The World Environment Situation Room (WESR)
A Federated Data System to support the SDGs and post- UNEP@50 Agenda

"Our Common Agenda is an agenda of action, designed to strengthen and accelerate multilateral agreements – particularly the 2030 Agenda – and make a tangible difference in people's lives" Antonio Guterres

UNEP is committed to WESR as a flagship programme to deliver data and analytics services to keep the global environment under review. As such, through WESR, the Global Environmental Data Strategy (GEDS) and the newly instituted Digital Transformation and Science Policy Subprogrammes, there is a unique opportunity for UNEP not only to embrace the digital age but to come together as an organization to deliver quality data products and services for climate change, nature and pollution to the UN System, member countries and stakeholders around the world.

Mission: To provide a coordinated and federated data system of the best openly accessible environmental data, information and knowledge to support decision-making, policy and action at the global, regional, national and local levels for sustainable development and national planning needs.

Introduction

In its 50th year UNEP must embrace the opportunities of the digital age and significantly advance its provision of environmental data, information and knowledge supporting its mandate, the UN, Member States and other stakeholders. This strategy and conceptual approach outline how UNEP will enhance the development of the World Environment Situation Room (WESR), headquartered in Nairobi, as a user-centric, demand-driven platform designed to meet the challenges of the next 50 years. It will facilitate access to real-time data, information and analytics via a federated data system to support keeping the environment under review and to enhance countries capacity to monitor and achieve the environmental targets of the Sustainable Development Goals (SDGs) and Multi-Lateral Environmental Agreements (MEAs). The timeliness and accessibility of data and information are essential to inform evidence-based policy and decision-making, whilst promoting innovation, transparency, flexibility, and fostering mutual accountability in the achievement of the SDGs and post UNEP@50 agenda.

The WESR will leverage capacities within a network of partner organizations including UN entities, regional and national organizations, and the established network of GRIDs and collaborating centres, through a federated data system for the global environment, with a strong emphasis on enhancing capacity in the Global South. It will work to meet the goals set in UNEP's Medium-term Strategy 2022-2025 and support the UN Secretary-General's Data Strategy, Our Common Agenda, the Strategy on New Technologies, and the Roadmap for Digital Cooperation.

Goals

Building on the piloting initiatives, UNEP, through the WESR, will be the go-to source within the UN system for environmental data and analytics in support of UN Country Teams and UN regional offices contributing to the UN Common Country Analysis (CCA). Free and open access to the WESR platform capabilities will support countries and a range of stakeholders in their needs for environmental data for policy and action, reporting on the State of the Environment (SoE) and national development planning, integrating information in the regional UN SDG gateways with interoperability and, more generally, supporting the achievement of SDGs and post UNEP@50 agenda.

Enhance the science-policy interface. WESR will enhance the science-policy interface through more integrated, flexible, and coherent access to scientific information and publications, geospatial data, environmental assessments, and foresight analyses, which can be harnessed for monitoring and reporting on the SDGs and MEAs.

Keep the global state of the environment under review. WESR will provide the data backbone to support scientific assessments including the Global Environment Outlook (GEO) process combined with the digital dissemination of high quality and disaggregated data, and expert analyses.

Build partnerships. UNEP will use its convening power to build a partnership model to enhance UNEP's capabilities in providing access to and use of environmental data to contribute to consolidating global to national efforts to address data fragmentation and leverage the best available data. Thus, WESR is being implemented in coordination and collaboration with other UN system entities and in partnership with the governments, research institutions, private sector and civil society organizations.

Strengthen governance and data standards. UNEP will build on WESR's existing governance mechanisms to strengthen leadership, transparency and accountability and leverage strategic expertise and guidance from government institutions, private sector and civil society organizations at the global, regional and national levels. A strengthened governance structure will harness needs and priorities from the user community into its product development cycle, increase political buy-in, provide guidance on partnership development, provide technical and domain expertise, and align the WESR initiative with other programs and initiatives.

Principles
The WESR strategy and conceptual approach is based on the following principles. These principles serve as guideline for the way forward and serve as a reference point for the governance mechanisms.

1. *Demand-driven*. Data, content and technology delivered by UNEP will be responsive to needs, challenges and priorities of users within UNEP, the broader UN system, and stakeholders across sectors including governments, multilateral institutions, private sector, academia and civil society.

