Global Environment Monitoring System & World Water Quality Alliance

Freshwater, Air and Ocean

UN environment programme

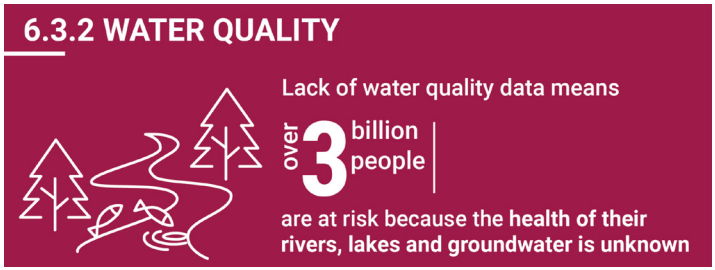
Introduction

The Global Environment Monitoring Unit in UNEP's Science Division provides innovative monitoring services to help the world community access global data and assessments on the state of freshwater quality, air quality, ocean and coasts with a view to support science and data-based decision-making. In its convening role, the unit also brings together 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.

GEMS/Water

The Global Environment Monitoring System for Freshwater Programme (GEMS/Water) Programme was established in 1978 to support countries to collect world-wide water quality data to assess the status and trends of global inland water quality. As UNEP's operational mechanism supporting partner countries in ambient water quality monitoring, GEMS/Water:

- provides access to and supports use of quality assured, compatible and comparable, open environmental data and analyses to Governments and stakeholders. The programme operates the global data and knowledge platform GEMStat and derives products and information that feed into UNEPs World Environment Situation Room (WESR).
- delivers data products for use in national, regional and global water quality and integrated assessments, including major UNEP products such as the Global Environment Outlook (GEO) or the World Water Quality Assessment.
- engages network partners to provide diverse capacity development products for various stakeholders and to support water quality monitoring, analysis and policy action at relevant scales including at country and community level
- constitutes UNEP's operational mechanism for ambient water quality in the UN-Water Integrated Monitoring Initiative for SDG 6 (IMI SDG6). It assists countries by overseeing and coordinating monitoring and reporting for SDG Indicator 6.3.2 on ambient water quality.



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World Water Quality Alliance (WWQA)

The World Water Quality Alliance (WWQA), represents a voluntary and flexible global multi-stakeholder network launched in 2019 that advocates the central role of freshwater quality in achieving prosperity and sustainability; it explores and communicates water quality risks in global regional, national and local contexts with the aim of pointing towards solutions for maintaining and restoring ecosystem and human health and well-being, with an aim to serve countries throughout the lifetime of the 2030 Agenda for Sustainable Development and beyond. The WWQA aims to provide a participatory platform for water quality assessments and co-design of tailored and demand-driven services.

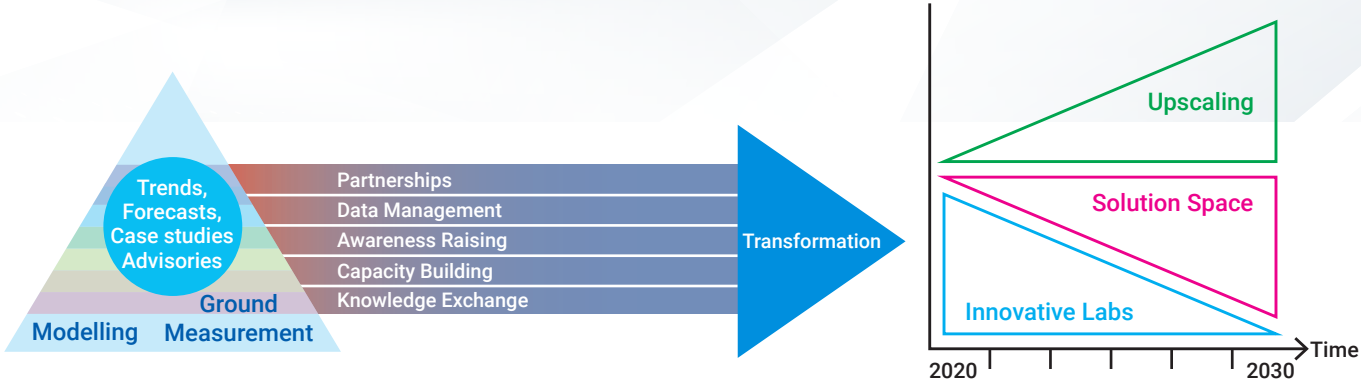
The WWQA focuses on improving world water quality through a partnership effort. As of January 2022, there are 14 active workstreams:

The WWQA focuses on deliverables on three levels:

- A global assessment of freshwater quality to be delivered for the UN Water Conference in March 2023 drawing on science – technology – innovation, including a data fusion approach combining in-situ monitoring, modelling and remote sensing. It will expand to additional sources and illustrate causal chain cases to highlight water quality risks and opportunities.
- Horizon scanning, agenda setting and investigating selected priority topics based on a collective prioritization process to identify persistent or emerging water quality issues of key environmental and socio-economic concern.
- Co-design and operationalization of water quality related services and products, based on a moderated in-country stakeholder-driven bottom-up process to identify local demands and needs (piloted in three Africa Use Cases).

