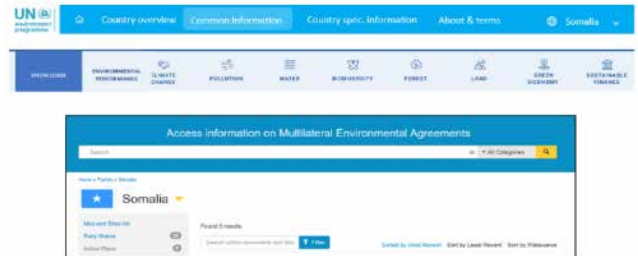


Impact on the Ground in Country support to UN Reforms (WESR CCA and EC Country Fiches)

WESR CCA - Impact

WESR CCA has made available an initial core set of basic data and analytics on environmental SDG indicators, where already available, for all the UN System and for all UN Member States.

It has also led to the engagement with UN Country Teams and UN Resident Coordinators in over 39 pilot countries enhancing the WESR platform and tailoring it to the needs and priorities of UN RCs in support the UN CCA and UNSDCF.



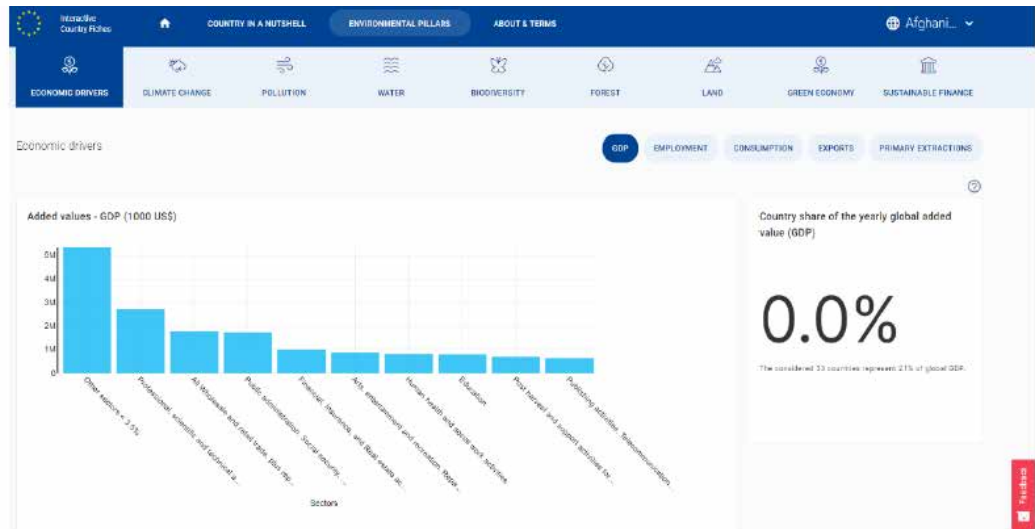
WESR CCA Dashboard

The country overview introduces the specific country description and the structure of the economy, population and territory. The pages provide the key information regarding the country's environmental performance, in the context of the most relevant policy questions.

<https://wesr-cca.unepgrid.ch/>

Interactive Country Fiches

The Interactive Country Fiches provide a system of interactive and updatable environmental profiles for the analysis of environmental situations and performances of countries around the world. Covering eight environmental pillars, this online tool aims to provide information on key national policies and actions and offers a single-entry point to over a hundred of up-to-date datasets. <https://dicf.unepgrid.ch/>