2. *User-centric design*. User needs, research and co-design will be central to the technology development process to provide a streamlined and intuitive user experience.

3. *Accountability and transparency*. The decision-making process from the governance framework should be accountable and transparent to the user community. A robust metrics framework will be put into place to understand usage and impact.

4. *Partnerships*. WESR will develop strategic partnerships at the global, regional and national levels to support the data and technology needs of the platform, while ensuring alignment and collaboration with existing programs and projects.

5. *Digital public goods*. WESR will be based on a digital public good model[1] where core data, products and services are free and open.

6. *Data systems*. Innovation and entrepreneurship will be enabled and promoted to use data to create new applications, businesses and other innovations from users around the world.

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[1] See for reference, emerging standards for digital public goods: https://digitalpublicgoods.net/standard/

7. *Capacity development*. A holistic capacity development process through partnerships will enable users from the general public, to developers, to scientists and decision-makers to make use of WESR data, products and services.

8. *Diversity and inclusion*. WESR will ensure geographic, gender and multi-stakeholder balance in its approach to engagement, product development and governance.

9. *Nimble and agile*. WESR, as a flagship data component of the digital transformation agenda, will aim to be action oriented, responsive, adaptive and iterative to deliver fit-for-purpose solutions in a timely manner. WESR will be the data module of the UNEP.org website. Fully integrated into the UNEP website.

10. *Interoperability*. WESR will leverage existing data, tools and applications through a robust API and web services framework.

The Approach

WESR will implement a demand-driven, user-centric approach that uses Agile methodologies to iterate on design and production. To do so, embracing a multi-stakeholder engagement process based on co-design principles will ensure products that are fit-for-purpose, leverage the latest technologies and innovation, ensure buy-in at the country level and support the development of a data ecosystem approach. WESR will meet its goals by:

- Providing an interoperable, federated and de-centralized approach enabling users to search, visualize, analyse, access, process, link and download data products and services using open APIs and web services.
- Archives in an analysis ready format, data collected and/or created by UNEP (e.g., projects data and SDGs target and indicators where UNEP is a custodian agency).
- Linking and integrating existing platforms curated by UNEP so that users can easily find applications, tools and resources.
- Providing easy and open access to the best, publicly available geospatial and earth observation data, environmental data and statistics, analytical models and algorithms, and decision-ready information products and services.
- Creating a collaborative environment that embraces user-centric and co-design principles.

The intent is to be pragmatic and focused on the approach by identifying use cases based on needs and priorities identified through both internal and external consultation and prioritized through the governance framework. Communications, outreach and engagement is fundamental to the process for building relationships and trust leading to products that are fit-for-purpose and actionable. A strong partnership with the UNEP Communications Division will be developed to align and accelerate this approach with a clear definition of target audiences.

WESR will create a de-centralized, federated approach to data sharing and access leveraging best practices in interoperability, APIs, web services and standards. It will aim to provide a more unified approach to data and information products cataloguing and searching so that users can easily find, access and analyse the data and information they are looking for.

Data, Products and Services

The WESR platform will be a cutting-edge, dynamic platform that collects, processes and shares the best environmental data, science and research available within the UN system for supporting UNEP's mandate and related multi-lateral environmental agreements. WESR should aim at becoming the reference data platform for UN-validated data and related standards on the environmental dimensions of sustainable development. At its core, WESR will make geospatial and earth observation data, environmental data and statistics, and UNEP publications readily accessible. It will leverage data to create tools, applications, services and decision-ready products based on an understanding of needs and priorities, and how these can be transformed into specific use cases for deployment.

