

Water and Climate Change

Policy makers must put water at the heart of action plans

Climate change is primarily a water crisis. We feel its impacts through worsening floods, rising sea levels, shrinking ice fields, wildfires and droughts. Sustainable water management is central to building the resilience of societies and ecosystems and to reducing carbon emissions. Everyone has a role to play – actions at the individual and household levels are vital.

Water and climate change are inextricably linked. Extreme weather events are making water more scarce, more unpredictable, more polluted or all three. These impacts throughout the water cycle threaten sustainable development, biodiversity, and people's access to water and sanitation. Flooding and rising sea levels can contaminate land and water resources with saltwater or faecal matter, and cause damage to water and sanitation infrastructure, such as water-points, wells, toilets and wastewater treatment facilities. Glaciers, ice caps and snow fields are rapidly disappearing. Meltwater feeds many of the great river systems. Volatility in the cryosphere can affect the regulation of freshwater resources for vast numbers of people in lowland areas.

Droughts and wildfires are destabilizing communities and triggering civil unrest and migration in many areas. Destruction of vegetation and tree cover exacerbates soil erosion and reduces groundwater recharge, increasing water scarcity and food insecurity. Growing demand for water increases the need for energy-intensive water pumping, transportation, and treatment, and has contributed to the degradation of critical water-dependent carbon sinks such as peatlands.

Water-intensive agriculture for food production, particularly meat, and for growing crops used as biofuels, can further exacerbate water scarcity.



Climate policymakers must put water at the heart of action plans. Sustainable water management helps society adapt to climate change by building resilience, protecting health and saving lives. It also mitigates climate change itself by protecting ecosystems and reducing carbon emissions from water and sanitation transportation and treatment.

Politicians must cooperate across national borders to balance the water needs of communities, industry, agriculture and ecosystems. Innovative financing for water resource management will be needed to help attract investment, create jobs, and support governments in fulfilling their water and climate goals.

Dursun Yıldız

Director

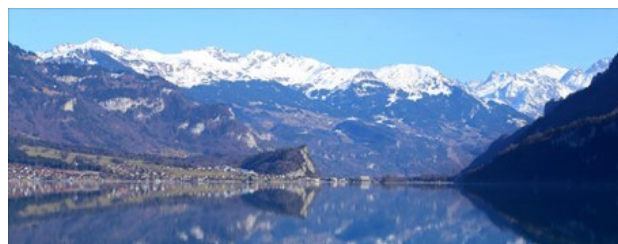
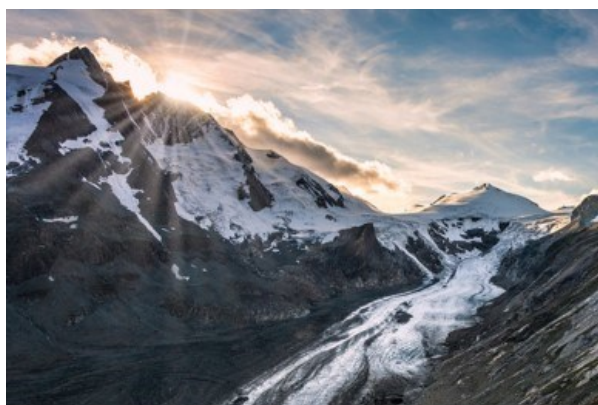
What World Water Day 2025 Remind Us



World Water Day 2025 reminds us that water security remains one of the defining challenges of our time. As the global population grows and climate change accelerates, access to clean and reliable water sources is becoming increasingly strained. Rising demand, pollution, and extreme weather events are pushing water systems to their limits, requiring urgent action to safeguard this critical resource.

