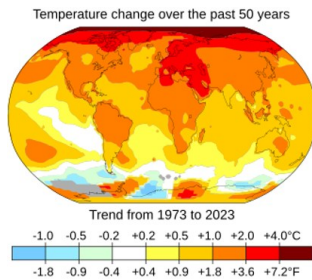


Climate Change and Transboundary Water Agreements



Climate change is emerging as one of the most significant challenges to the effectiveness of existing transboundary water agreements. Most international river treaties were negotiated based on historical hydrological conditions, assuming relatively stable river flows and predictable water availability. Today, increasing temperatures, changing precipitation patterns, prolonged droughts, severe floods, and glacier retreat are altering these assumptions.

In many transboundary basins, climate change is increasing hydrological uncertainty rather than simply reducing water availability. This creates new risks for water allocation arrangements based on fixed quantities of water. Agreements that allocate specific volumes may become difficult to implement when river flows decline significantly or fluctuate unpredictably.

As a result, modern transboundary water governance is shifting from **water-sharing** to **benefit-sharing**, from rigid allocation rules to **adaptive management**, and from sectoral approaches to integrated **WEFE Nexus (Water-Energy-Food-Ecosystem Nexus)** frameworks. Flexible agreements that include joint monitoring systems, data sharing, drought management plans, climate risk assessments, and periodic review mechanisms are becoming increasingly important.



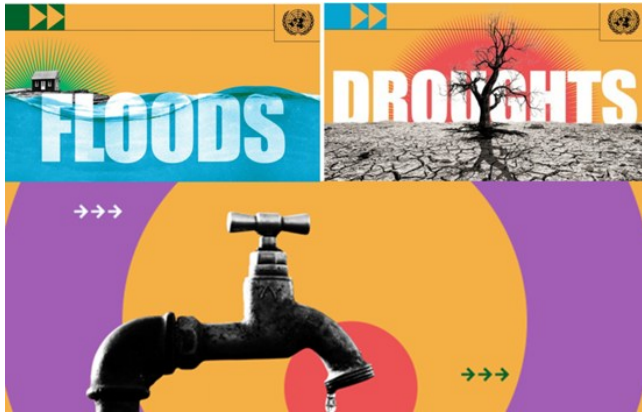
Climate change also creates opportunities for greater regional cooperation. Joint reservoir operation, coordinated flood management, renewable energy integration, ecosystem protection, and climate adaptation projects can help riparian countries increase resilience while reducing the risk of conflict.

The future success of transboundary water agreements will depend not only on legal commitments but also on their ability to adapt to changing climatic conditions. Agreements that incorporate flexibility, scientific cooperation, and climate resilience measures are likely to be more sustainable and effective in the 21st century. *Climate change is transforming transboundary water management from a question of allocating water under certainty to managing shared risks and opportunities under uncertainty.*

Dursun Yıldız

Director

Water at the Center of Climate Crisis



Climate change is exacerbating both water scarcity and water-related hazards (such as floods and droughts), as rising temperatures disrupt precipitation patterns and the entire water cycle.

Water and climate change are inextricably linked. Climate change affects the world's water in complex ways. From unpredictable rainfall patterns to shrinking ice sheets, rising sea levels, floods and droughts – most impacts of climate change come down to water.

Climate change is exacerbating both water scarcity and water-related hazards (such as floods and droughts), as rising temperatures disrupt precipitation patterns and the entire water cycle.

Get more facts on climate and water below.

Water scarcity

Over two billion people worldwide don't have access to safe drinking water today, and roughly half of the world's population is experiencing severe water scarcity for at least part of the year. These numbers are expected to increase, exacerbated by climate change and population growth.

Only 0.5 per cent of water on Earth is useable and available freshwater – and climate change is dangerously affecting that supply. Over the past twenty years, terrestrial water storage – including soil moisture, snow and ice – has dropped at a rate of 1 cm per year, with major ramifications for water security.

Melting glaciers, snow and permafrost are affecting humans and ecosystems in mid-to-high latitudes and the high-mountain regions. These changes are already impacting irrigation, hydropower, water supply, and populations depending on ice, snow and permafrost.

Climate change is one of the key drivers of the loss and degradation of freshwater ecosystems and the unprecedented decline and extinction of many freshwater-dependent populations, particularly due to land use and pollution.

Limiting global warming to 1.5°C compared to 2°C would approximately halve the proportion of the world population expected to suffer water scarcity, although there is considerable variability between regions.

Water quality is also affected by climate change, as higher water temperatures and more frequent floods and droughts are projected to exacerbate many forms of water pollution – from sediments to pathogens and pesticides.

Climate change, population growth and increasing water scarcity will put pressure on food supply as most of the freshwater used, about 70 per cent on average, is used for agriculture (it takes between 2000 and 5000 liters of water to produce a person's daily food).