The platform will enable these services to be shared and delivered while enabling users to not only ingest those provided by UNEP, but to create their own products. By creating such an approach for WESR, users across the world will have access to raw, structured and derived data, algorithms and models that can be used to create their own applications. Growing this capacity leverages the "convening" power of UNEP by allowing users to have the data and information they need at their fingertips, while creating the enabling infrastructure, standards and guidelines for how to use the data, platform and services effectively. A conceptual diagram for the existing WESR prototype is as follows:
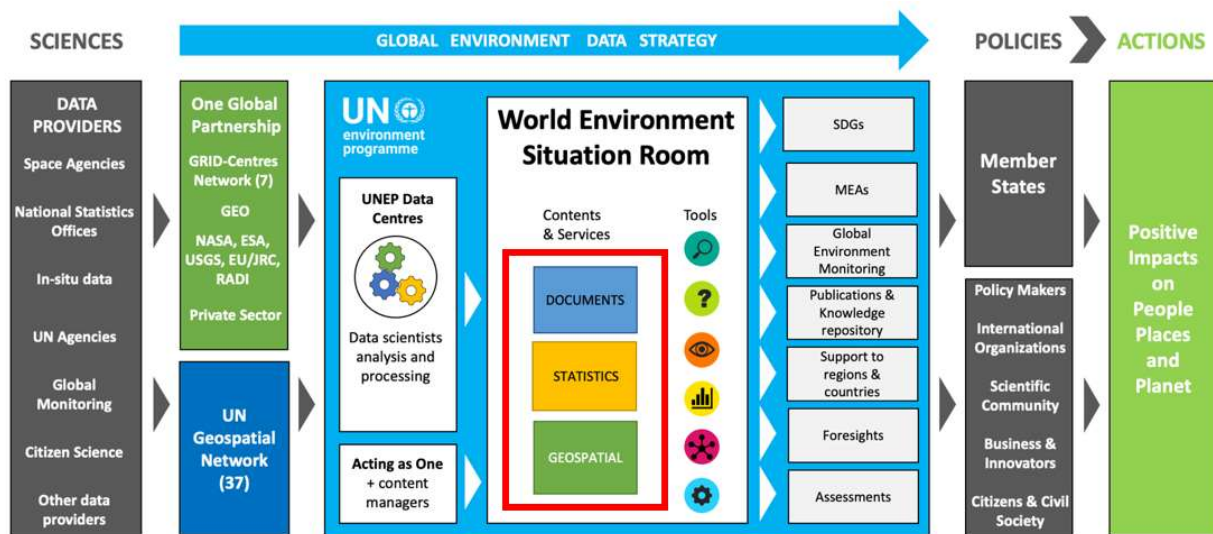
UNEP WESR Impact pathways

The development of products and services provided by the WESR will be based on an engagement approach that is iterative, user-centric and guided by a responsive governance framework. Several examples of use cases have been identified to be further explored with users:

- *Global Environment Outlook (GEO),* with WESR providing the data backbone for GEO.

- *Monitoring progress against key SDG and MEA indicators.* Countries across the world are facing gaps on data needed to address the SDGs, as well as communicating progress and addressing implications on policy and decision-making.

- *Integration of Global Environmental Monitoring System (GEMS).* Access to earth observation data can provide GEMS additional efficiency and scale by modelling water availability and quality based on

An Agile, user-centric approach for developing use cases and products

historical and current trends for countries to better understand their water security.

- *Harmonizing MEA reporting*: MEA reporting is complicated by the fact that core data sets which are common to each MEA are not always used when preparing reports. The result is that trends and findings from such reports are not easy to integrate and compare. Furthermore, national government officers are frustrated by the inability to integrate MEA reports to better understand overall trends and threats to SDGs.

- *Enabling horizon scanning, foresight, data and scenario analysis and intelligence functions:* The foresight process combines a myriad of techniques to characterize these processes, such as scoping studies, horizon-scanning, trend analysis and emerging issues analysis. Currently, there are numerous UNEP products which are not analysed to draw such insights. It is therefore essential that UNEP identify the use case of identifying emerging environmental issues and threats, which will require the integration of existing assets and federation of others.

Governance

Strengthening existing governance mechanisms for WESR to be inclusive, transparent, aligned and responsive in its operation will be a key objective. As the Digital Transformation Subprogramme comes online in 2022, the existing Data Governance Group will be expanded to the Data and Digital Governance Group which is

