

Growth in water consumption of data centres needs more attention

While energy efficiency and greenhouse gas emissions have become mainstream in the sustainability strategies of data centres, water management is an area that needs more attention

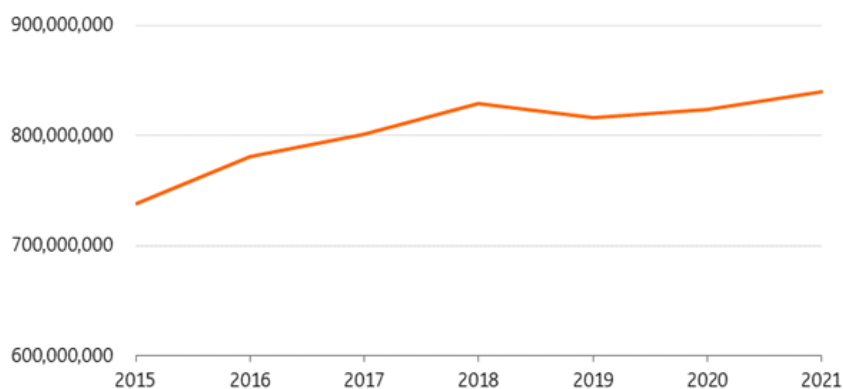


In order to continue using water to cool data centres, companies now need to enhance water usage efficiency, work with local communities and minimise the risk from droughts

Water consumption by big tech firms has surged

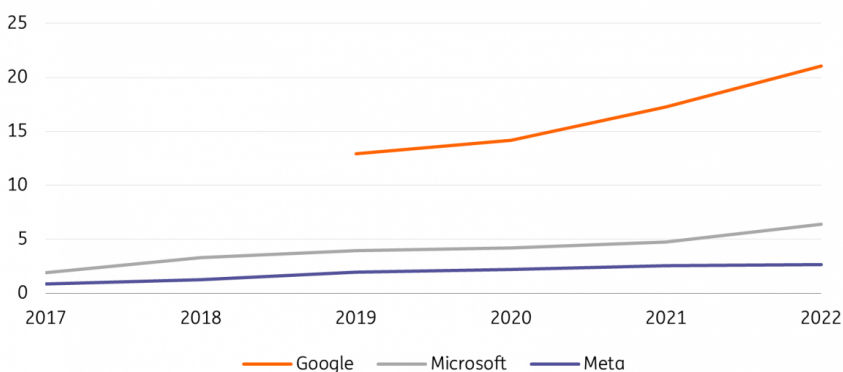
Some data centres can use water for the cooling of their suites that house the cabinets and racks. With the increase in servers, water consumption from data centres has risen significantly worldwide from 738 million litres in 2015 to more than 840 million litres in 2021, as can be seen in the graphs below. This is largely driven by the rising water usage by big technology companies. In the US, which has about 25% of the data centres globally, a mid-sized data centre uses about 300,000 gallons of water a day, equal to the water consumption of 100,000 homes.

Water consumption of data centres globally in litres per day



Source: WSJ

Water consumption by Microsoft, Google and Meta in billion litres per year



Source: ING Research based on company reporting (Note: Water consumption = water withdrawal – water discharge)

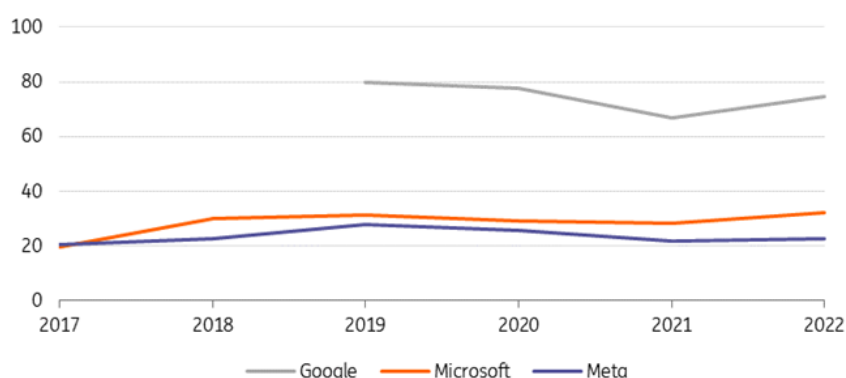
Managing water usage

The challenges data centres face around water usage are often related to their geographical location. Data centres are sometimes in areas where water sources are scarce. For instance, in 2022, 23% of Microsoft’s and 18% of Google’s freshwater withdrawals were from water stress areas. This means that to continue using water to cool data centres, companies need to enhance water usage efficiency and minimise the risk from droughts. They must also properly manage relationships with the local community for large amounts of water consumption.