Water-related hazards

Climate change has made extreme weather events such as floods and droughts more likely and more severe.

Rising global temperatures increase the moisture the atmosphere can hold, resulting in more storms and heavy rains, but paradoxically also more intense dry spells as more water evaporates from the land and global weather patterns change.

Annual mean precipitation is increasing in many regions worldwide and decreasing over a smaller area, particularly in the tropics.

Climate change has increased the likelihood of extreme precipitation events and the associated increase in the frequency and magnitude of river floods.

Climate change has also increased the likelihood or severity of drought events in many parts of the world, causing reduced agricultural yields, drinking water shortages, increased wildfire risk, loss of lives and economic damages.

Drought and flood risks, and associated societal damages, are projected to further increase with every degree of global warming.

Water-related disasters have dominated the list of disasters over the past 50 years and account for 70 per cent of all deaths related to natural disasters.

Since 2000, flood-related disasters have risen by 134 per cent compared with the two previous decades. Most of the flood-related deaths and economic losses were recorded in Asia. The number and duration of droughts also increased by 29 per cent over this same period. Most drought-related deaths occurred in Afri-



Water solutions

Healthy aquatic ecosystems and improved water management can lower greenhouse gas emissions and provide protection against climate hazards.

Wetlands such as mangroves, seagrasses, marshes and swamps are highly effective carbon sinks that absorb and store CO₂, helping to reduce greenhouse gas emissions.

Wetlands also serve as a buffer against extreme weather events. They provide a natural shield against storm surges and absorb excess water and precipitation. Through the plants and microorganisms that they house, wetlands also provide water storage and purification.



Early warning systems for floods, droughts and other water-related hazards provide a more than tenfold return on investment and can significantly reduce disaster risk: a 24-hour warning of a coming storm can cut the ensuing damage by 30 per cent.

Water supply and sanitation systems that can withstand climate change could save the lives of more than 360,000 infants every year.

Climate-smart agriculture using drip irrigation and other means of using water more efficiently can help reduce demand on freshwater supplies.



Water-linked' Botswana joins both UN Global Water Conventions to advance water cooperation heading towards the 2026 UN Water Conference



On 20 January, Botswana acceded to both the 1992 United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UN Water Convention) and the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Watercourses Convention).

This marks a major milestone in its commitment to sustainable and cooperative management of shared water resources. With this dual accession, Botswana becomes the 58th Party to the UN Water Convention — the 14th from Africa and the 4th from Southern Africa — and the 42nd Party to the UN Watercourses Convention.

Nearly all of Botswana's territory lies within transboundary river basins, including the Cubango-Okavango, Limpopo, Orange-Senqu, and Zambezi. These basins are vital to the country's people, ecosystems, and economy. Their shared nature underscores the importance of strong cooperation with neighbouring States.

Hence, while landlocked, Botswana is a 'water-linked' country looking to harness this water connectivity for cooperation, sustainable development and regional integration.

The accessions follow a National Workshop on the UN Global Water Conventions held on 25-26 October 2023 in Gaborone. Organized by Botswana in partnership with UNECE and the European Union, a national roadmap to accession was the major outcome.

By joining both UN global water conventions, Botswana aligns itself with globally recognized legal frameworks that promote equitable and reasonable use of shared waters, prevent conflicts, promote peace and foster dialogue, data exchange, and joint management for sustainable development.

Ms. Sonja Koeppel, Secretary of the Water Convention, acknowledge this major milestone: “We warmly welcome Botswana as the 58th Party to the UN Water Convention,” added Ms. Koeppel. “Botswana now joins a growing global community of Parties which is bucking the trend of shrinking multilateralism. It reinforces Africa’s strong engagement in transboundary water cooperation and helps to further a shared global vision for sustainable and peaceful management of freshwater resources.”

Source:<https://unece.org/climate-change/press/water-linked-botswana-joins-both-un-global-water-conventions-advance-water>

Jordan joins the UN Water Convention as water scarcity and climate pressures intensify

17 February 2026



Jordan has acceded to the 1992 United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UN Water Convention), in a move aimed at strengthening cooperation over shared water resources in one of the world’s most water-scarce regions. The accession follows that of Iraq in 2023 and further expands participation from the region in the agreement.

Jordan is the [59th Party](#) to the UN Water Convention, joining 18 states from Africa, Asia and Latin America to have joined this treaty in the last 10 years.

Jordan faces severe water scarcity and ranks amongst the world’s water-poorest countries. Around 40% of its water resources are shared with neighbouring countries, including Iraq, Israel, Lebanon, the State of Palestine, Saudi Arabia and the Syrian Arab Republic, making cooperation over transboundary surface and groundwater essential. Water management challenges continue to intensify, driven by population growth, the significant refugee population, and climate pressures. Water security is a national priority, championed at the highest political level and backed by sustained government investment in the water sector.