internal to UNEP. However, it will be important to seek expert guidance both at the strategic and technical levels from national institutions, major stakeholders and partners to UNEP. This will build buy-ins from both policy and technical aspects and enable financial and technical support for WESR.
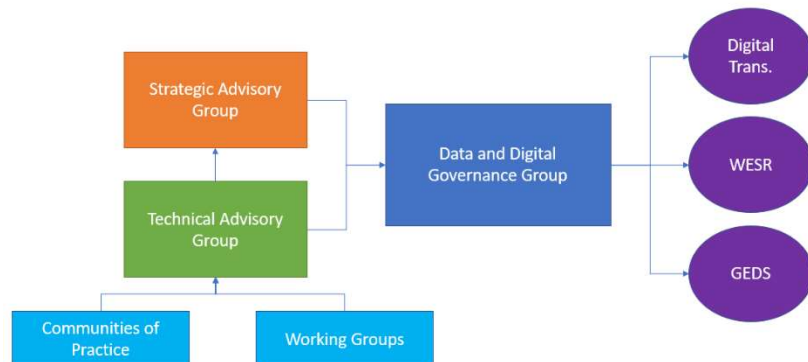
Partnerships
Currently, 33 partners and entities have collaborated in the pilot phase of WESR, in what is referred to as the *One Global Partnership*. This includes 7 GRID centres (Geneva, Arendal, Warsaw, Sioux-Falls, Abu-Dhabi, Nairobi and RADI in China), 3 other collaborating centres (WCMC, DTI, and University of Yale), 6 private companies (Google, Microsoft, IBM, ESRI, Descartes Lab, and AirQ), 7 UN entities (UNSD, OICT, FAO, UNDP, WHO, ECOSOC through UN-GGIM and UNODC) and 5 UN Regional Economic Commissions, other international organizations (e.g., GEO), 2 Geospatial Agencies (NASA and ESA-Copernicus) and 2 Citizen Science Associations (US and Europe).

Partnerships are crucial to the WESR development as they can provide a practical extension of UNEP given its limited reach and resources. A network of partners can support programme delivery by fundraising, identifying new data sources, training stakeholders and providing access to domain expertise, among other roles. Several categories for partnerships can be created:

1. *Data Partner.* A partnership that is focused on the exchange and sharing of data and methodologies.

2. *Technology Partner.* A partnership that is focused on the development of technology, infrastructure and standards.

3. *WESR Delivery Partner.* A partner that can support the delivery of program objectives at the national or regional level. This can include providing domain expertise, user engagement and co-design, capacity development, communications and building political support.

4. *Domain Expertise Partners.* Organizations and companies that UNEP may want to partner with who have specific domain expertise in UNEP's priority areas, or programme development experience at the country level.

Partnerships will be strengthened in the Global South, by strengthening the HQ function in Nairobi, by establishing new GRIDs and collaborating centres, integrating collaborating centres from academic networks in the Global South

Capacity Development
Implementation of the WESR strategy requires capacity development along the value chain of stakeholders, including at the national and regional levels, within the federation of WESR partners, and within UNEP itself.

Through the partnerships developed by UNEP to support implementation of WESR, UNEP will be able to extend its capacity development reach through global, regional and national institutions. A holistic capacity development approach will be developed for applying data to support decision making, policy and action across general, technical and executive audiences.

Regional capacity should target UNEP Regional Office staff playing a key role in implementing the engagement strategy, Regional Economic Commissions, research institutes, regional NGO partners, with the goal of reaching improved capacity to grow regional environmental data networks and to create communities of practice among national initiatives. UNEP HQ will need to build its capacity by engaging or training staff responsible for implementing engagement strategies, as well as technicians responsible for guiding the development of back end of WESR.
Capacity development is a transversal activity over the course of the 3 phases for implementation of the WESR, across the whole Roadmap.

A Phased Approach

The following provides a phased approach for enhancing WESR through the 2030 timeframe. The roadmap is presented according to three phases: 1) setting the foundation by improving the strategic and operational mechanisms for WESR; 2) increasing capacity and usage by further engaging, developing the platform and its use cases, and enabling uptake; and 3) getting to a data ecosystem with networked data, users and applications enabling users to create their own innovations. Each phase is meant to build on the previous as the federated system continues to advance and curate the delivery of data, information and knowledge based on identified needs and priorities from the user community.

Phase III
Creating an ecosystem

Phase II
Increasing Uptake and Capacity development

Phase I:
Setting the Foundation
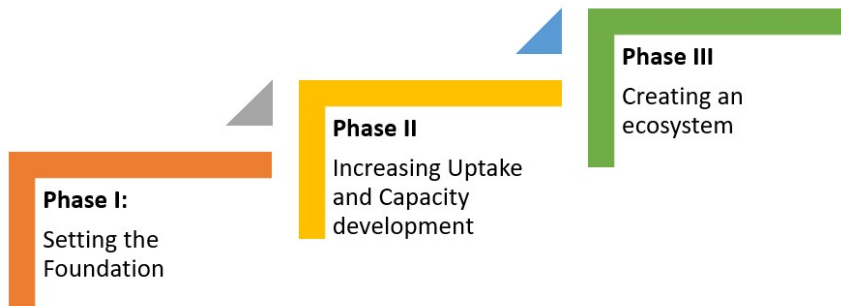
Phase I (2022-2023): Setting the Foundation.
The goal of Phase I is for UNEP to leverage the work to date on the WESR prototype and build the strategic foundation that allows WESR to become fully operational.