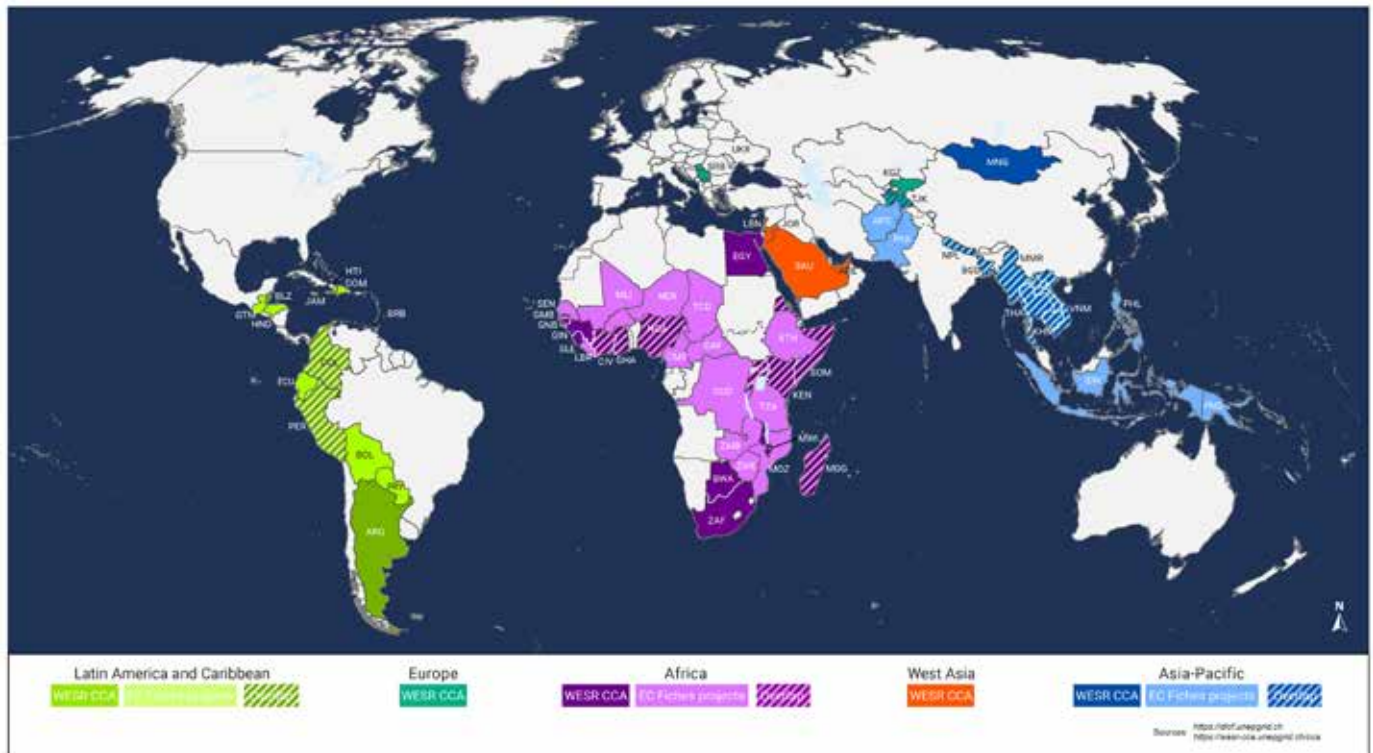


EC fiches country specific dashboard



Lessons Learnt from the implementation of WESR CCA and EC Fiches

- The Data Analytics Dashboards are a useful platform supporting the CCA implementation.
- There is a need for “Data Analysts” and “Policy Analysts” working with the Data platform and providing alignment with Country specific priorities and needs.
- There is a need for “Common Information” made available to all countries; but also “Country Specific Information”, aligned with Countries Priorities.
- The Data Dashboards should also include other Data sets (social and economic data) in addition to environmental data.
- The interoperability of the WESR CCA Dashboard with the UN Knowledge Hubs in the Regions in particular the UN Regional Economic Commissions is a critical element for success.



From the graphical representation of the global efforts by both WESR CCA and EC Fiches, more than 60 countries from 5 world regions (Africa, Latin America and the Caribbean, West Asia, Central Asia and Asia and the Pacific) have so far benefitted with about 12 of them piloting both projects.



Digital Library Services

The mandate of the UNEP Library is to serve the information and knowledge needs of the UNEP personnel in support of UNEP's work. Additionally, since 2007, the library manages the oversees the access of environment information to eligible developing countries.

