



MARCH 2024 | VALUING THE INVISIBLE

Addressing groundwater overuse with sustainable solutions

Groundwater makes up 30% of all freshwater² and close to 99% of all liquid freshwater on earth supplying nearly half of all drinking water worldwide³.

Currently, 70 % of the groundwater extracted globally is used for agricultural products like food, fibres, livestock, and industrial crops – with significantly higher withdrawal levels in arid and semi-arid regions.⁴



Christian Zilien
CFA, Product Specialist
Equity



Nezhla Mehmed
Portfolio Manager
Global Investment Platform

KEY TAKEAWAYS

- Every year since 1993, the United Nations (UN) has marked World Water Day on 22 March, bringing the significance of freshwater to the centre of public attention.
- This year's World Water Day theme "Leveraging Water for Peace"¹ puts a dedicated focus on how scarce or polluted water, or unequal and limited access to this precious liquid, can spark conflict and how cooperating on water can create a positive ripple effect.
- Safeguarding freshwater resources as a lifeline of our planet also implies preventing groundwater and aquifers from running dry.
- Here, investments in sustainable solutions that focus on managing and restore natural water storage capabilities can help addressing actual and future water-related challenges.



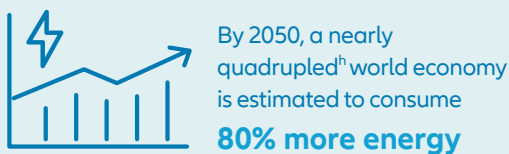
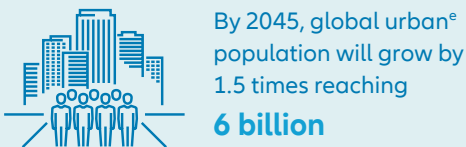
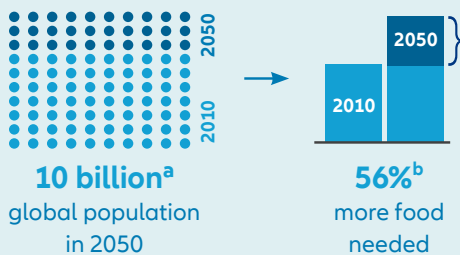
**Embracing
Disruption**

Very large aquifers together account for more than half of the world's groundwater reserves and are the source of approximately 40 % of global groundwater withdrawals⁵. According to a recent scientific analysis, 36% of in total 1,693 examined aquifers worldwide, declined significantly from 2000 to 2022.⁶

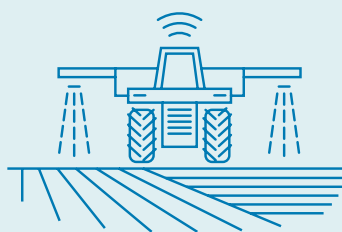
Depending on their hydrogeological characteristics some aquifers might only take a decade or even less to recharge whilst other types might need thousands of years.

Given the fragility of groundwater and aquifers as essential components of our planet's hydrological cycle it's crucial to direct investments to more sustainable water treatment, water management and water infrastructure and supply solutions. This will help address the challenges arising from globally accelerating groundwater depletion and can also play an important role in securing food supply to an ever-increasing population with an equally rising water demand and growing energy needs.

The drivers of a growing water demand



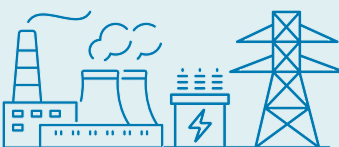
Global freshwater use by sector



Agriculture
currently uses **70%^c** of global freshwater by 2050 **+19%^d**



Municipal
to date **~ 11%^f** by 2050 **+130%** of domestic use^g



Industry & energy
to date **19%** by 2050 **+400%** manufacturing **+140%** thermal electricity generationⁱ

^a [World Resources Institute: How to Sustainably Feed 10 Billion People by 2050. December, 2108](#)

^b Ibid.

^c Ibid.

^d Ibid.

^e [Worldbank: Urban development](#)

^f [Our world in data: water-use stress. July, 2018](#)

^g [OECD: Environmental outlook to 2050. April, 2001](#)

^h Ibid.

ⁱ [Nature.com: Reassessing the projections of the World Water Development Report. July, 2019](#)

Groundwater and aquifers: essential resources under pressure

This is even more imperative as, with advancing climate change and with a higher frequency and longer persistency of droughts, overused aquifers and groundwater reservoirs can no longer serve as reliable buffers that help to mitigate losses in agriculture in arid periods. This, in turn, lowers agriculture’s resilience to future droughts, jeopardising global food supply chains and food security.

