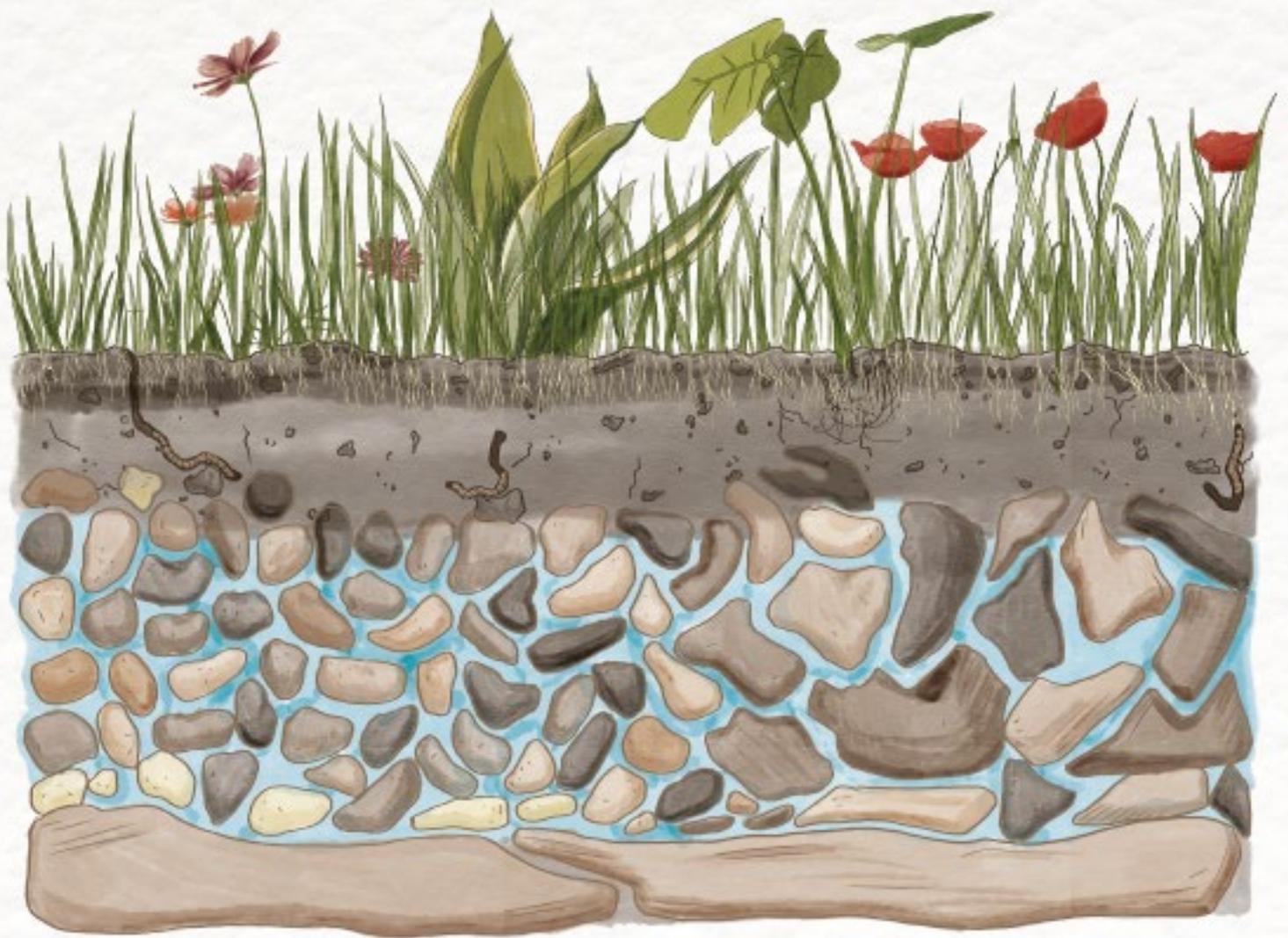


World Water Day 2022 Factsheet

# Groundwater: making the invisible visible



## **The basics:**

### **When is World Water Day?**

World Water Day is held on 22 March every year.

### **What is World Water Day?**

World Water Day is an annual United Nations Observance, started in 1993, focusing on the importance of water, coordinated by UN-Water and led by one or more UN-Water [Members](#) and [Partners](#) with a related mandate.

### **What is the aim of World Water Day?**

World Water Day celebrates water and raises awareness of the 2 billion people living without access to safe water. It is about taking action to tackle the global water crisis. A core focus of World Water Day is to support the achievement of Sustainable Development Goal (SDG) 6: water and sanitation for all by 2030.