GEMS/Air

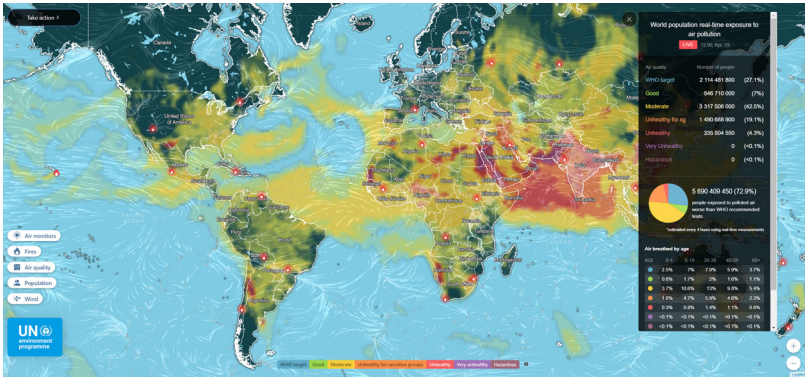
The Global Environment Monitoring System for Air (GEMS/Air) Programme catalyses scalable innovation using science and technology know-how, to enable developing country governments to drive transformation that improves the air their citizens breathe.



GEMS/Air is implementing its new strategy developed in 2021, which aims to enable governments and other stakeholders to make evidence-based decisions by improving access to and use of air quality data. The adaptive strategy employs 3 key strategic pillars to facilitate transformation towards cleaner air:

Critical to scaling GEMS/Air success are:

- Innovation Labs - through pilot projects. These can include validating market interests related to investment in monitoring or assessing how low-cost air sensors meet the use case of interested countries.
- The Solution Space - defined through the innovation labs. Provides insight towards solutions that can be upscaled, replicated and adapted in similar context.
- Upscaling Solutions that are bankable - an optimal approach to catalysing action to reduce duplication, combine efforts and leverage shared knowledge. The creation of the global Consortium for Better Air Quality data (CBAQd) is a key element of this strategy that will facilitate implementing scalable solutions.



Global air quality map in partnership with IQAir

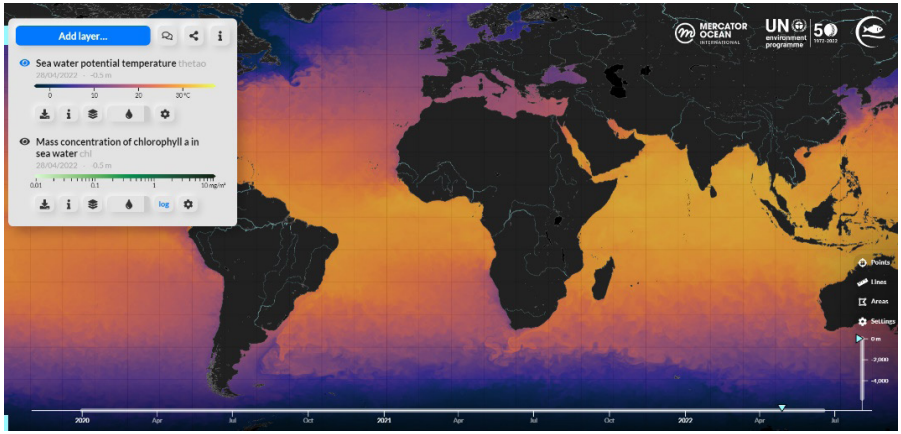
An example of its approach is illustrated through one of its partnerships (UNEP/IQAir) that demonstrates upscaling of crowd source air quality data using low-cost sensors and reference instruments yield the world's largest databank for fine particulate matter PM2.5. (i.e. particulate matter with diameters that are generally 2.5 micrometres and smaller in size) that UNEP hosts. This database is an example of the potential of crowdsourcing air pollution data. The application is accessible from iqair.com/unep.

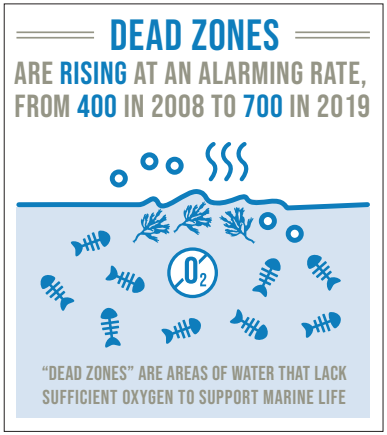
GEMS Ocean

Monitoring the world's ocean and coasts is an important prerequisite for effective decision-making that enables the protection and sustainable use of marine resources. Scientific, credible, and open data is needed to assess the impacts of climate change, pollution, extreme events, and manage the ocean's valuable resources. At the same time, comprehensive engagement that includes working with coastal communities and building capacity, particularly in Small Island Developing States (SIDS) and Developing Countries, is key to achieving data-driven impact and change for the benefit of marine resources and sustainable development.

The Global Environment Monitoring System for the Ocean and Coasts (GEMS Ocean) Programme aims to provide a framework for partnership and recognizes the importance of working with Member States and donors to shape a transformative service that truly bridges the gap between data, people and action. With this partnership approach, GEMS Ocean strives to address challenges such as coastal erosion, sea level rise, marine pollution, habitat degradation and overfishing, to name a few, in a more coherent and impactful way leading to improve the conservation, management and sustainable use of ocean and coastal resources. Special emphasis will be given to the land-sea interface and the Source to Sea (S2S) system, which refer to the biophysical continuum between land and sea environments, connected through riverine systems and that influence continental shelfs as well as the open ocean. For more information on the priorities and strategic approach of the GEMS Ocean Programme, please refer to our strategy brochure.

The Programme leverages UNEP's World Environment Situation Room (WESR) platform and other relevant partner portals to display data and data analytics. The goal is to provide and showcase compelling individual case-level narratives, including examples that illustrate nature-based solutions efforts, to ultimately inform relevant societal stakeholders across all sectors.





Source: Sustainable Development Goals Report 2021

unep.org/gemswater | unep.org/wwqa | unep.org/gemsair | unep.org/gemsocean

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