Companies like Microsoft and Google have been working on water replenishment through projects such as water conservation to offset their consumption. Microsoft plans to be ‘water positive’ by 2030 by reducing water consumption, replenishing more than it uses, providing people with access to water and sanitation services, and engaging in water policy. But there is a long way to go to replenish more than one consumes. Google is one of the only companies to have reported that it replenished 6% of its freshwater consumption in 2022. There are more nuances to this. If a company consumes less water than it replenishes at the global level, it could still worsen water stress situations in a specific region while replenishing water elsewhere.

Other practices include water recycling, cooling system upgrading, and research & development to bring innovative technologies into use. Although more data centres and technology companies are actively managing water usage, reporting on water usage is not as widespread as reporting on power consumption or energy efficiency. Companies need to up their game. In addition to absolute usage, there is limited disclosure of relative water consumption metrics (some metrics can be calculated from other disclosed data). The first is Water Usage Efficiency (WUE). Similar to PUE, WUE is the ratio between annual data centre water usage and the energy use (kWh) of ICT equipment. The second metric is water consumption as a ratio of company revenue. For big technology companies, this ratio has more or less stayed stable over the past few years. This possibly indicates that there is room for improvement for more efficient water management.

Water consumption intensity by Microsoft, Google and Meta in cubic meters per \$million of revenue



Source: ING Research based on company reporting

More work needed

These metrics would allow for better comparisons among peers. Some investors are becoming interested in looking at water and water intensity-related metrics when considering sustainable finance products. In a nutshell, water usage is attracting attention from the data centre industry, but a lot more effort is needed to bring net water usage down and report on progress.

Author

Coco Zhang

ESG Research

coco.zhang@ing.com

Jan Frederik Slijkerman

Senior Sector Strategist, TMT

jan.frederik.slijkerman@ing.com

Diederik Stadig

Sector Economist, TMT & Healthcare

diederik.stadig@ing.com

Disclaimer

This publication has been prepared by the Economic and Financial Analysis Division of ING Bank N.V. ("ING") solely for information purposes without regard to any particular user's investment objectives, financial situation, or means. *ING forms part of ING Group (being for this purpose ING Group N.V. and its subsidiary and affiliated companies)*. The information in the publication is not an investment recommendation and it is not investment, legal or tax advice or an offer or solicitation to purchase or sell any financial instrument. Reasonable care has been taken to ensure that this publication is not untrue or misleading when published, but ING does not represent that it is accurate or complete. ING does not accept any liability for any direct, indirect or consequential loss arising from any use of this publication. Unless otherwise stated, any views, forecasts, or estimates are solely those of the author(s), as of the date of the publication and are subject to change without notice.

The distribution of this publication may be restricted by law or regulation in different jurisdictions and persons into whose possession this publication comes should inform themselves about, and observe, such restrictions.

Copyright and database rights protection exists in this report and it may not be reproduced, distributed or published by any person for any purpose without the prior express consent of ING. All rights are reserved. ING Bank N.V. is authorised by the Dutch Central Bank and supervised by the European Central Bank (ECB), the Dutch Central Bank (DNB) and the Dutch Authority for the Financial Markets (AFM). ING Bank N.V. is incorporated in the Netherlands (Trade Register no. 33031431 Amsterdam). In the United Kingdom this information is approved and/or communicated by ING Bank N.V., London Branch. ING Bank N.V., London Branch is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. ING Bank N.V., London branch is registered in England (Registration number BR000341) at 8-10 Moorgate, London EC2 6DA. For US Investors: Any person wishing to discuss this report or effect transactions in any security discussed herein should contact ING Financial Markets LLC, which is a member of the NYSE, FINRA and SIPC and part of ING, and which has accepted responsibility for the distribution of this report in the United States under applicable requirements.

Additional information is available on request. For more information about ING Group, please visit www.ing.com.