The Library performs a wide range of activities including:

- Delivering information research and access services;
- Cataloguing, indexing and providing access to UNEP's institutional knowledge through the knowledge repository (<https://wedocs.unep.org/handle/20.500.11822/1>);
- Supporting UNEP publication and outreach processes including advising of referencing and citation in UNEP publications; and
- Managing the Online Access to Research in the Environment (OARE) (<http://oare.research4life.org/content/en/journals.php>), a Research4Life access to information initiative that provides developing countries access to free or low-cost peer-reviewed journals, books and databases in the environment and related fields.

To ensure that UNEP personnel base their work on the latest science and research findings, the library subscribes on their behalf to the latest peer-reviewed information databases including Nature, ScienceDirect, and Wiley.

Library Information Resources¹

The Library subscribes to a number of electronic resources to serve the information needs of its patrons.

Climate Change and Law Collection
 EBSCO Environment Complete
 EIU Economist Intelligence Unit
 Foreign Affairs
 Foreign Policy
 IMF Economic Review 2021²
 ITU iLibrary 2021
 JSTOR

Nature*
 Nature Climate Change*
 New Scientist*
 OARE
 OECD iLibrary
 Oxford English Dictionary
 Proquest Central
 Science Online

ScienceDirect
 UN Comtrade*
 UN iLibrary
 UNEP Knowledge Repository
 Wiley Online Library
 World Bank eLibrary
 WTO iLibrary

Access to electronic databases is usually via IP address. However, in view of the COVID-19 situation, most of the vendors have granted login credentials. The Library must be contacted for more information about access to the resources.



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¹ The resources are accessible to UNEP personnel in support to UNEP's work. Please see the Library weCollaborate page for COVID-19 remote access credentials or contact angelina.djampou@un.org or samuel.opiyo@un.org for access information.

² Resources marked (*) were not given COVID-19 remote access credentials. contact angelina.djampou@un.org or samuel.opiyo@un.org for access information.



Providing developing countries access to scientific information through the Online Access to Research in the Environment (OARE) partnership

What is OARE?

OARE is an access to information initiative that provides developing countries access to free or low-cost peer-reviewed journals, books and databases in the environment and related fields. It is led by the United Nations Environment Programme in partnership with major scientific publishers.

OARE is part of the [Research4Life](#) partnership, together with four other sister programmes with similar objectives: [Hinari](#) led by WHO, [AGORA](#) led by FAO, [ARDI](#) led by WIPO, and [GOALI](#) led by ILO.

What is available?

- More than 85,000 Scientific journals, e-books and databases
- Full-text content that can be read, printed, saved, etc.
- Training on information literacy

Who can access OARE / Research4Life?

Researchers, students, policymakers, environmental experts and librarians through their institutions in eligible countries

Who is eligible?