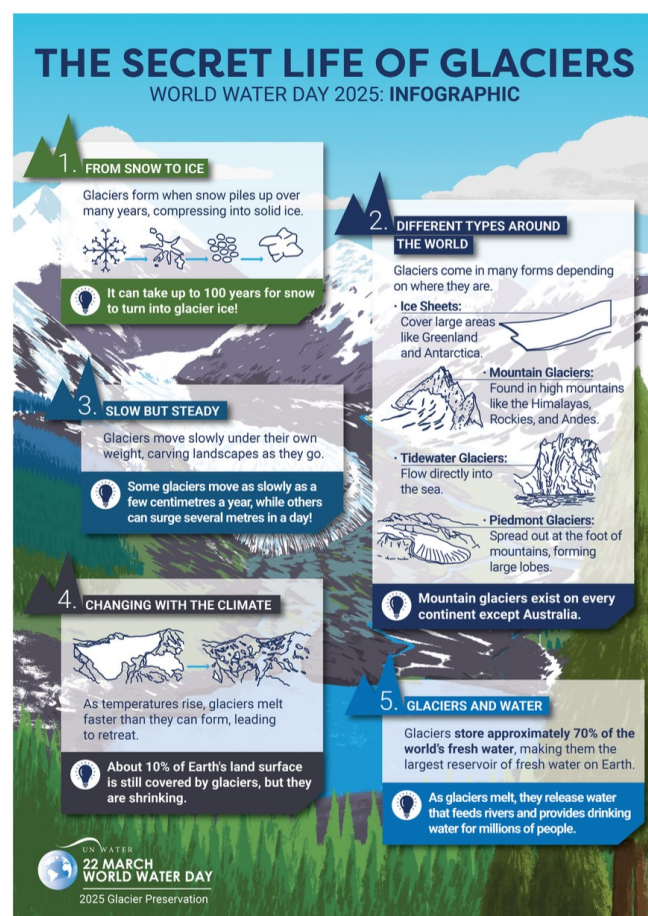


This year's UN theme, "Glacier Preservation" highlights the vital role that glaciers play in sustaining freshwater supplies for millions worldwide. Glaciers act as natural reservoirs, releasing water steadily to rivers and ecosystems. However, rapid glacier melt due to climate change threatens water availability, disrupts ecosystems, and increases the risk of natural disasters such as floods and droughts



Protecting these frozen water sources is essential for ensuring long-term water security.

Water systems are inherently interconnected, shaped by physical, social, economic, and political factors. The way water resources are preserved today will determine the future of our food systems, energy access, biodiversity, and global stability. Investing in sustainable water management is not just an environmental imperative—it is a pathway to resilience and long-term security.



2025 International Year of Glaciers' Preservation

Glaciers are crucial for regulating the global climate and providing freshwater, essential for billions of people. However, due to climate change, driven mainly by human activities since the 1800s, these vital resources are rapidly melting. The United Nations has designated 2025 as the International Year of Glaciers' Preservation to highlight the importance of glaciers and ensure that those relying on them, and those affected by cryospheric processes, receive the necessary hydrological, meteorological, and climate services. These efforts underscore the critical role mountain regions play as a key source of global freshwater and ecosystem services.



UNESCO and the World Meteorological Organization (WMO) officially launch the International Year of Glaciers' Preservation, marking a crucial milestone in global efforts to protect the vital ice that provides freshwater to over 2 billion people. This global and coordinated initiative throughout the year will seek to highlight about the critical role of glaciers and address the urgent challenges posed by accelerated glacier melt.



Around 70% of the global freshwater is stored in glaciers and ice sheets, however these ice formations are rapidly retreating due to climate

disruption. Preserving these crucial resources is essential for environmental sustainability, economic stability and safeguarding cultures and livelihoods. The United Nations General Assembly proclaimed 2025 as the International Year of Glaciers' Preservation to raise awareness on the vital role glaciers, snow, and ice play in the climate system and water cycle, as well as the far-reaching impacts of rapid glacial melt.

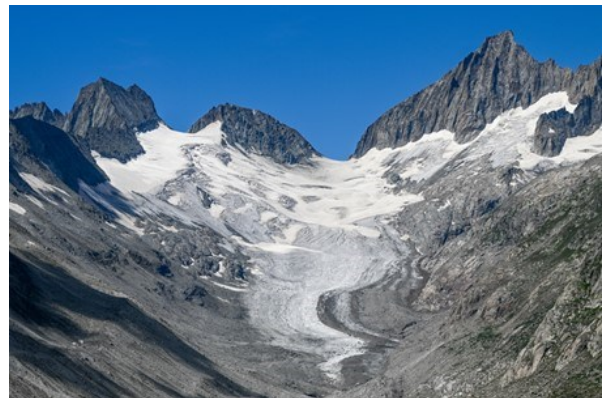
WMO recently confirmed that 2024 was the warmest year on record and has sounded repeated Red Alerts about the state of our climate, including the retreat of glaciers. In 2023, glaciers suffered the largest mass loss in the five decades of record-keeping. It was the second



consecutive year in which all regions in the world with glaciers reported ice loss. Melting ice and glaciers threaten long-term water security for many millions of people. This international year must be a wake-up call to the world.

The International Year of Glacier Preservation will focus on several critical areas:

- Expanding global glacier monitoring systems to enhance data collection and analysis
- Developing early warning systems for glacier-related hazards
- Promoting sustainable water resource management in glacier-dependent regions
- Preserving cultural heritage and traditional knowledge related to glacial environments
- Engaging youth in glacier preservation efforts and climate action



The International Year of Glaciers' Preservation 2025 will mobilize governments, scientific institutions, private sector organizations, and civil society to urgently reduce greenhouse gas emissions and implement effective adaptation strategies. Only through collaborative action and increased awareness will these vital resources be preserved for future generations.