### **What is the theme of World Water Day 2022?**

UN-Water sets the annual theme. In 2022, the theme is groundwater. Previous themes can be found here: [www.worldwaterday.org/archives](http://www.worldwaterday.org/archives)

### **What happens on World Water Day?**

In the lead-up to 22 March, people and organizations host World Water Day events and participate in the global public campaign, launched in the preceding months by UN-Water on [www.worldwaterday.org](http://www.worldwaterday.org) and social media.

On World Water Day itself, the [UN World Water Development Report](#) is released, focusing on the same topic as the campaign and recommending policy direction to decision makers.

## **The theme:**

### **Groundwater – making the invisible visible**

The theme of World Water Day 2022 is groundwater. The campaign title is ‘Groundwater – making the invisible visible’. The following text forms the central narrative of the campaign:

Groundwater is invisible, but its impact is visible everywhere.

Out of sight, under our feet, groundwater is a hidden treasure that enriches our lives. In the driest parts of the world, it may be the only water people have.

Almost all of the liquid freshwater in the world is groundwater, supporting drinking water supplies, sanitation systems, farming, industry and ecosystems.

In many places, human activities over-use and pollute groundwater. In other places, we simply do not know how much water is down there.

Groundwater will play a critical role in adapting to climate change. We need to work together to sustainably manage this precious resource.

Groundwater may be out of sight, but it must not be out of mind.

### **What is groundwater?**

Groundwater is water found underground in aquifers, which are geological formations of rocks, sands and gravels that hold substantial quantities of water. Groundwater feeds springs, rivers, lakes and wetlands, and seeps into oceans. Groundwater is recharged mainly from rain and snowfall infiltrating the ground. Groundwater can be extracted to the surface by pumps and wells.

### **Why is groundwater important?**

Almost all the liquid freshwater in the world is groundwater. Life would not be possible without groundwater. Most arid areas of the world depend entirely on groundwater. Groundwater supplies a large proportion of the water we use for drinking, sanitation, food

production and industrial processes. Groundwater is also critically important to the healthy functioning of ecosystems, such as wetlands and rivers. Overexploitation of groundwater can lead to land instability and subsidence, and, in coastal regions, to sea water intrusion under the land.

### **Why should we care about groundwater?**

Groundwater is being over-used in many areas, where more water is abstracted from aquifers than is recharged by rain and snow. Continuous over-use leads eventually to depletion of the resource.

Groundwater is polluted in many areas and remediation is often a long and difficult process. This increases the costs of processing groundwater, and sometimes even prevents its use.

In other places, we do not know how much groundwater lies beneath our feet, which means we could be failing to harness a potentially vital water resource.

Exploring, protecting and sustainably using groundwater will be central to surviving and adapting to climate change and meeting the needs of a growing population.

### **What can we do about groundwater?**

Groundwater has always been critically important but not fully recognized. We must protect groundwater from pollution and use it sustainably, balancing the needs of people and the planet.

Groundwater's vital role in water and sanitation systems, agriculture, industry, ecosystems and climate change adaptation must be reflected in sustainable development policymaking.

Under the SDG 6 Global Acceleration Framework, particularly in the areas of innovation, governance, data and information we need to see urgent action in relation to groundwater.

### **The key messages of the World Water Day 2022 campaign:**

- Groundwater is invisible, but its impact is visible everywhere.
- Almost all of the liquid freshwater in the world is groundwater, supporting drinking water supplies, sanitation systems, farming, industry and ecosystems.
- What we do on the surface matters underground. We must only put harmless, biodegradable products on the soil and use water as efficiently as possible.
- Groundwater crosses borders. We must work together to manage transboundary groundwater resources.
- We cannot manage what we do not measure. Groundwater must be thoroughly explored, analyzed and monitored.
- Groundwater will play a critical role in adapting to climate change. We must protect and explore groundwater, balancing the needs of people and the planet.

### **The visible impacts of groundwater:**

#### **The invisible ingredient in food**

Population growth, rapid urbanization and economic development are just some of the factors driving increased demand for water, energy and food. Agriculture is the largest consumer of the world's freshwater resources, and more than one-quarter of the energy used globally is expended on food production and supply. Feeding a global population expected to reach 9 billion people by 2050 will require a 60 per cent increase in food production.

About 40 per cent of all the water used for irrigation comes from aquifers.<sup>1</sup> Especially in water-scarce countries, the provision of cheap energy for pumping groundwater for irrigated agriculture can lead to groundwater depletion and declining water quality, with potentially severe consequences for those who now depend on groundwater irrigation. Furthermore, the use of fertilizers and pesticides in agriculture is a serious threat to groundwater quality;

for example, nitrate is the most common contaminant of groundwater resources worldwide. Avoiding the problems of groundwater depletion requires coherent policies on energy, land

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<sup>1</sup> <https://www.fao.org/3/AL816E/al816e.pdf>

use and irrigation.<sup>2</sup> Reducing food waste can also play an important role in lowering water consumption.

