

Freshwater Strategic Priorities 2022–2025

to implement UNEP's
Medium-Term Strategy





Produced by the Inter-Divisional Water Group,
a water community of practice across UNEP, for
implementation of UNEP's Medium-Term Strategy.

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summary.

The protection, management and restoration of freshwater ecosystems is fundamental to combating the triple planetary crises of biodiversity loss, pollution and climate change.

As water is under threat, despite it being central to life, there is a compelling need for freshwater action. To meet the water-related Sustainable Development Goals (SDGs), UNEP seeks to facilitate measurable and substantive progress on freshwater issues at global, regional and national levels.

UNEP supports countries to promote the management, protection and restoration of the world's freshwater ecosystems, while increasing resilience to natural disasters and conflict.

UNEP collects and transforms data into actionable information and decision support tools. It helps countries understand and determine the state of freshwater bodies, supports the implementation of plans and policies around water and develops and disseminates decision support tools that promote progress.



Why does the United Nations Environment Programme (UNEP) have a freshwater strategic document?

Water and water-related ecosystems play a fundamental role in the health of the environment, providing services to people and communities and combating the impacts of climate change and all economic activities. Working on the environmental aspects of monitoring, managing and protecting water resources and freshwater ecosystems has been an integral part of UNEP's mandate since its inception and has been embodied in various **freshwater strategies** in the past (UNEP 2017).

Embedded in its Medium-Term Strategy, UNEP recognizes three **interlinked planetary crises** for urgent understanding, prioritization and action:

- Climate change
- Nature and biodiversity loss
- Pollution and waste

The impacts of all three of these inter-related planetary crises are directly, and in some cases disproportionately, felt on freshwater bodies, which are essential for the lives, livelihoods and health of people, economies and the planet. At the same time, when functional, including protected, restored and well managed, freshwater bodies are strong allies in combating all three crises. Freshwater bodies can help protect and restore biodiversity, mitigate pollution through water filtration and purification and contribute to climate stability by providing both mitigation and adaptation benefits.

Read UNEP Executive Director **Inger Andersen's statement** on World Water Day, 2022.

How does this freshwater strategic document support UNEP's Medium-Term Strategy 2022-2025?

UNEP's **Medium-Term Strategy for 2022-25** (MTS) (UNEP 2021), adopted by the UN Environment Assembly and serving as the guidance for UNEP's work, recognizes the three planetary crises and thus principal areas of action to address them (thematic sub-programmes). These three thematic sub-programmes are underpinned by two foundational sub-programmes and facilitated by two enabling sub-programmes (Figure 1).

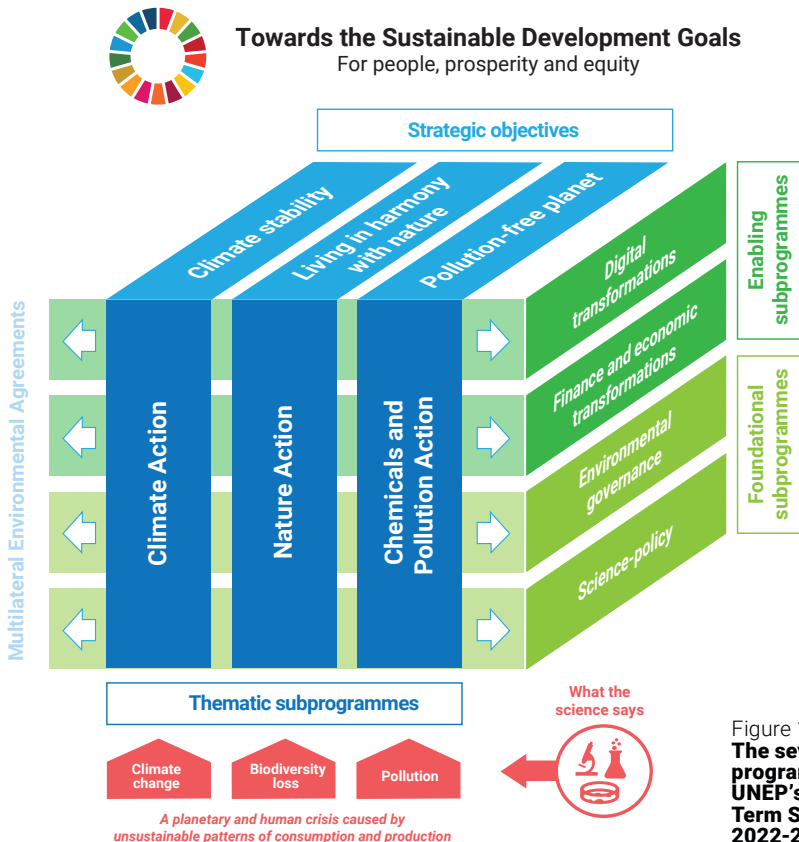


Figure 1
The seven sub-programmes of UNEP's Medium-Term Strategy 2022-25

For an external audience, the aim is to:

- create awareness among partners and stakeholders of the state of freshwater ecosystems and the importance of protecting and restoring them.
- provide information on the work of UNEP related to freshwater.
- inspire and promote collaboration with other organizations for the benefit of freshwater, other ecosystems, people and economies.