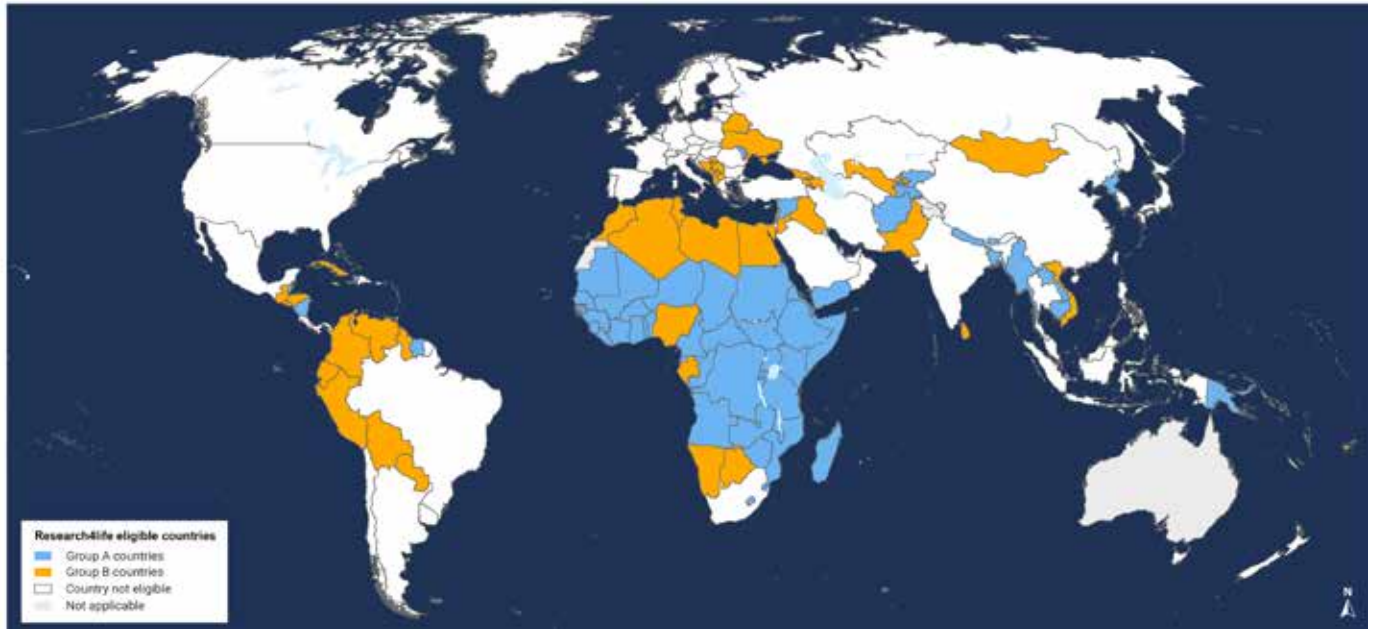
- 115 eligible countries grouped into two groups: [Group A countries](#) have free access to content, whereas [Group B countries](#) have low-cost access to information.
- Eligible institutions within eligible countries include government offices, research institutions, universities, non-profit organizations, etc.
 - Eligible institutions must register in order to access the resources. To date, 8,700 institutions have registered.



Photo credit: iStock.com / Gleanu Mihai



Countries, Regions and Territories eligible for Research4Life



Visit <https://www.research4life.org/access/how-to-register/> to register

Visit www.unenvironment.org/oare for more information on OARE

Partnerships, Networks and Alliances





● ● ● Alliance for Hydromet Development

UNEP is a founding member of the Alliance for Hydromet Development, which commits to ramp up action that strengthens the capacity of developing countries to deliver high-quality weather forecasts, early warning systems (EWS), weather, hydrological, and climate services – known for short as “hydromet” services.

Launched at UNFCCC COP25 in December 2019, the Alliance for Hydromet Development brings together major international development, humanitarian, and climate finance institutions, collectively committed to scale up and unite efforts to close the hydromet capacity gap by 2030. It aims to increase the effectiveness and sustainability of hydromet investments by forging a collaborative partnership which recognizes and leverages the respective competencies and expertise of its members.

“Investing in adaptation planning and science is a critical precondition for peace and stability across the world. The more effective our hydro-meteorological services, the better will be our capacity to observe and predict the impacts of a changing climate and ensure effective environmental management, disaster risk reduction and food security.”
Inger Andersen, Executive Director of UNEP, 2019

Focus Areas

Improving systematic observations for better data by strengthening country capacity for sustained operation of observational systems and seeking innovative ways to finance developing country observations

Enhancing support for better adaptation, mitigation, and resilience by strengthening country capacity for science-based mitigation and adaptation planning

Strengthening EWS for improved disaster risk management by developing multi-hazard warning systems, comprising better risk information, forecasting capabilities, warning dissemination, & anticipatory response

Boosting investments for better effectiveness and sustainability by fostering programmatic approaches that go beyond individual projects, including systematically strengthening the WMO integrated hydromet system

Strategic Priorities

- Producing a regular [Hydromet Gap Report](#) to track progress on closing the capacity gap by 2030
- Creating an innovative mechanism to finance developing country surface-based weather and climate observations – the [Systematic Observations Financing Facility \(SOFF\)](#)
- Deploying a standardized tool to benchmark and assess countries’ hydromet capacity gaps – the [Country Hydromet Diagnostics \(CHD\)](#)



Photo credit: Stefano Zocca | Unsplash



UNEP is a co-founder, implementing entity, and co-chair of the Advisory Board of the **Systematic Observations Financing Facility (SOFF)** which aims to close the data gap in basic weather and climate observations that are critical to underpin better weather forecasts, early warning systems, and climate information services.