Despite regional geopolitical complexities, Jordan has secured bilateral agreements on several shared water resources, including the Jordan River basin, the Yarmouk River basin and the Disi-Saq aquifer basin, and has significantly improved access to safely managed drinking water, reaching 89% of the population in 2024. This progress underscores the importance of continued cooperation over shared waters.

Emphasizing the importance of accession to the Convention, Minister of Water and Irrigation of Jordan, H.E. Raed Abu Soud said: “Water is a national priority for Jordan. Joining the UN Water Convention will strengthen cooperation with our neighbors, allow us to exchange experience with countries facing similar challenges, and advance sustainable, climate-resilient water management to address the climate-refugee nexus for present and future generations. This effort also underlines Jordan’s commitment ahead of the 2026 UN Water Conference.”

“Jordan’s accession to the UN Water Convention sends a powerful signal of leadership in one of the world’s most water-stressed regions,” said UNECE Executive Secretary Tatiana Molcean. “At a time when climate change and rising demand are intensifying pressure on shared water resources, Jordan is choosing regional cooperation. The Convention offers practical tools to turn water scarcity from a source of tension into an opportunity for partnership, resilience, and peace-building.”

Jordan’s accession will contribute to advancing the implementation of the recently updated National Water Strategy 2023–2040, which sets out a long-term plan to tackle contemporary water challenges.

Jordan’s accession, reflects the significant expansion of the Convention, including in the Middle East, and draws on the positive experience shared by Iraq after its accession.

Sierra Leone joins UN Water Convention, strengthening water cooperation



Sierra Leone has officially acceded to the United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UN Water Convention) in a high-level ceremony at the UN headquarters in New York during the 80th session of the UN General Assembly. This marks a significant milestone in the country's growing commitment to sustainable water governance at both the national and regional level.

The country now joins a growing group of West African nations that have acceded to the UN Water Convention— including Côte d'Ivoire, Gambia, Ghana, Guinea Bissau, Nigeria, Senegal and Togo — and who are aligning their water governance with international standards and embracing cooperative approaches to shared basin management. The Water Convention counts now 57 Parties with 13 from Africa.

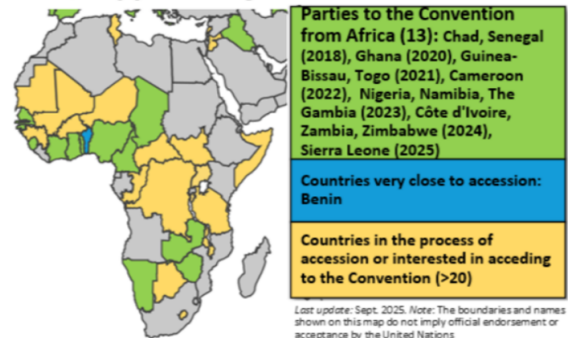


UNECE Executive Secretary Tatiana Molcean stated “Sierra Leone’s accession to the UN Water Convention further consolidates the strong momentum for water cooperation in Africa, where over 90% of freshwater is in shared basins. I welcome this important step and encourage all countries sharing water with neighbouring states to harness the UN Water Convention for cooperation to strengthen peace, security, climate change adaptation and sustainable development”.

As climate change intensifies its impact on water availability across West Africa and brings greater unpredictability in rainfall patterns, longer dry seasons, and increased competition for water, Sierra Leone’s accession sends a clear signal of leadership and readiness to work with its neighbours for shared solutions. With a population of over 8.6 million people, Sierra Leone is located at the center of a hydrologically interconnected region in West Africa.

The country shares several transboundary water basins — including the Moa, Great and Little Scarcies, and Mano River basins — with neighboring countries Guinea and Liberia. These shared rivers are not only critical sources of freshwater but also play a vital role in supporting livelihoods, food security, hydropower generation, and ecosystem services for millions.

Momentum builds for water cooperation in Africa, supported by UN Water Convention



Photo/image credits: United Nations



Recognizing the importance of these shared water resources, Sierra Leone’s accession to the UN Water Convention seeks to enhance its institutional and technical capacity to manage its rivers more effectively. It also reflects a broader goal to reduce the risk of water-related conflicts, foster regional cooperation, and strengthen the resilience of ecosystems and communities in the face of mounting pressures from climate change and population growth.

According to the 3rd global cycle of national reporting on SDG Indicator 6.5.2 (2024) measuring transboundary water cooperation, for which UNECE and UNESCO are co-custodians, 64 transboundary rivers, lakes and aquifers are situated across Africa. This makes transboundary water cooperation a must across the continent to adapt to climate change, prevent conflict and ensure the protection of shared water resources.

Photo/image credits: United Nations

Source :<https://unece.org/climate-change/press/sierra-leone-joins-un-water-convention-strengthening-water-cooperation>



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We need to build a future,
Where people live in harmony with nature

HPA

Think Forward .Lead Forward