Within UNEP, the document is intended to provide a common framework for the various groups and units that each contribute to UNEP's freshwater-related work.

The compelling need for freshwater action

Despite some progress in certain areas, **the world is not on track to meet the water-related SDGs and their targets** (UN-Water 2021) nor is it on track to deliver long-term sustainability by 2050. **Urgent action and strengthened international cooperation are needed** (UNEP 2019) to reverse these negative trends and restore planetary and human health. For the three thematic sub-programmes of the MTS, the following drivers and trends illustrate the urgent need for freshwater action.

Freshwater and climate action

Climate change significantly impacts water, and healthy freshwater ecosystems are needed to help adapt to climate change effects. This relationship is fundamental to sustainable development because:

- The impacts of climate change are experienced by most societies through seasonal and inter-annual changes in rainfall, and snowfall patterns, as well as shortage or excess of water felt through droughts and floods. Pollution through sediment and storm run-off, forest fires and saltwater intrusion into groundwater are further impacts.
- Over the last 20 years, 90 per cent of major disasters were caused by floods, droughts and other water-related events. With more frequent droughts, people in water-scarce areas will increasingly depend on groundwater because of its buffer capacity and resilience to climate variability.
- Climate change challenges the sustainability of water resources, which are already under severe pressure in many regions of the world. More than two billion people currently live under water stress, a factor likely to increase due to climate change.

- The increased frequency and severity of extreme climate events also impacts water quality and management. During periods of drought, less dilution and flushing-out of water pollution take place; and during floods nutrients, surface-bound contaminants and solid waste are flushed into rivers and lakes. Overflowing of sewage systems, which can contaminate and compromise the quality of otherwise suitable water sources, is also common. Rising average temperatures of surface waters affects water chemistry and may trigger more frequent incidents of harmful algal and bacterial blooms, as impressively illustrated in recent cyanobacteria blooms.
- Changes in access to water and rain-fed grazing lands are often a factor behind community and regional conflicts.
- Healthy freshwater ecosystems and areas adjacent to them, including lakes, wetlands, rivers and their floodplains, can serve as natural sponges and buffers to flooding and storm surges. Mangroves, which exist at the confluence of marine and freshwater ecosystems, are essential defences against extreme weather events and a cradle of biodiversity.
- Wetlands, especially peatlands, act as massive carbon sinks and thus exacerbate climate change if not properly managed. When managed, protected and restored to functionality, wetlands help to store carbon.
- Sustainable water and water ecosystem management are thus an essential part of the solution to both mitigating and adapting to climate change. But beyond that, they are also an essential element to meet other SDGs essential to climate action, including SDGs 1 (on poverty eradication) and 2 (on food security) and an underlying factor in creating stable and prosperous societies.





Freshwater and nature action

Maintaining a healthy relationship between water, nature and people is more important than ever because:

- Healthy resilient ecosystems, such as wetlands and forests, and access to abundant and clean water go hand in hand. The value provided by ecosystems has demonstrated that their benefits far exceed conservation costs. The 2011 economic value of ecosystem services has been globally estimated at \$125 trillion. In the same year, global GDP was estimated at US\$75 trillion.
- Freshwater ecosystems are particularly biodiverse, supporting about 10 per cent of all described species and 55 per cent of fish species depending on them for their survival. Yet they are also going extinct more rapidly than terrestrial or marine species, with around one third of all freshwater biodiversity facing extinction due to invasive species, pollution, habitat loss and over-harvesting.
- Joined up management of surface and groundwater resources is essential. Groundwater makes an important contribution to river flow and is heavily used for irrigation; groundwater-dependent ecosystems supply almost half of all drinking water. In arid and semi-arid regions, groundwater is often the only reliable water resource and plays an integral role in supporting a healthy environment.
- The relationship between healthy nature and reliable water has always been central to development, but many communities around the world are highly vulnerable. Regrettably, the COVID-19 pandemic is affecting the fragile social and economic progress of many communities around the globe and exacerbating existing vulnerabilities due to declining water quality and reduced water supplies.
- Fiscal stimulus packages, as invoked by many governments in the wake of COVID-19, offer opportunities to restore nature and reduce threats to both water quality and availability. It is not an opportunity UNEP can let slip by.
- Water supply and safe sanitation are fundamental to human health and hygiene, but UNEP needs to reach beyond that. Deficiencies in a country's water resources and wastewater management systems adversely affect ecosystem diversity and the ability to protect populations against



the negative effects of pandemics/epidemics. Inclusive decision-making is needed to improve access to and management of water resources and address water pollution, wastewater treatment, water use and services, water resources management, freshwater ecosystem health and enhance coordination between sectors and stakeholders at all levels.