Weather and climate information for the global public good

Mission Statement

In order to save lives and livelihoods as well as protect property across the whole globe, we must improve the availability of weather and climate observations from the most data sparse areas. These are vital for weather forecasts, early warning systems and climate information services. The lack of such observations limits countries' capacity to adapt to climate change and build resilience. Numerous global agreements recognize that successful action on climate mitigation, adaptation, resilience and poverty reduction depends on high-quality weather and climate services, and on the capacity to make informed decisions and take appropriate steps in light of that information. SOFF funding is a foundational investment that underpins the effectiveness and sustainability of the investments in other development and climate funds in full complementarity.

How SOFF operates

SOFF systematically addresses the persistent problem that causes missing observations by providing support through the combination of four key features:

1

Global approach for sustained high-quality international data exchange as a measure of success

2

Innovative, long-term finance for sustainable progress towards Global Basic Observing Network (GBON) compliance

3

Technical competencies enhanced through peer-to-peer advisory support

4

Leverage partners' resources for complementarity and coordinated support across the meteorological value chain

Support to countries is provided in three phases: Readiness, Investment, and Compliance. This is implemented through a close collaboration between beneficiary countries, implementing entities, and peer advisors, consisting of advanced national meteorological services.

Early Warnings for All

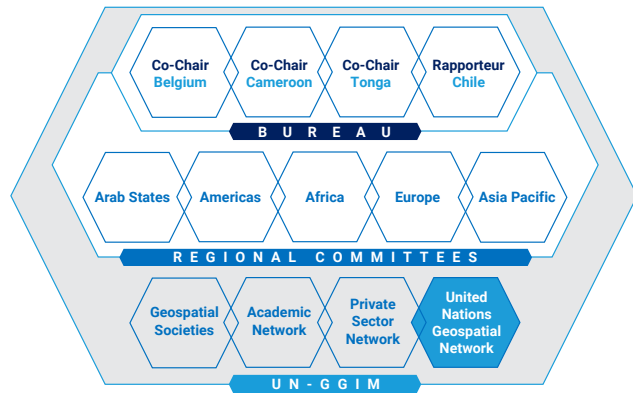
Warnings are only as good as the data they are built upon. SOFF is a foundational element and delivery mechanism of the UN Secretary General's Early Warnings for All initiative, specifically in support of Pillar 2 on *Observations and Forecasting*.



ECOSOC - UN Geospatial Network, across 40 Agencies, Funds and Programmes of the UN System

Strengthening the Coherence and Coordination of Global Geospatial Information Management across the UN System

The role of the UN Geospatial Network in the UN-GGIM Architecture



'As the pandemic continues to unfold, and the world moves further off track in meeting the 2030 SDG deadline, timely and high-quality data are more essential than ever. Indeed, data are being widely recognized as strategic assets in building back better and accelerating the implementation of the SDGs. What is needed now are new investments in data and information infrastructure, as well as human capacity to get ahead of the crisis and trigger earlier responses, anticipate future needs and design the urgent actions needed to realize the 2030 Agenda for Sustainable Development.'



António Guterres, Secretary-General of the United Nations
The Sustainable Development Goals Report 2021

UN-GGIM Objectives

- A formal inter-governmental body which reports directly to the Economic and Social Council (ECOSOC)
- Discusses and coordinates Geospatial Information Management activities by involving Member States at the highest level.
- Makes joint decisions and sets directions on the use of geospatial information within national and global policy frameworks;
- Address global issues and contribute collective knowledge as a community with shared interests and concerns
- Develops effective strategies to strengthen geospatial capacity particularly in developing countries
- To make timely, reliable and authoritative geospatial information consistently and readily available to support national, regional and global development.