UN World Water Development Report

Mountains and glaciers - Water towers

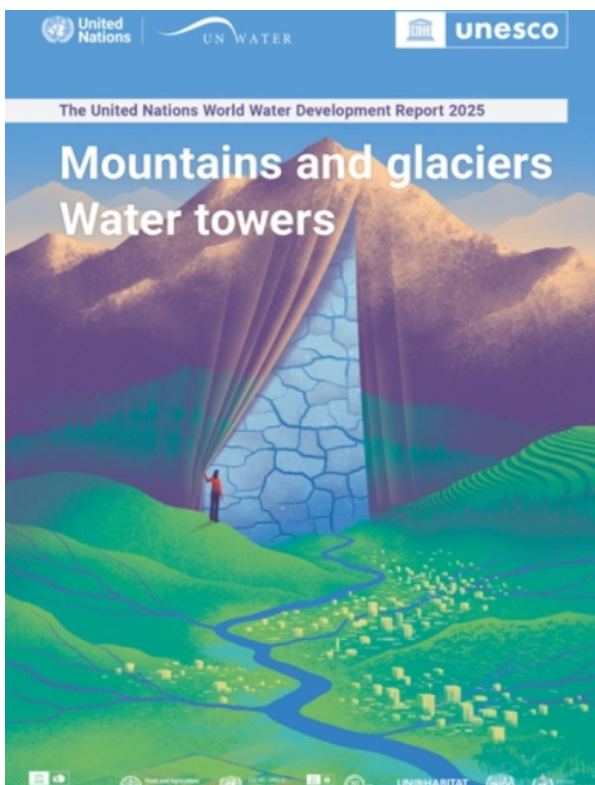
21 March 2025

For billions of people, mountain meltwater is essential for drinking water and sanitation, food and energy security, and the integrity of the environment.

But today, as the world warms, glaciers are melting faster than ever, making the water cycle more unpredictable and extreme. And because of glacial retreat, floods, droughts, landslides and sea-level rise are intensifying, with devastating consequences for people and nature.

The United Nations World Water Development Report 2025: Mountains and glaciers - Water towers offers solutions to help us simultaneously mitigate and adapt to rapid changes in our frozen water resources. This report provides a clear overview of the current state of play and recommends what needs to change. The urgent need to drastically reduce carbon emissions is emphatically repeated.

By detailing the connections between mountain fresh water, essential services and the natural world, this publication highlights the critical importance of conserving the cryosphere to the achievement of the Sustainable Development Goals.



. Qosh Tapa Canal Second Phase Excavation 87% Complete: NDC



10 Feb. 2025

According to the company's officials, they are carrying out the canal's construction in accordance with global engineering standards.

The National Development Company (NDC) says that 87% of the excavation work for the second phase of the Qosh Tapa Canal has been completed, and the construction of the canal's headworks has reached 75%. According to the company's officials, they are carrying out the canal's construction in accordance with global engineering standards.

Nabiullah Arghandiwal, the spokesperson for the National Development Company, stated: "The work on the Qosh Tapa Canal is currently progressing rapidly and in line with global engineering standards in various sections. At present, 87% of the second phase of excavation has been completed, and the construction of the



tion of the headworks has progressed to 75%."

The Chamber of Agriculture and Livestock

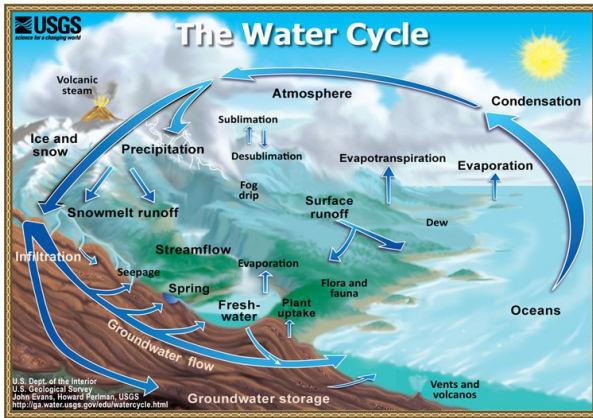
considers the construction of this canal a fundamental step toward Afghanistan's self-sufficiency in agriculture. "The Qosh Tapa Canal has vast fertile lands, and if utilized properly, we can achieve self-sufficiency in wheat and rice production," said Mirwais Haji Zada, deputy of the agriculture and livestock chamber. According to information from the National Development Company, the construction of seven large bridges along the Qosh Tapa Canal is also underway, which will provide further facilities for farmers and residents of the region.