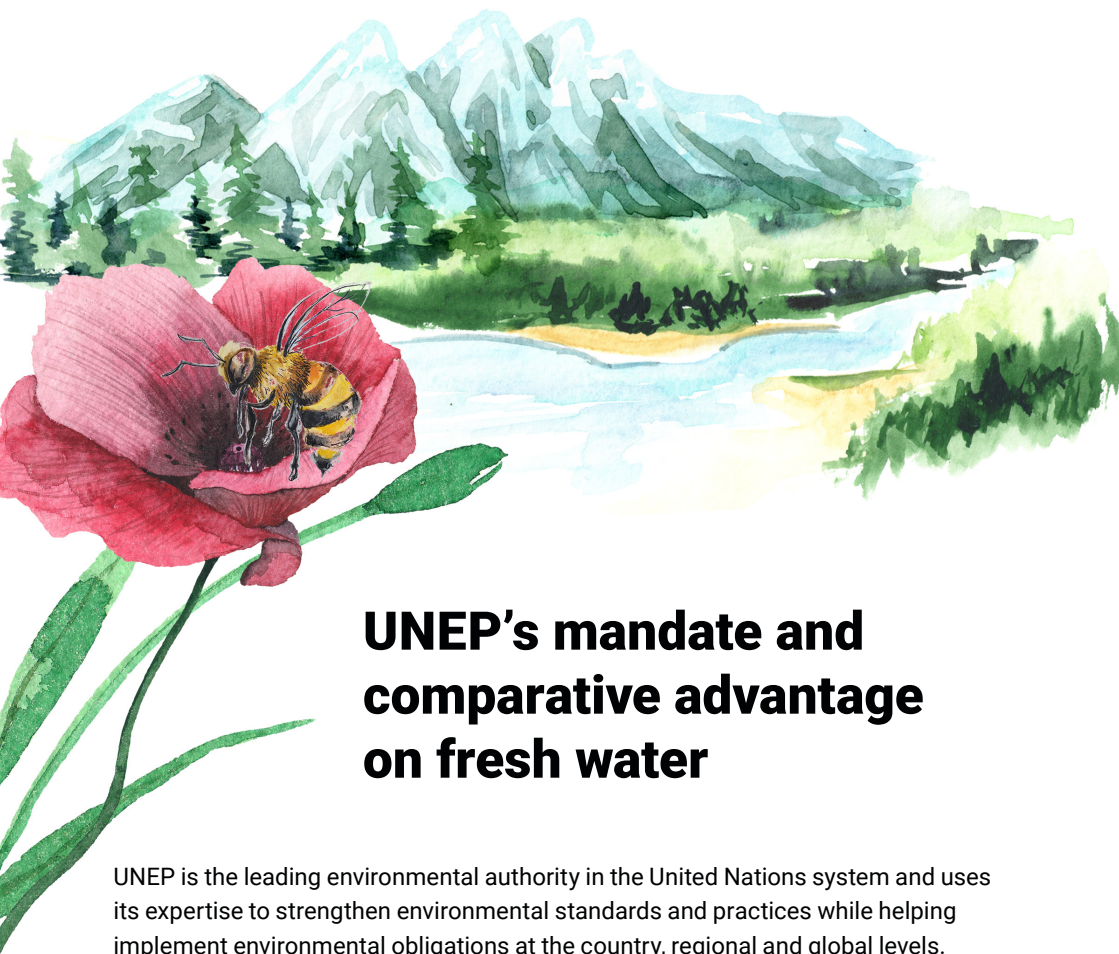
Freshwater and chemicals and pollution action

Water pollution is intricately linked to human and ecosystem health, with effects on food security, because:

- Around one-third of all rivers in Latin America, Africa and Asia suffer from severe pathogenic pollution; severe organic pollution is found in around one-seventh of all rivers; and severe and moderate salinity pollution in around one-tenth of all rivers. Together, such widespread pollution risks the health of people, the freshwater fishing industry (threatening food security and livelihoods) and the use of river water for irrigation, industry and other purposes. For several years, the **overall ecological status in European rivers has not improved** (European Environment Agency 2018) despite the EU Water Framework Directive.
- Solid waste, including macro and micro plastic pollution, is a major concern in freshwater bodies. Lakes and rivers are recipients and conduits for large amounts of plastic pollution entering coastal and marine habitats. UNEP recently launched a first guidance on freshwater monitoring for plastics and response strategies, which are currently being piloted in selected freshwater bodies (including lakes and rivers) around the world.
- Many countries encounter massive pollution of freshwater systems from industrial effluent that includes heavy metals and other contaminants, rendering freshwater bodies unfit for their intended use.
- Like surface water, groundwater is threatened by both anthropogenic and natural contaminants, such as saline intrusion, nutrients, pesticides and other chemical substances. But despite the importance of groundwater for people and ecosystems, information and data on groundwater quality are sparse, with often less information available in countries of the Global South. **Groundwater** is an invisible resource that remains out of sight and out of mind for most people (World Water Quality Alliance 2021).