In addition, the anthropogenic pollution of groundwater – i.e., its contamination with vast quantities of waste, wastewater and residue from households, industry, mining, and agriculture – puts additional pressure on this indispensable resource.



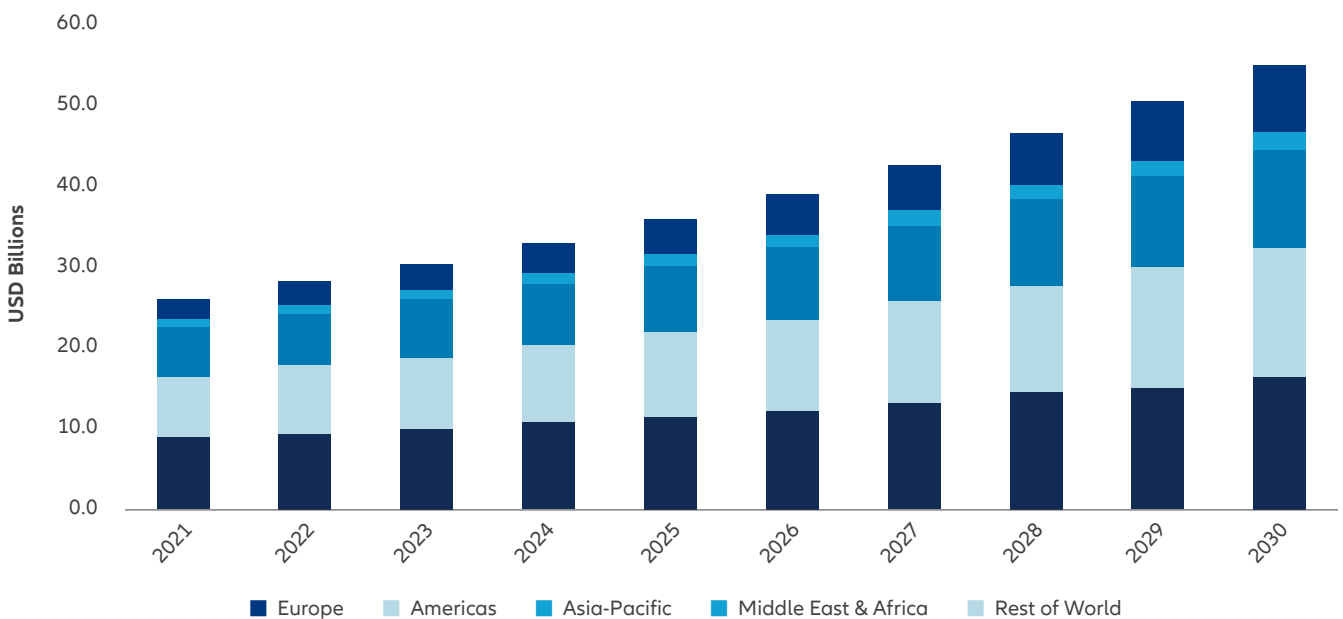
42 % of US crops exports (mostly corn) are grown from depleted groundwater⁷. The more groundwater is depleted and, consequently, the fewer crops can be produced and exported, the more importing countries and their food supply are put at risk.

Improving the storage and access to freshwater resources with sustainable solutions

The sustainable and holistic preservation, management and restoration of natural freshwater storage capabilities represents a market that, in certain segments, is set to show a nearly double-digit growth over the coming years. This

is being driven by, among other factors, rising expenditure on digital solutions that help to monitor and measure groundwater levels and water quality in a cost-efficient way.

Global water and wastewater utility sector expenditure on digital solutions is projected to show an annual growth rate of 8.8%, reaching a market value of USD 55.2 bn in 2030, more than doubling the USD 25.9 bn in investments made in 2021.⁸



Source: [Cleantech Insights: The Future of Digital Water Technologies](#). As of March 2023.

This developing market also includes the identification of and investment in innovators, key enablers and beneficiaries along the water entire value chain.

For instance, a worldwide leading manufacturer of sophisticated water and wastewater treatment technologies, services and products has developed a hydroacoustic current meter (Acoustic Doppler Current Profilers, ADCP) to measure water velocity and complex water flow conditions for professional environmental water monitoring.

A Sweden-based leader in the field of heat exchangers offers groundwater-based self-produced heating and cooling systems that significantly reduce emissions, helping to optimise energy consumption and securing the groundwater temperature.

To enable those and other frontrunning companies to further develop quality and resiliency products that improve the sustainability of natural water resources it is crucial to redirect even more capital flows towards solutions that address current and future water-scarcity and water-quality challenges.



