



6 CLEAN WATER AND SANITATION



EDAI
EDUCATION AI



Ensure access to water and sanitation for all

Artificial Intelligence for Clean Water

SDG 6 currently has no targets on track, making it one of the least progressing SDG goals. This lack of progress means that safe drinking water remains out of reach for billions worldwide, with 2.2 billion lacking access to safely drinkable water and 3.5 billion lacking access to safe sanitation.

With droughts becoming more common, this situation is expected to worsen, endangering the lives of billions of people. In 2022, roughly half of the world's population experienced severe water scarcity for at least part of the year, while one-quarter faced 'extremely high' water stress.

The connection between AI and SDG 6 is not extensively documented in various AI UN use case repositories: 3 use cases out of 40 in AI for Good: Innovate for Impact, and approximately 50 use cases out of 408 in the UN Activities on AI.

Specific use cases for water improvement can include data monitoring for water management systems, which can optimize water flows to reduce energy and chemical usage while increasing water quantity. This reduction is crucial, as water and wastewater management organizations are expected to invest around US\$6.3 billion in AI solutions to enhance their services. Additionally, by improving climate event predictions, AI can better help the system manage large water discharges, which may occur more frequently due to increased flooding from climate change. AI solutions can also be used to locate new water sources for at-risk communities or to test the water quality of those sources. Other use cases include AI-driven farming solutions that reduce the need for irrigation, asset monitoring in water systems to ensure ongoing maintenance, monitoring the quality of lakes and other bodies of water, and the use of AI to drive desalination plant efforts.

However, these solutions are often costly and may not be accessible to all countries or communities. This is particularly critical as water access issues affect regions differently, and most countries affected by water issues are also the poorest, making it even more challenging for them to use AI solutions because AI itself requires significant water usage to function. From producing the supporting hardware to the cooling of data centers, substantial water quantities are needed, which could be polluted or inaccessible for individuals to meet their own needs. **The numbers are quite significant, as it is stated that “the global AI demand may be accountable for between 4.2-6.6 billion cubic meters of water withdrawal in 2027, which is more than the total annual water withdrawal of Denmark or half of the United Kingdom”.**

Key Considerations for Stakeholders

- **Impact assessment:** The development of AI use cases and incentives should be aligned with OECD AI principles to maximise sustainable value creation. The objective is to prioritise governmental tools for AI use cases related to the SDGs.
- **Technology improvement:** Reducing water consumption is imperative to support the development of SDG 6 hence technologies with less water use should be prioritized.

Impact

According to a study on the impact of AI on SDG 6, AI could act as an (positive) enabler for 100% of the targets and act as an inhibitor (negative) for 63% of the targets.

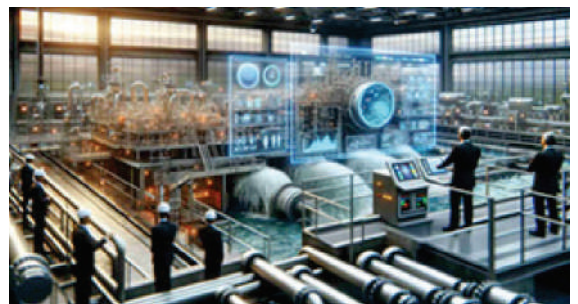
Use case 1

Implementing AI to monitor water consumption and to identify and address overconsumption.



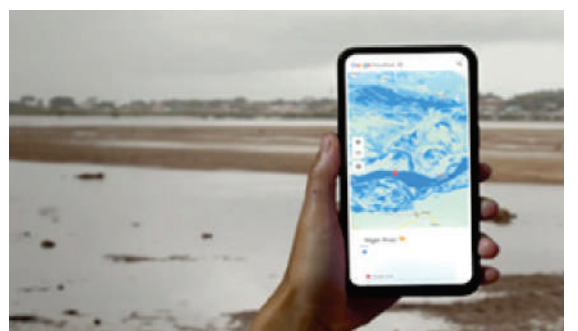
Use case 2

Using AI in wastewater management systems to improve forecasting of the system and reduce costs.



Use case 3

Establishing AI use cases that can improve flood and rain prediction to help the system account for water changes.



SDG 6: Clean water and sanitation

Ensure access to water and sanitation for all



FACTS AND FIGURES

- Despite progress, **2.2 billion people** still lacked safely managed drinking water services, **3.5 billion** lacked safely managed sanitation services, and **2.0 billion** lacked basic hygiene services in 2022
- Approximately **58% of household wastewater** was safely treated in 2022. Progress towards the target of halving the proportion of untreated wastewater by 2030 is limited. Wastewater **statistics are lacking** in many countries and reporting is low, especially from industrial sources.
- **Water-use efficiency worldwide rose 9%**, from \$17.4/m³ in 2015 to \$18.9/m³ in 2020
- Globally, **water stress remains at a safe level of 18.2% in 2020**, but with significant regional variations, including a **worrisome 18% increase in Northern Africa and Western Asia** between 2015 and 2020.
- Although there has been global progress on **integrated water resources management** between 2017 and 2020, it falls far short of meeting target 6.5 by 2030. Encouragingly, **44 countries have nearly achieved** the target and **22 countries have proved that real and rapid progress is possible**, but **urgent acceleration is needed in 107 countries**.
- Data from 2017 and 2020 show that **only 32 out of 153 countries** that share transboundary rivers, lakes, and aquifers have **90% or more** of those waters covered by operational arrangements.
- Surface water bodies, such as lakes, rivers, and reservoirs, are undergoing rapid global changes, with **one in five river basins showing high fluctuations in surface water levels in the past 5 years**
- ODA disbursements to the water sector decreased between 2015 and 2021 from **\$9.6 billion to \$8.1 billion, a decrease of 15%**. Total ODA commitments to the water sector have also **reduced by 12% from \$11.2 billion in 2015 to \$9.8 billion in 2021**.
- Since 2016, the proportion of countries with defined legal or policy procedures for local community participation in rural drinking water and water resources management has remained **above 70%**, while the percentage of countries with substantial levels of participation has consistently stayed **below 40%**.

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WHERE WE STAND

- Despite some progress, **billions still lack access** to safe water, sanitation, and hygiene.
- **Water scarcity is worsening** in many parts of the world due to conflicts and climate change
- **Water pollution** poses a significant challenge to human health and the environment in many countries.
- Achieving **universal coverage by 2030** will require a **6-fold increase** in current global rates of progress on drinking water, a **5-fold increase** for sanitation, and a **3-fold increase** for hygiene.

Global Youth AI Advisory Body



Delhi School of Artificial Intelligence