- Anthropogenic nutrient sources contribute more than 70 per cent to river nutrient **loading** (UNEP 2020) curbing global nutrient cycles requires paradigm shifts in food and waste systems. Most of the increase in river nutrient loading has been in Asia, but eutrophication and harmful algal blooms are now spreading in many river basins, including in Europe. Climate change is another key driver contributing to the risk.
- Waterborne diseases due to viral or bacterial contamination are already a significant cause of death and disability worldwide, exacerbated by new and emerging pollutants. Emerging pollutants are not easily removed by current wastewater treatment technologies and are of increasing concern. They include certain veterinary and human pharmaceuticals, pesticides, antimicrobial agents, flame retardants, detergent metabolites, microplastics and microfibres. Endocrine-disrupting chemicals are of particular concern as they are now widely distributed through the freshwater system on all continents. Their long-term impacts on human health include foetal underdevelopment, child neurodevelopment and male infertility.
- Human illnesses and deaths due to antibiotic- and antimicrobial-resistant infections are increasing rapidly and are projected to become a main cause of deaths worldwide by 2050. Antibiotics reach the aquatic environment from a wide range of sources, including treated and untreated human waste, agriculture, animal husbandry and aquaculture. Antibiotic-resistant bacteria are now found in both source water and treated drinking water worldwide.
- There is a need to encourage drastic reductions in pesticide and herbicide use, as well as antimicrobial applications in production that adversely affect soil and water quality.
- On the other hand, and after a piloting and scoping effort carried out by the European Commission across Europe, viral residual and DNA signals detectable in wastewater effluent will receive substantial attention in serving as a sentinel system for early warning of pathogen risks, including COVID-19.





UNEP's mandate and comparative advantage on fresh water

UNEP is the leading environmental authority in the United Nations system and uses its expertise to strengthen environmental standards and practices while helping implement environmental obligations at the country, regional and global levels. UNEP's mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing and enabling nations and peoples to improve their quality of life without compromising that of future generations.

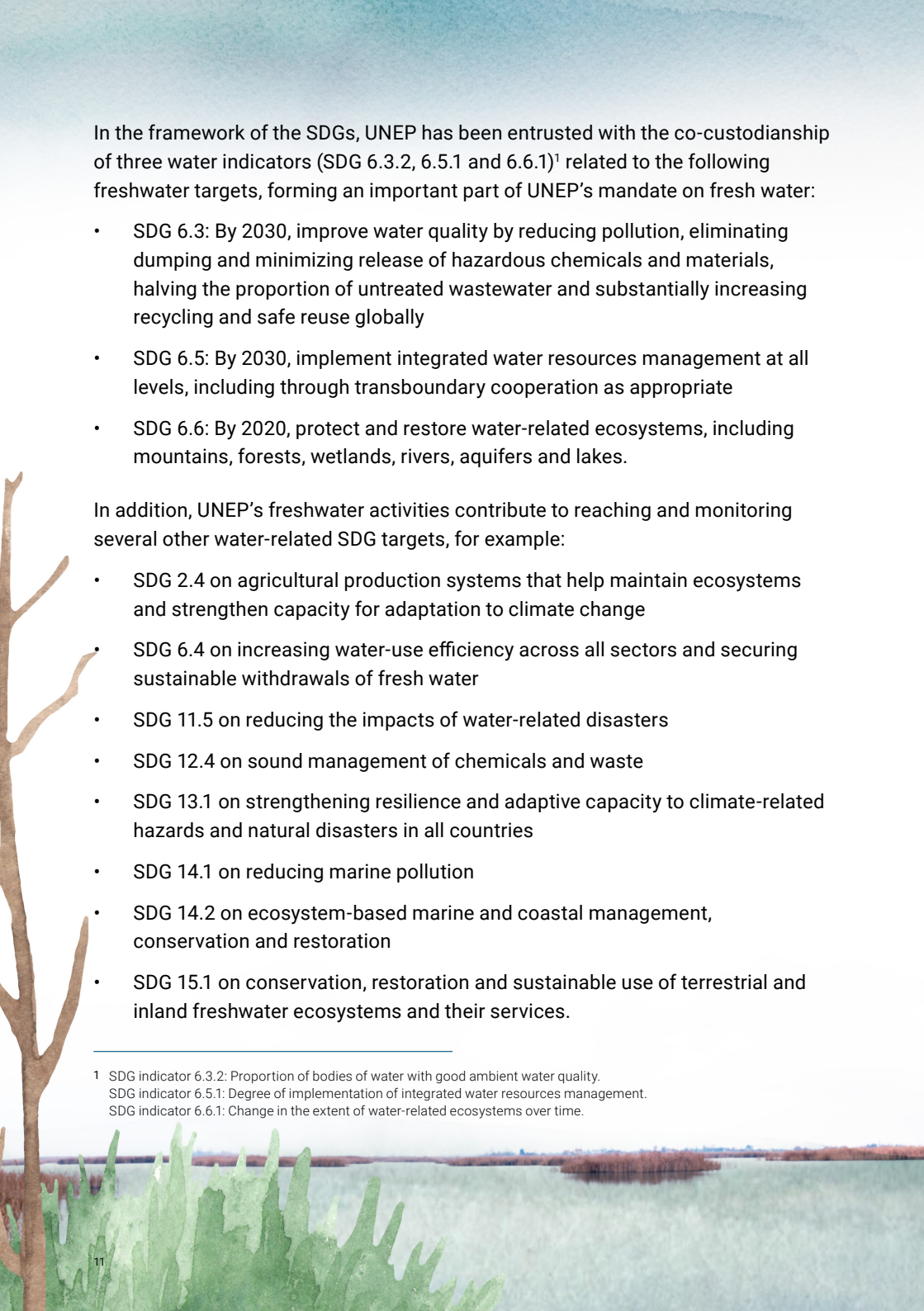
Following the Rio+20 Summit in 2012, the UN General Assembly gave UNEP a stronger mandate and role in promoting a strong science-policy interface, providing capacity-building to countries as well as access to technology and strengthening its regional presence to assist countries in the implementation of their national environmental policies.