### **A resource without borders**

Most of the world's large aquifers cross international borders. Some 468 transboundary aquifers have been identified worldwide, hence, the vast majority of countries share groundwater resources.<sup>3</sup> Globally, of the eight largest aquifers under stress, six are transboundary. Some of these aquifers are non-renewable, such as the Nubian and North-Western Sahara Aquifer Systems.<sup>4</sup>

In the last 20 years, substantial progress has been made in the baseline assessment of transboundary aquifers. However, examples of structural and formalized cooperation among aquifer-sharing countries are rare. Among more than 200 analyzed agreements on internationally-shared rivers and lakes,<sup>5</sup> only a few of them include specific provisions on groundwater. At the moment, only a handful of transboundary aquifers are governed by an international agreement.<sup>6</sup> With the increasing use of groundwater resources worldwide, the need for stronger specific cooperation on transboundary groundwaters has become ever more evident and urgent.<sup>7</sup>

### **A finite supply**

There are limitations to groundwater use, such as groundwater quality and high costs of abstraction (from deep aquifers). Furthermore, groundwater is not always available in sufficient quantities in the places where there is the highest human demand for water. For instance, the Asia and the Pacific region has the lowest per capita water availability in the world, with groundwater use in the region predicted to increase 30 per cent by 2050.<sup>8</sup>

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<sup>2</sup> <http://www.fao.org/3/bl496e/bl496e.pdf>

<sup>3</sup> <https://www.un-igrac.org/resource/transboundary-aquifers-world-map-2021>

<sup>4</sup> <https://earthsecurity.org/report/ceo-briefing-global-depletion-of-aquifers-global-companies-must-take-an-active-role-in-groundwater-governance-to-avoid-existential-risks/>

<sup>5</sup> <https://doi.org/10.2166/wp.2018.033>

<sup>6</sup> <https://www.iucn.org/news/world-commission-environmental-law/202103/international-law-and-transboundary-aquifers>

<sup>7</sup> [https://unece.org/DAM/env/water/publications/WAT\\_model\\_provisions/ece\\_mp.wat\\_40\\_eng.pdf](https://unece.org/DAM/env/water/publications/WAT_model_provisions/ece_mp.wat_40_eng.pdf)

<sup>8</sup> [https://www.unescap.org/sites/default/files/CED5\\_1E\\_0.pdf](https://www.unescap.org/sites/default/files/CED5_1E_0.pdf)

### **Groundwater quality and pollution**

The potential threats to the quality of groundwater are natural (geogenic) contamination and contaminant sources from land use and other human activities (anthropogenic contamination).

Two of the most widely-spread geogenic contaminants are arsenic and fluoride. Naturally-occurring arsenic pollution in groundwater affects millions of people on all continents. Therefore, groundwater quality needs to be assessed and monitored regularly.

Anthropogenic contamination includes the effects of agricultural intensification, urbanization, population growth and climate change. For example, across Africa, groundwater quality is affected by poor sanitation infrastructure and agriculture practices, which has led to high levels of nitrate and microbial contamination.

In North America and Europe, nitrates and pesticides represent a big threat to groundwater quality: 20 per cent of European Union (EU) groundwater bodies exceeds EU standards on good water quality due to agricultural pollution.

### **Groundwater and the SDGs**

Good groundwater management is needed to achieve most of the Sustainable Development Goals (SDGs) of Agenda 2030. Fifty-three of the SDG's 169 targets have a link to groundwater.<sup>9</sup> For instance, SDG target 2.4 on sustainable food production systems and resilient agricultural practices relies on the availability of groundwater.

Good groundwater management is needed to achieve SDG target 6.6 to protect and restore water-related ecosystems, and SDG target 15.1 on the conservation of freshwater ecosystems and their services.

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<sup>9</sup> <https://inweh.unu.edu/wp-content/uploads/2018/12/Groundwater-and-Sustainable-Development-Goals-Analysis-of-Interlinkages.pdf>

**The links to find out more:**

- World Water Day 2022 website: [www.worldwaterday.org](http://www.worldwaterday.org)
- UN World Water Development Report 2022: [www.unwater.org/publication\\_categories/world-water-development-report](http://www.unwater.org/publication_categories/world-water-development-report)
- International Groundwater Resources Assessment Centre: [www.un-igrac.org](http://www.un-igrac.org)
- UN-Water: *Summary Progress Update 2021: SDG 6 — water and sanitation for all*: <https://www.unwater.org/publications/summary-progress-update-2021-sdg-6-water-and-sanitation-for-all/>
- UN-Water SDG 6 Data Portal: [www.sdg6data.org](http://www.sdg6data.org)
- FAO The Water-Energy-Food Nexus: <http://www.fao.org/3/bl496e/bl496e.pdf>
- World Bank: *Quality Unknown: The Invisible Water Crisis*: <https://openknowledge.worldbank.org/handle/10986/32245>