#	Outcomes
1	Further iterate on development of the core infrastructure and integrate data, content and services across UNEP
2	Establish enhanced governance structure for decision-making and transparency inclusive of external expert guidance
3	Evaluate existing partnerships, develop partnership model, and create agreements
4	Develop a communications, engagement and outreach strategy to build an active user community
5	Create key impact metrics and KPIs, which are easy to measure on a regular basis.
6	Focus on the development of 2-3 prioritized use cases based on governance feedback
7	Develop capacity development tools and resources
#	Outcomes
1	An integrated operational WESR platform that serves the needs of UNEP, the broader UN System, country teams and regional offices
2	Increased buy-in across UNEP as an organization-wide initiative with international, multi-stakeholder support
3	The value proposition of WESR is understood by UNEP leading to better coordination and cooperation within UNEP and the UN System

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4	Focused and impactful partnerships to support data, technology, implementation and domain expertise
5	A robust monitoring and evaluation framework to understand what is working and what needs improvement
6	Increased integration of existing UNEP platforms, WESR driving the data backbone of GEO, more countries reporting on SDGs, increased ability for foresight analysis, CCAs are informing UN processes
7	Increased ability within UNEP and the UN System to use WESR and understand their roles

Costs:

Per year: 2.23M USD
Total: 4.46M USD

Phase II (2024-2025): Increasing Capacity, Uptake and Engagement
The goal of Phase II is to further develop the WESR infrastructure, products and services but focus on engagement, building trust and building capacity to ensure uptake and usage.

#	Activities
1	Conduct training workshops, webinars, and online training and education resources
2	Primarily use conferences and online materials for external capacity development
3	Continue to increase UNEP staffing for WESR design, development and deployment as well as partnerships based on demand
4	UNEP will create a sustainability plan for WESR based largely on donors and philanthropy as well as internal cost recovery
5	Continue to build and iterate on the core infrastructure and identify 4-5 additional use cases
#	Outcomes
1	The number of users engaging with WESR across UNEP and the UN System is increasing. Through regional mechanisms and partnerships, increased usage from countries.
2	Broader awareness of WESR among users globally
3	WESR is fully operational; staffing at UNEP HQ and regional offices optimized; and a network of supporting partners in place
4	A plan to financially sustain WESR is in place, but dependent on availability of funding
5	WESR is enhancing the science-policy interface and there is improved reporting against the SDGs and MEAs; Integrated data is easily findable and WESR is supporting Global Environment Outlook. A digital GEO report is fully operational

Costs:

Per year: 2.26M USD
Total: 4.52M USD

Phase III (2026 - 2030): Establishing a Data Ecosystem

The goal of Phase III is for WESR to have the network of data, users, applications and knowledge in place where data is flowing bidirectionally across organizations and platforms creating a data ecosystem approach. Governments, private sector and civil society are not only using data, products and services provided by WESR, but creating their own innovations powered by WESR.

#	Activities
1	Create scalable, decision-ready products for mass consumption
2	More deliberately engage the private sector in relation to CSR and ESG goals, and creating 3rd party applications and new innovations
3	A physical World Environment Situation Room is established in Nairobi, and powering similar situation rooms to be established regionally
4	Data is normalized, data science is powering the user experience, datasets are combined from multiple sources
5	Create case studies and lessons learned on the impact on the SDGs, MEAs, SOE reporting, GEO, CCA
#	Outcomes
1	Environmental data is streamlined into everyday business and political systems and applications driving impact on policy, decision making and action
2	The user base for WESR continues to grow with a true innovation and entrepreneurship spirit
3	UNEP demonstrates its commitment to the Global South by developing and powering state-of-the-art situation rooms in Nairobi and beyond
4	Platforms and data are talking to one another adding efficiency and scalability in the seamless user experience for finding, accessing, managing and using environmental data
5	There has been a marked increase in data, reporting and efficiencies across UNEP programs, initiatives and projects

Costs:

Per year: 2.83M USD
Total: 11.32M USD

Total Costs over 8 Years:

20.3M USD