In short, and as stated in the MTS, UNEP's overall mandate is to coordinate global responses to environmental challenges and related emerging issues, within and outside the UN, while keeping watch over the state of the world environment and linking science to policymaking.

For the freshwater domain, this means:

- Collect data, analyse and report on the global status of ambient water quality, water resources management and the environmental health of freshwater ecosystems.
- Provide policy advice and harmonization and support institutional reform to strengthen national and regional cooperation to improve climate resilient water resources management, to prevent water pollution and to protect and restore freshwater ecosystems.
- Build capacity through training and tools, facilitate access to data and information to enhance evidence-based assessment, action planning and decision-making processes, as well as policy and strategy formulation for improved management of freshwater resources.
- Support piloting of innovative management practices, including nature-based solutions, and implementation of national and regional strategic action plans that contribute to climate, nature and pollution actions.
- Utilize UNEP's convening power to bring together Member States, agencies and actors across all of society through partnerships, networks and other mechanisms, fostering collaboration on assessment and implementation of water-related aspects of the global environmental agenda.
- Scale up impact through data by mobilizing local actors and knowledge, including digital transformation, to foster local agenda achievements based on social engagement.
- Provide freshwater-related inputs to strengthen UNEP's communications and awareness-raising campaigns.





In the framework of the SDGs, UNEP has been entrusted with the co-custodianship of three water indicators (SDG 6.3.2, 6.5.1 and 6.6.1)¹ related to the following freshwater targets, forming an important part of UNEP's mandate on fresh water:

- SDG 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- SDG 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- SDG 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

In addition, UNEP's freshwater activities contribute to reaching and monitoring several other water-related SDG targets, for example:

- SDG 2.4 on agricultural production systems that help maintain ecosystems and strengthen capacity for adaptation to climate change
- SDG 6.4 on increasing water-use efficiency across all sectors and securing sustainable withdrawals of fresh water
- SDG 11.5 on reducing the impacts of water-related disasters
- SDG 12.4 on sound management of chemicals and waste
- SDG 13.1 on strengthening resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- SDG 14.1 on reducing marine pollution
- SDG 14.2 on ecosystem-based marine and coastal management, conservation and restoration
- SDG 15.1 on conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services.

¹ SDG indicator 6.3.2: Proportion of bodies of water with good ambient water quality.

SDG indicator 6.5.1: Degree of implementation of integrated water resources management.

SDG indicator 6.6.1: Change in the extent of water-related ecosystems over time.

UNEP is well-positioned to fulfil its mandate on fresh water because:

- has a long history and experience of monitoring the status of and changes to the environment, including in areas relating to fresh water.
- has the convening power to bring data providers, Earth Observation and modelling experts – as well as stakeholders and actors across society – to the table for policy dialogue, science-based assessments and environmental agreements. It convenes global experts and user communities of practice such as the World Water Quality Alliance and coordinates global environment monitoring and capacity development at scale, including the SDGs.
- administers or provides the secretariat for multilateral environmental agreements related to fresh water, including **Convention on Biological Diversity**, the **Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and the **Stockholm Convention** on Persistent Organic Pollutants.
- enhances its in-house capacity and expertise by partnering with a wide range of organizations and collaborating centres which increase UNEP's capacity and depth of water-related expertise, innovation and technologies.
- is engaged, as an environmental authority, in several global actions and campaigns that relate to freshwater, including the UN Water Action Decade, the UN Global Acceleration Framework for SDG 6, the UN Decade on Ecosystem Restoration and the Clean Seas campaign.