Foundation

The Network is building upon the experiences of past coordination efforts of the United Nations Geographic Information Working Group (UNGIWG), 2000 - 2016



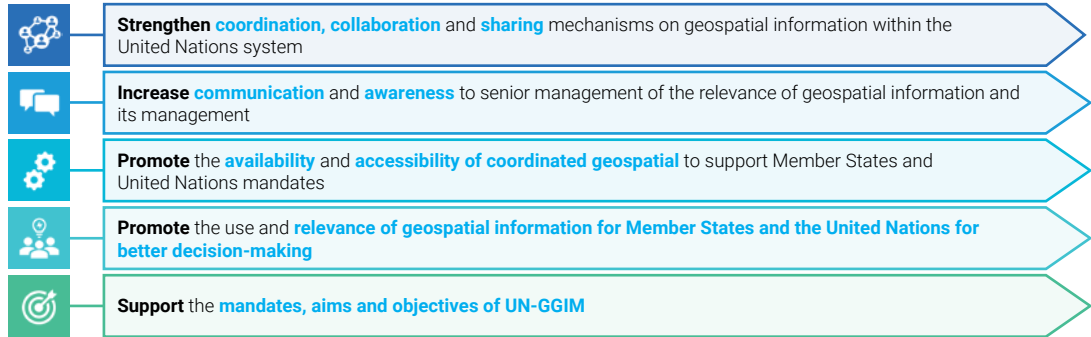


Vision of the UN Geospatial Network

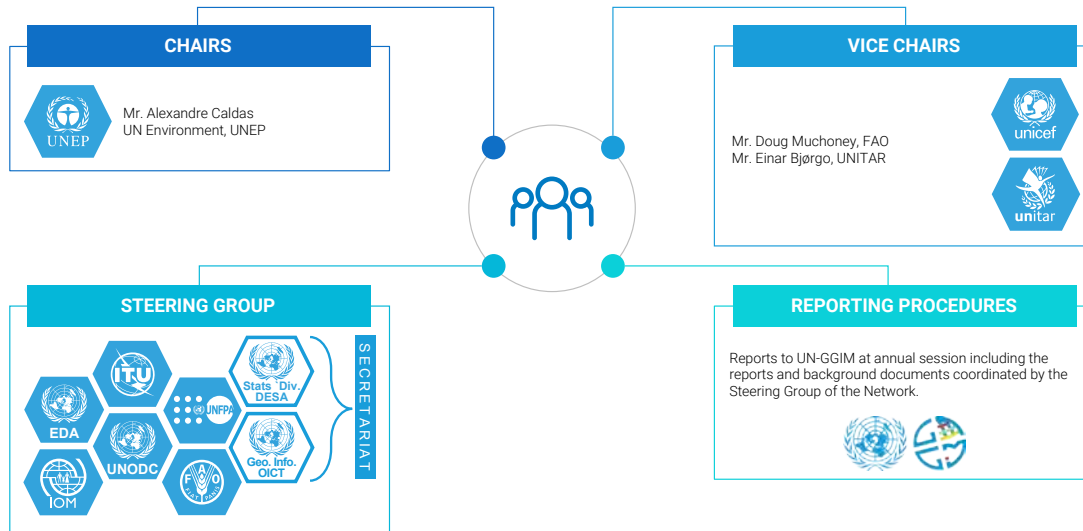
Geospatial for a Better World... Transforming People, Places and Planet

Mission

Strengthen the Coordination and Coherence of Geospatial Information Management within the United Nations System Objectives



Structure



Strategy and Priorities

The Network as approved for the forthcoming years to pursue a number of key strategic priorities.