¹ [UN World Water Day](#)

² [How Much Water Is on Earth? – Earth How](#). As of September 25, 2023.

³ [UN World Water Development Report 2022](#). As of March 2022.

⁴ [UN World Water Development Report 2022: Agriculture](#). As of April 2023.

⁵ [The Groundwater Project: Large Aquifer Systems Around the World](#). As of July 2022. Updated March 2023.

⁶ [Nature.com: Rapid groundwater decline and some cases of recovery in aquifers globally](#). As of January 2024.

⁷ United Nations University; Institute for Environment and Human Security (UNU-EHS): Technical Report. Groundwater depletion. As of 2023.

⁸ [Cleantech Insights: The Future of Digital Water Technologies](#). As of March 2023.

Investing involves risk. The value of an investment and the income from it will fluctuate and investors may not get back the principal invested. Past performance is not indicative of future performance. This is a marketing communication. It is for informational purposes only. This document does not constitute investment advice or a recommendation to buy, sell or hold any security and shall not be deemed an offer to sell or a solicitation of an offer to buy any security.

The views and opinions expressed herein, which are subject to change without notice, are those of the issuer or its affiliated companies at the time of publication. Certain data used are derived from various sources believed to be reliable, but the accuracy or completeness of the data is not guaranteed and no liability is assumed for any direct or consequential losses arising from their use. The duplication, publication, extraction or transmission of the contents, irrespective of the form, is not permitted.

This material has not been reviewed by any regulatory authorities. In mainland China, it is for Qualified Domestic Institutional Investors scheme pursuant to applicable rules and regulations and is for information purpose only. This document does not constitute a public offer by virtue of Act Number 26.831 of the Argentine Republic and General Resolution No. 622/2013 of the NSC. This communication's sole purpose is to inform and does not under any circumstance constitute promotion or publicity of Allianz Global Investors products and/or services in Colombia or to Colombian residents pursuant to part 4 of Decree 2555 of 2010. This communication does not in any way aim to directly or indirectly initiate the purchase of a product or the provision of a service offered by Allianz Global Investors. Via reception of this document, each resident in Colombia acknowledges and accepts to have contacted Allianz Global Investors via their own initiative and that the communication under no circumstances does not arise from any promotional or marketing activities carried out by Allianz Global Investors. Colombian residents accept that accessing any type of social network page of Allianz Global Investors is done under their own responsibility and initiative and are aware that they may access specific information on the products and services of Allianz Global Investors. This communication is strictly private and confidential and may not be reproduced, except for the case of explicit permission by Allianz Global Investors. This communication does not constitute a public offer of securities in Colombia pursuant to the public offer regulation set forth in Decree 2555 of 2010. This communication and the information provided herein should not be considered a solicitation or an offer by Allianz Global Investors or its affiliates to provide any financial products in Brazil, Panama, Peru, and Uruguay. In Australia, this material is presented by Allianz Global Investors Asia Pacific Limited ("AllianzGI AP") and is intended for the use of investment consultants and other institutional /professional investors only, and is not directed to the public or individual retail investors. AllianzGI AP is not licensed to provide financial services to retail clients in Australia. AllianzGI AP is exempt from the requirement to hold an Australian Foreign Financial Service License under the Corporations Act 2001 (Cth) pursuant to ASIC Class Order (CO 03/1103) with respect to the provision of financial services to wholesale clients only. AllianzGI AP is licensed and regulated by Hong Kong Securities and Futures Commission under Hong Kong laws, which differ from Australian laws.

This document is being distributed by the following Allianz Global Investors companies: Allianz Global Investors GmbH, an investment company in Germany, authorized by the German Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin); Allianz Global Investors (Schweiz) AG; Allianz Global Investors UK Limited, authorized and regulated by the Financial Conduct Authority; in HK, by Allianz Global Investors Asia Pacific Ltd., licensed by the Hong Kong Securities and Futures Commission; in Singapore, by Allianz Global Investors Singapore Ltd., regulated by the Monetary Authority of Singapore [Company Registration No. 199907169Z]; in Japan, by Allianz Global Investors Japan Co., Ltd., registered in Japan as a Financial Instruments Business Operator [Registered No. The Director of Kanto Local Finance Bureau (Financial Instruments Business Operator), No. 424], Member of Japan Investment Advisers Association, the Investment Trust Association, Japan and Type II Financial Instruments Firms Association; in Taiwan, by Allianz Global Investors Taiwan Ltd., licensed by Financial Supervisory Commission in Taiwan; and in Indonesia, by PT. Allianz Global Investors Asset Management Indonesia licensed by Indonesia Financial Services Authority (OJK).