Strategic priorities on fresh water

Within the three thematic sub-programmes of the MTS, UNEP’s convening power and its mandate and work on fresh water underpin three tiers of work. Those tiers illustrate the different aspects of UNEP’s mandate, spanning the entire spectrum from being a global policy-setting and normative body for the environment to demonstrating best practice in implementation on the ground (Figure 2):

- **Data, monitoring, and assessment:** Establishing a solid scientific basis for diagnosis and assessment of the freshwater environment through global, national and local data collection, modelling and remote observation, citizen science, analysis and presentation.
- **Transforming data into actionable information and decision support tools:** Using the scientific basis to create normative guidelines globally and nationally and to engage in countries and at scale to build partnership to co-design and disseminate tools and methodologies for addressing water-related issues in regions and countries.
- **Support to action:** Supporting countries in implementing technology innovation, including social process, and promoting and demonstrating nature-based solutions for water-related priority issues.

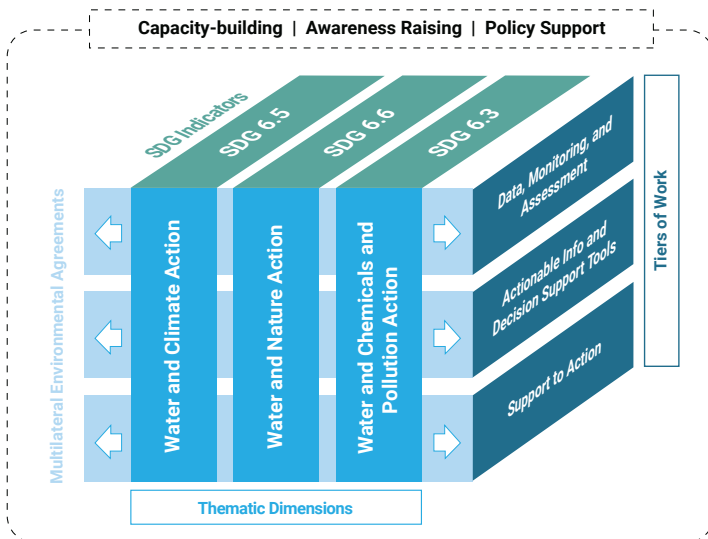


Figure 2
UNEP’s core areas of work with fresh water

Some of UNEP's programmes or initiatives are confined to a particular thematic sub-programme, and others cut across and address two or all of them. The following list outlines UNEP initiatives within the three tiers of work:

Establishing Science: Data, monitoring, and assessment

- Like all custodian agencies, UNEP supports national monitoring and coordinates global reporting to the **UN High-Level Political Forum (HLPF) on Sustainable Development** regarding progress on three freshwater-related SDG indicators: Indicator 6.3.2 on proportion of bodies of water with good ambient water quality; 6.5.1 on Integrated Water Resources Management (IWRM) implementation; and, together with the Ramsar Secretariat, 6.6.1 on changes in the extent of water-related ecosystems over time.
- Since the start of the SDG period, UNEP has been a core member of the UN-Water coordinated **Integrated Monitoring Initiative for SDG 6**. More than 185 countries have reported to the UN via UNEP. While processes for the above three indicators are coordinated, they have separate monitoring methodologies that each require dedicated specialist attention.
- To track, monitor and improve the health of freshwater ecosystems UNEP, together with international partners, has developed and run the **Freshwater Ecosystems Explorer** with high resolution Earth Observation data over the past 20 years.
- Since 1978, UNEP has run the **Global Environment Monitoring System for Freshwater** (GEMS/Water) Programme, mandated to support Member States in monitoring and assessing their water quality and reporting their data to UNEP's **global database on water quality**. The database currently comprises millions of data points on freshwater quality; GEMS also provides related capacity development programmes reflecting regional and national demand.
- Mandated by UNEA, UNEP developed a **World Water Quality Assessment**, in response to which the **World Water Quality Alliance** (WWQA) convened an open community of practice with several workstreams and currently over 150 partners. The central aim is to combine the best available data sources, including modelling and Earth Observation, and serve the normative as well as the action value chain by tailored data services.

Using science: Transforming data into actionable information and decision support tools

UNEP builds on the above work to determine freshwater status and issues, identify and prioritize actions and develop and disseminate decision support tools that promote progress. Examples include:

- Working with countries to develop action plans (or similar) that aim to address identified barriers.
- Capacity development initiatives, such as workshops, training and mass open online courses and webinars, together with consortia and platforms developed with the aim of providing a match-making service to institutions and individuals.
- Sensitization and knowledge products, such as data/information platforms, targeted publications, vital graphics and videos.
- Leading on social engagement with actors of society; so far this has resulted in the launch of Local Water Forums that address specific water issues in over 30 municipalities globally.
- Providing a comprehensive overview of all water-related tools, platforms and access to information and data on UNEP's **World Environment Situation Room**.



Supporting countries: Support to action

Support to action on climate, ecosystems and pollution issues. This is typically achieved through a combination of larger initiatives/programmes, as well as by working with countries and other partners using funding from a variety of sources. Climate, nature and chemical/pollution issues are often collectively combined and addressed in individual projects.