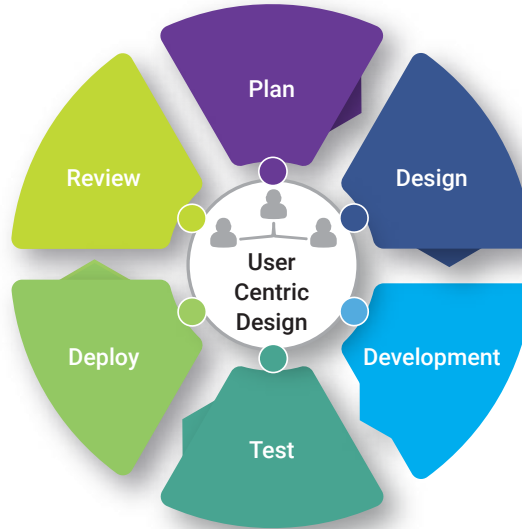


One UN Geospatial Situation Room - Implementation PATHWAYS

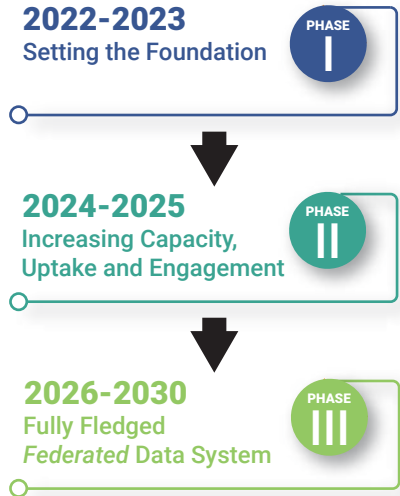
Blueprint Strategy

Strategic Alignment with the UN Strategy

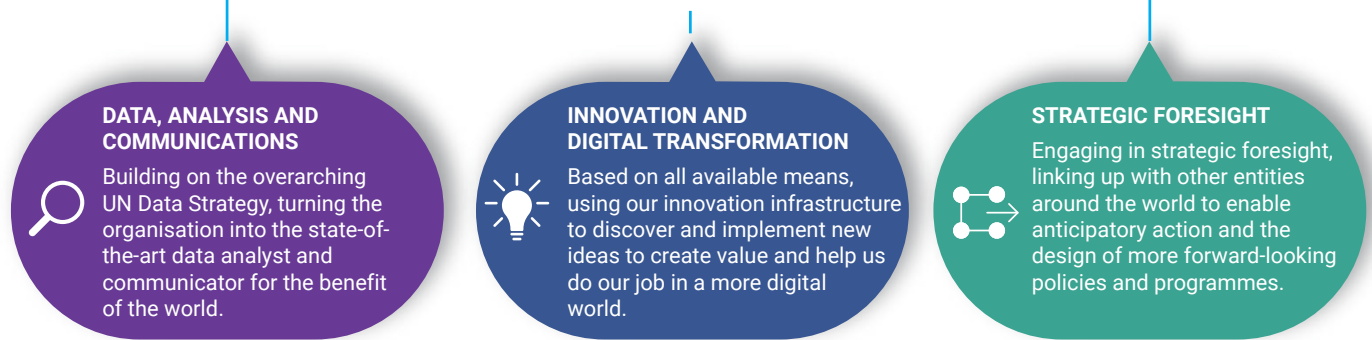
One UN Situation Room initiative is fully aligned with the UN Secretary General' report 'Our Common Agenda', the UN Data Strategy, Strategy on New Technologies and the Roadmap for Digital Cooperation.



