What if the world knew exactly how much water we use and could predict future water needs and shortages?

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Better Water Meter

Within Reach | Transitional | **Visionary**

Industrial Internet of Things (IIoT) and satellite data form an automated and comprehensive water accounting system that provides insights into water usage and flows and a better understanding of how much water we really need to support more informed decisions on global water policies and conservation efforts.

UNCERTAINTIES

Collaboration, Technology

MEGATREND (Most significant)

Boundless
Multidimensional Data

TRENDS

ESG & Beyond GDP
Food–Water–Energy Nexus
International Collaboration
Open Data

TECHNOLOGIES

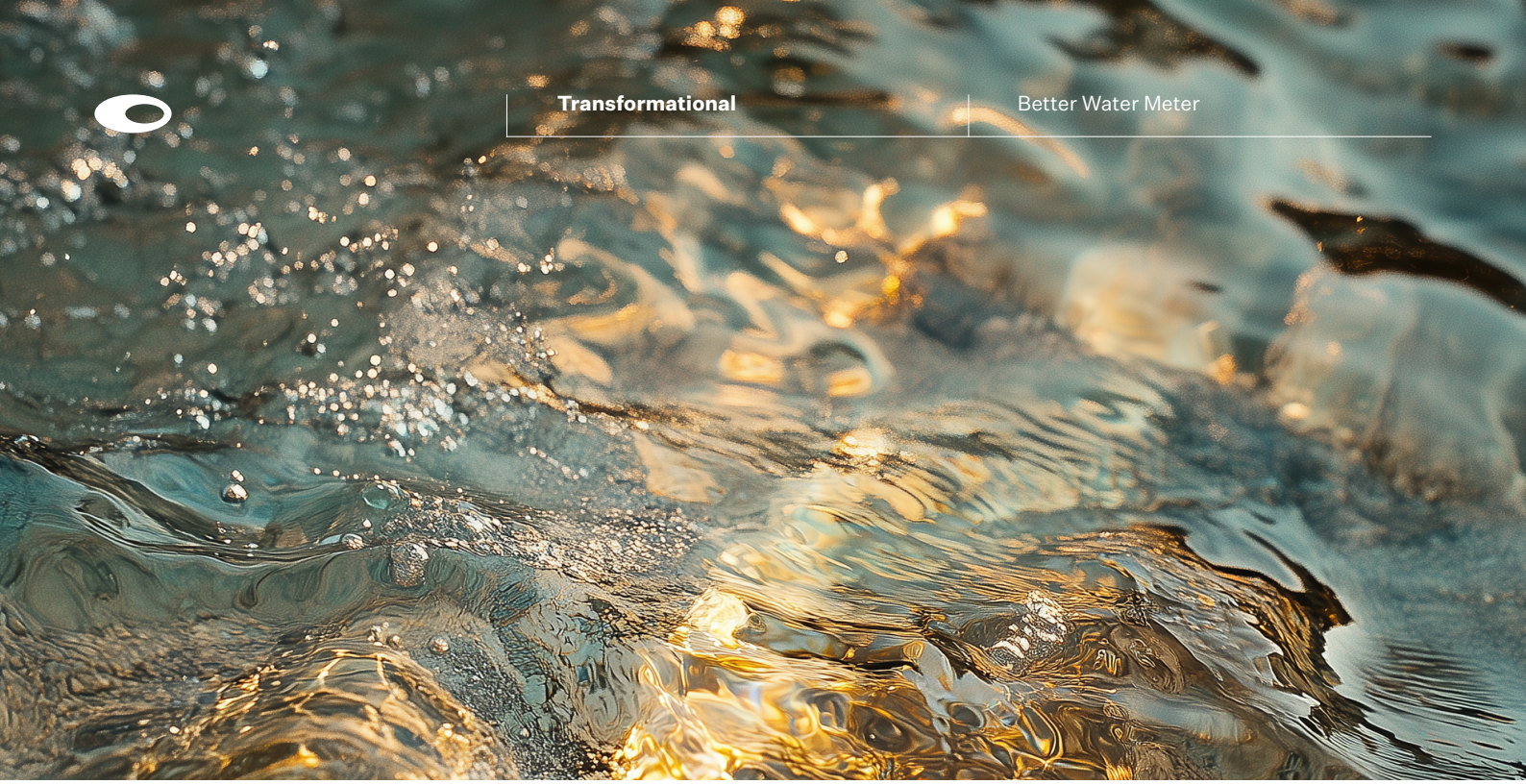
Artificial Intelligence
Internet of Things (IoT)
Real-Time Analytics

SECTORS IMPACTED

All Sectors

KEYWORDS

Industrial Internet of Things (IIoT)
Sanitation
Water Accounting
Water Crises
Water Footprint



WHY IT MATTERS TODAY

By 2030, **demand for water will likely exceed supply by**

40%

potentially reducing global GDP by 8% by 2050, **with low-income nations facing losses of up to 15%.**

The world faces an unprecedented water crisis affecting billions. Over 2 billion people lack access to safe drinking water, while nearly half the global population (3.6 billion people) cannot access proper sanitation.[1146] By 2030, demand for water will likely exceed supply by 40%, potentially reducing global GDP by 8% by 2050, with low-income nations facing losses of up to 15%.[1147] This crisis will threaten food security since more than half of global food production occurs in regions with unstable water availability.[1148]

Climate change and inefficient water use are jointly creating a cascading crisis in global water systems. In the Amazon, severe droughts are becoming more frequent, while Asia and Europe face unprecedented flooding.[1149] Mountain regions present a particularly stark example, where accelerated glacier melt is triggering chain reactions.[1150] Industrial use, particularly in food processing, wastes a significant proportion of water.[1151] For example, producing 1 kg of milk formula requires 4,700–7,430 litres of water.[1152]

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THE OPPORTUNITY

BENEFITS

Improved water accounting; forecasting droughts and floods; access to data that support scalable water management solutions; foundation for international cooperation and data sharing agreements.

RISKS

Extensive resource requirements; data and system interoperability; complex sensor networks; cybersecurity and potential misuse; data manipulation; incorrect predictions.

Together, data from the Internet of Things (IoT) – including the IIoT (secured by blockchain[1153]) – and satellite monitoring[1154] form a real-time digital twin of the Earth's entire water system.[1155] The automated water accounting system provides a comprehensive overview of water resources and movements, providing a better understanding of how much water we really need, better informing global policies, and optimising water use and conservation.

The system monitors all three water footprints[1156] – green (e.g. rain and soil moisture), blue (e.g. rivers, lakes and groundwater), and grey (e.g. from washing machines and showers) – while tracking water flows around the world. From underground aquifers and river systems to industrial and agricultural sites, sensors monitor groundwater levels, river flows, water quality, and consumption patterns. Satellites provide data on precipitation, soil moisture, and other key variables in the water cycle. Advanced machine intelligence helps predict droughts in advance to identify inefficiencies in water use in the global food trade, and equip local communities with information to manage their water needs and usage. As quantum computing handles complex calculations across the food–water–energy nexus, the system can provide early warnings on water quality, mitigating the risk of waterborne diseases.

This approach makes water accounting more accurate, transparent and clear, providing a comprehensive overview of water resources and movements worldwide and giving us a better understanding of how much water we really need