Examples of significant initiatives:

- Support to water and climate action – **Climate Technology Centre & Network**; collaborating with the Adaptation Unit on elaborating and implementing Global Environment Facility (GEF)/Green Climate Fund (GCF)-funded projects; support to the GEF portfolio, **climate adaptation support** in countries around the world; support to Adaptation Fund special programmes; **IWRM support programme**; Water and Climate Coalition; support to innovation efforts in the form of e.g. digital twinning of the hydrological cycle in a changing climate aimed at high-resolution short-term forecasting services with the European Commission and science partners
- Support to water and nature action – Water Action Decade and the Decade on Ecosystem Restoration
- Support to water and chemical pollution action – **Global Partnership on Marine Litter**; **Global Wastewater Initiative**, **World Water Quality Alliance** and the Clean Seas campaign
- Support to a holistic source-to-sea continuum approach to address both ecosystems and pollution flow, recognizing the linkages between land, fresh water, coast and sea – **Global Programme of Action for the Protection of the Marine Environment from Land-based Activities**; **Action Platform for Source-to-Sea Management** (S2S Platform); **Ocean Action 2030 Coalition of the High-Level Ocean Panel**
- Implementing agency for the **Global Environment Facility** and **Green Climate Fund**, piloting nature-based solutions for water-related climate adaptation. More information about UNEP's projects on nature-based solutions for water-related climate adaptation can be found [here](#).

Many more examples and details of UNEP's activities in the field of water can be found online at UNEP's **Water** webpage.

Strategic partnerships

UNEP executes most of its activities and programmes through partnerships with other organizations and will continue fostering partnerships and integrated solutions.

Within the UN system, UNEP works through – and supports – **UN-Water**, the inter-agency coordination mechanism which counts more than 30 UN organizations, Funds and programmes as its members. UNEP collaborates with other UN agencies on environmentally related freshwater topics of priority concern.

Over the years UNEP has built on its expertise and experience to develop a well-respected, integrated approach to global environmental management. UNEP treats environmental issues as multi-dimensional, requiring a range of perspectives and expertise, and has taken on the challenge of ensuring that global environmental issues are addressed through this integrated approach.

The world's environmental challenges, and specifically in fresh water, can only be addressed through productive partnerships that manage, mitigate and ultimately leverage a wide range of perspectives. UNEP's approach to partnering – and which follows an all-of-society scope, including youth – ensures that governments have access to the right knowledge and expertise to solve their environmental challenges. This partnering strategy will drive the integrated approach externally, through collaboration with external agencies, organizations and communities, governments, civil society and increased engagement with the private sector.

The private sector ranges from multi-nationals, small and medium enterprises, to small-scale local operators and the informal sector. Collectively the private sector is a major water user, consumer and polluter worldwide. At the same time, in most countries, the private sector is the major employer, educator, innovator and income generator, both for governments in the form of corporate taxes as well as for individuals. Partnering with the private sector is essential to address many of the world's freshwater-related problems, to lift people and countries out of poverty, and to achieve sustainable development.



In creating and strengthening partnerships, UNEP will:

- Build on existing partnerships, such as those within the UN system which serve as Members of UN-Water – and with Non-Government organizations (NGOs), private sector and academic organizations which collaborate as Partners of UN-Water – and seek to develop new ones in the United Nations system, and among other global, regional or national organizations, research/academia, NGOs, civil society and the private sector. Certain initiatives, referred to earlier, are already using partnerships and demonstrating the added value to deliver on UNEP’s mandate. This should be further encouraged.
- Implement strategic projects that empower governments, regional bodies and the private sector to successfully manage, conserve and protect freshwater resources. UNEP has a track record of delivering strategic projects at the policy and implementation level. Strategic and demonstrative projects are differentiated from pilot projects in that they tangibly show what to do, how to do it and then can be replicated at various scales.
- Draw on its experience and position as a global convenor of numerous conventions, networks and assessments to support country implementation of global goals on the environmental dimensions of fresh water, including providing support for monitoring, analysis and reporting at the global level on the UNEP-led water-related targets of the SDGs.
- Continue and strengthen collaboration with dedicated partner organizations and collaboration centres whose capacity, expertise and resources on fresh water can complement those of UNEP.
- Use the freshwater agenda to build trust and promote peace and cooperation among users, especially in conflict situations.
- Consider several forms of engagement and partnerships with the private sector, taking advantage of the multi-faceted roles that private sector actors can play (financing partners, knowledge and technology providers, dissemination agents, advocacy promoters, etc.), and acknowledging that it may require amendments to legal and institutional arrangements to ensure stable and fair conditions for market players.



Cross-cutting aspects

Gender in water management

In many parts of the world, women and girls typically suffer disproportionately from poor water availability and management of water, yet **they are often essential for good water management** (Trivedi 2018). UNEP ensures all its projects reflect the different needs of women and men and seeks to promote a strong gender perspective in environmental policies at the national, regional and international levels. UNEP is also focusing gender mainstreaming on internal policies and processes, and gender disaggregation in its collection of data and information.