Roadmap: A Phased Approach for Implementation



3 out of 5 Drivers of the UN Quintet of Change





One UN Geospatial Situation Room - Implementation PATHWAYS

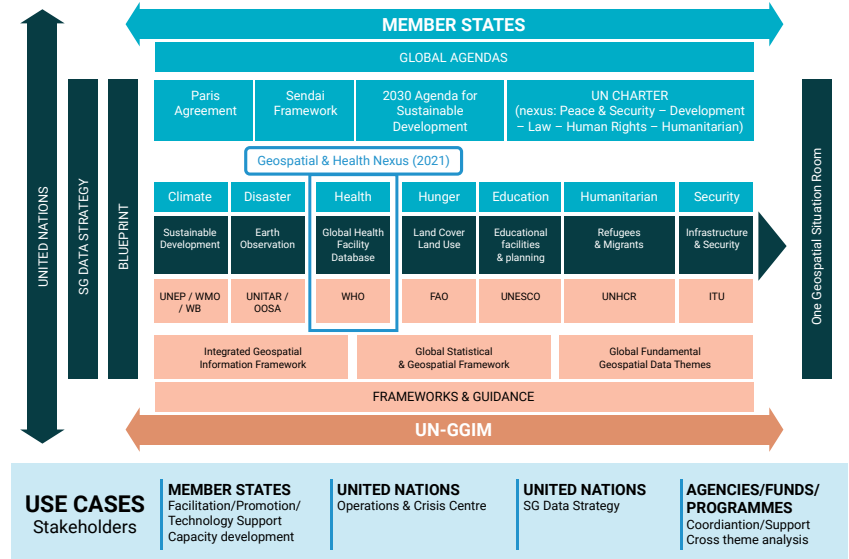
Blueprint Strategy

A Geospatial Data Hub for the nexus of the United Nations

- Focus on the *nexus* of 5 pillars of the UN (peace and security, sustainable development, humanitarian, international rule of law and human rights)
- Builds on *synergies* of existing data systems and platforms across UN system (integrating geospatial, statistics and other data documents)
- Is implemented as a *federated* data system, with clearly identified Authoritative Data Hubs and Spokes
- Contributes directly as a USE CASE to the implementation of the SG *UN Data Strategy* (e.g. UN Data Hub and UN Peace and Security, UNOCC)
- Is built using a *Scalable and Phased* approach implementation plan



High-level Architecture and Priorities



Service Delivery and Use Cases

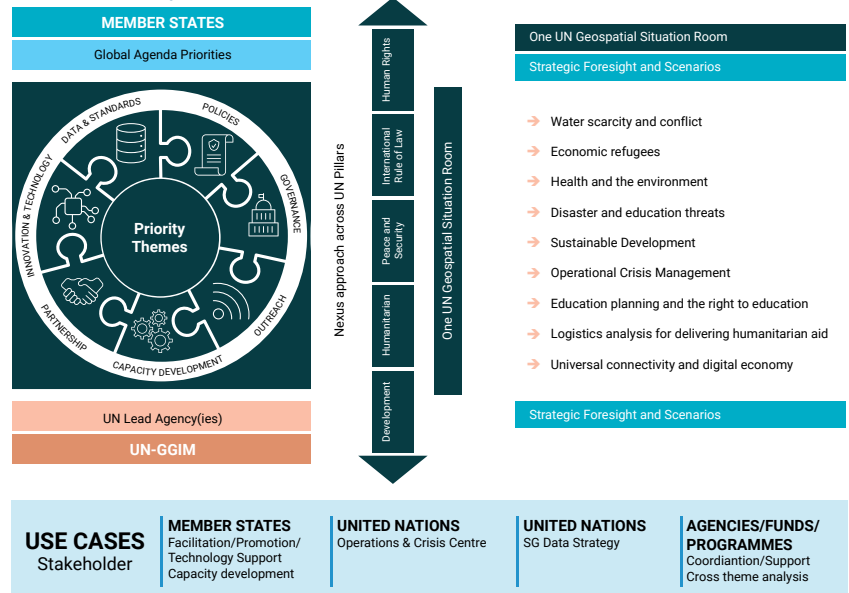




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data.unep.org/earlywarning

Early Warning and Data Analytics | Strategy, Policy and Action for People, Places and Planet
33 Partners in the One Global Partnership and 40 UN Agencies in the ECOSOC UN Geospatial Network



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OTHER ONE GLOBAL PARTNERSHIP PARTNERS

| UNEP GRID-Geneva | UNEP GRID-Warsaw | GRID-Sioux Falls | GRID-Nairobi | GRID-Azores | Environment Agency - ABU DHABI | RADII | Air Centre | SPREP | UNEP WCMC | Yale University |
| NASA | ESA Copernicus | Google | IBM | Descartes | UN System (OICT, DESA-UNSD, UN-GGIM, FAO, WMO, WHO, UNDP) | GEO | European Association Citizen Science | US Association of Citizen Science |

Contact: alexandre.caldas@un.org

Transforming the lives of People, Places and Planet