Source: <https://tolonews.com/business-193007>

Permanent shifts in the global water cycle

Decades of terrestrial water-storage changes reveal an irreversible decline in soil moisture

Luis Samaniego



Understanding the relationship between atmospheric carbon levels and global temperature dates back to 1895, when Swedish scientist Svante Arrhenius argued that variations in carbon dioxide concentrations could affect Earth's heat budget. How climate warming affects Earth's hydrological cycle—the continuous water movement between Earth and the atmosphere—is a key question for managing water resources and making weather predictions. Although local and regional changes in the water cycle have been observed (*1, 2*), conclusive proof of a global-scale shift has been elusive. Answering this question requires decades of global mean sea level data and advanced climate and hydrological modeling. On page 1408 of this issue, Seo *et al.* (*3*) report how the integration of multiple global geophysical datasets reveals a permanent decline in terrestrial water storage. The study provides robust evidence of an irreversible shift in terrestrial water sources under the present changes in climate.

Moisture in the soil is lost, Water goes to the ocean: When hydrologists Dongryeol Ryu and Ki-Weon Seo saw their results, they were stunned. “At first we thought, ‘That’s an error in the model,’” Ryu told *The Associated Press*. But their findings held up to scrutiny:

The water stored on land has been disappearing. In the last two decades, more than 2600 Gt (billion metric tons) of water that used to be stored in soil, snow, and freshwaters has permanently moved into the ocean, they report in *Science*.

That number wasn’t easy to come up with. “How climate warming affects Earth’s hydrological cycle—the continuous water movement between Earth and the atmosphere—is a key question for managing water resources and making weather predictions,” writes hydrologist Luis Samaniego in an accompanying Perspective. To get a figure they could trust, Ryu, Seo, and their colleagues had to integrate three long-term, global datasets—ones that track water storage anomalies, sea level changes, and the movement of the Earth’s axis—with advanced climate and hydrological modeling. As Samaniego told *AP*, “It’s a fascinating puzzle of all disciplines that came at the right moment to verify something that was not possible before.”

Based on these analyses, this massive and unappreciated loss of terrestrial water is likely due to climate change, and it may be irreversible. That means there will simply be less water for crops and thirsty animals—including us.

SAMANIEGO L. (2025) **Permanent shifts in the global water cycle** *Science* 27 Mar 2025 Vol 387, Issue 6741 pp. 1348-1350 DOI: 10.1126/science.adw5851 available at [https://www.science.org/doi/10.1126/science.adw5851?](https://www.science.org/doi/10.1126/science.adw5851?utm_source=sfmc&utm_medium=email&utm_campaign=ScienceAdviser&utm_content=distillation&et rid=342934921&et_cid=5575266)

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The Natural Environment is of Great Importance in Water Security



Dursun Yıldız , Director

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The importance of the natural environment in water security is very important. The natural environment is a set of systems that directly affect the quality and quantity of water. The importance of the natural environment in terms of water security can be addressed under main headings such as protecting water resources and water quality, regulating the climate, maintaining biodiversity and ecosystem balance, and reducing disaster risks. The natural environment primarily plays a very important role in protecting and sustaining water resources. In this context, forests, wetlands and natural vegetation in our natural environment protect underground and surface water resources. These areas allow rainwater to filter into the soil. They also contribute to the protection of underground water levels and feed water basins. Thus, reducing the risk of drought.

The natural environment also has an important function in protecting water quality. The natural environment acts as a filter that prevents water pollution. In addition, forests and vegetation prevent erosion, so that soil does not mix with water. Wetlands can naturally filter pollutants such as pesticides and heavy metals. Natural ecosystems support the healthy functioning of the water cycle, provide a balance between evaporation and precipitation, and affect the rain regime by creating microclimates. Aquatic ecosystems in the natural environment reduce the effects of extreme climate events such as drought and flood. A healthy natural environment supports aquatic ecosystems and provides home to millions of living organisms and plants.

These organisms and plants are important for the continuity of the ecosystem and the renewal of water

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As long as the natural environment can remain free from the destructive effects of humanity, they also play an important role in reducing the effects of disasters such as floods and inundations. In addition, forests, absorb water and slow down surface flow. In addition, wetlands protect the settlements that humanity has created by occupying water basins by holding flood waters. In summary, it is not possible to provide sustainable water security without the natural environment. Therefore, deforestation, concreting and destruction of natural areas endanger both the quantity and quality of water in the long term. There is a very close relationship between natural environmental security and water security that feeds each other. This situation requires the implementation of water security and environmental security policies with an integrated understanding at the river basin scale.



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

HPA

Think Forward .Lead Forward