Water and conflict

Environmental degradation and disasters can be a factor leading to displacement, forced migration, local or regional conflicts, and with 90 per cent of natural disasters being water-related, there is scope for better water management as a way of preventing conflicts. UNEP contributes to a wide range of environmental issues related to disasters and conflicts, focusing on the impacts of natural disasters on water quality, urban areas and damage to natural and man-made infrastructure, including freshwater habitats and ecosystem services. Providing water security for people may go hand in hand with nature-based solutions, e.g. through recharge of aquifers.

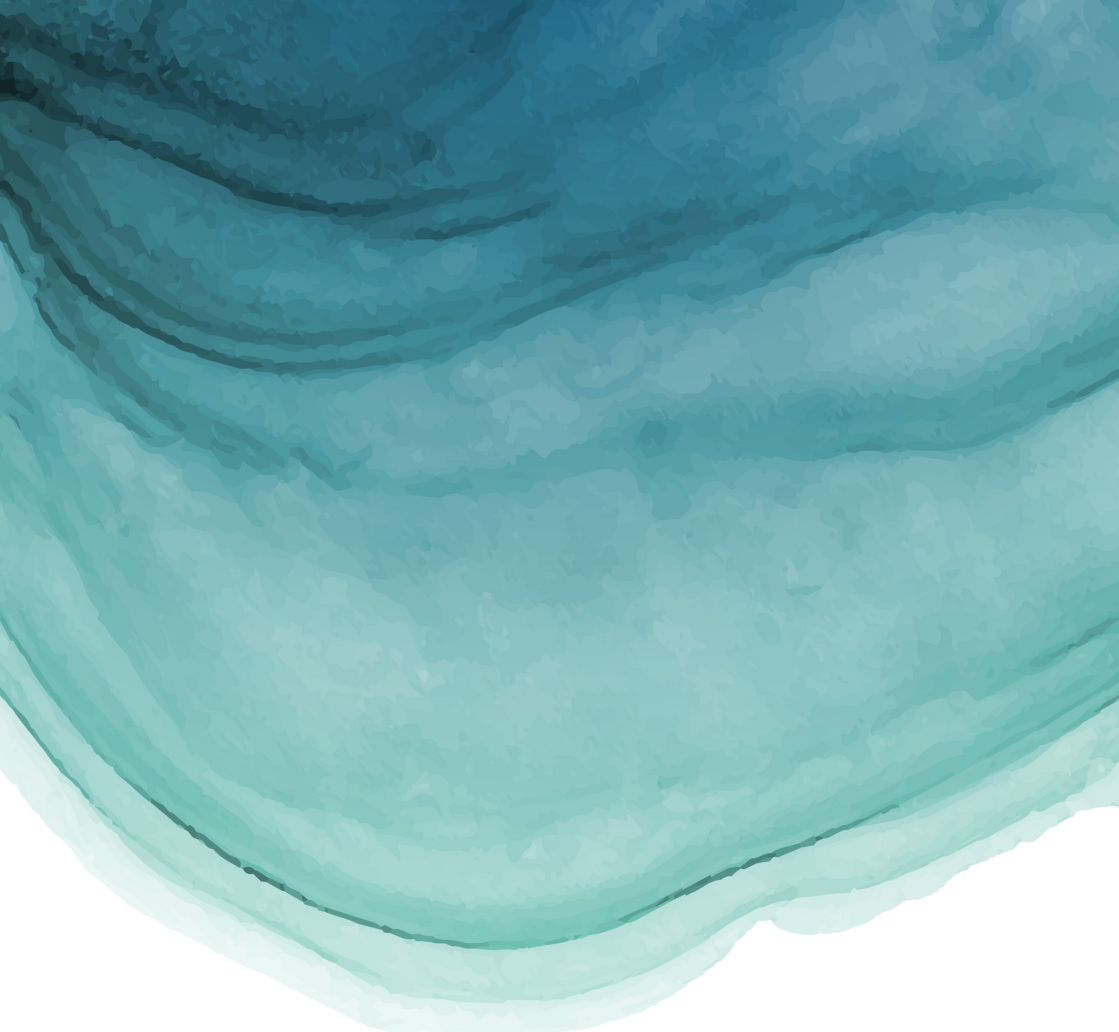
Funding sources underpinning UNEP's freshwater agenda

UNEP receives core funds from Member States through its Environment Fund, project resources and in-kind contributions from bilateral donors, global funds and through partnerships such as those with **UN-Water**, centres of excellence, communities of practice and private sector collaborations. But scaling up ambitions to help countries accelerate their efforts to meet the water-related SDG targets requires additional funding. Additional cash and in-kind contributions and developing new resource mobilization strategies and business models, notably for the powerful partnerships, would help further UNEP's freshwater agenda.

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