

Sustainable finance helps data centres reduce their environmental impact

Pressure to accelerate data centre decarbonisation is mounting as a result of new regulations and ESG, and companies are increasingly using sustainable finance products to help reach their environmental goals



Sustainable finance products now provide an effective tool for data centres to fund their decarbonisation efforts and reach key environmental goals

Pressure for data centre decarbonisation is mounting

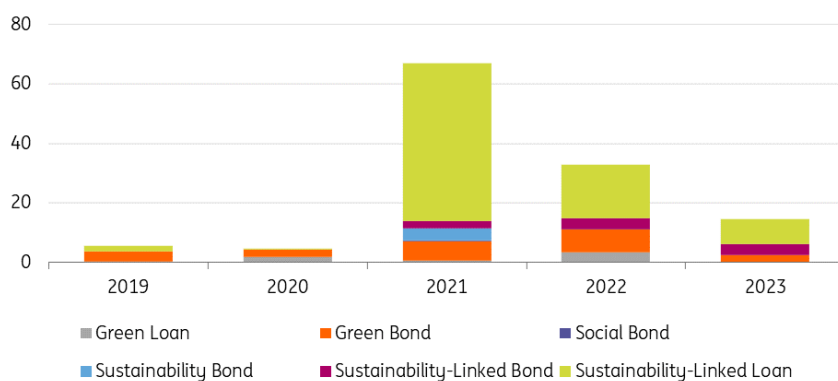
The pressure for data centres to accelerate decarbonisation has never been stronger. Environmental, Social, and Governance (ESG)-conscious investors and corporate clients of data centres are demanding lower emissions. Moreover, mandatory sustainability data disclosure is forcing data centre providers to manage their sustainability efforts more actively.

In the EU, with the Energy Efficiency Directive (EED) and Corporate Sustainability Reporting Directive (CSRD) coming into force (the latter requires c.50,000 companies to report their direct and indirect emissions from 2024 onwards), data centres (with an installed IT power demand of at least 100 kilowatts) will need to provide detailed public reports of their energy usage and performance. The EU Taxonomy also includes a reference to the European Code of Conduct on Data Centre Energy Efficiency. In the US, the signing of California's Climate Corporate Data Accountability Act (SB 253) and Climate-Related Financial Risk Act (SB 261) together require thousands of companies

to report quality climate data. These acts will likely impact the Securities and Exchange Commission's highly anticipated climate disclosure rules, likely this year. Moreover, states such as Virginia and Oregon have proposed bills to strengthen data centre sustainability reporting and slash emissions by 60% by 2027.

Sustainable finance products remain an effective tool for data centres to fund their decarbonisation efforts. This is the case despite uncertain economic conditions and government sustainability policies contributing partly to a decline in issuances among a wide range of corporates – including those in the technology sector – from January to September this year compared to the same period in 2022. Sustainability-Linked Loans (SLLs) is still the dominating ESG financing mechanism in the technology space (58% of the sector's total issuance in Jan-Sept 2023, up from 55% in 2022). This contrasts with a sharp decline in the share of SLLs in the general sustainable finance market this year.

Global issuance of sustainable finance products in the technology sector (US\$bn)



Source: Bloomberg New Energy Finance, ING Research
 Note: 2023 data is from January to September

Indeed, companies with substantial data centre operations have been using sustainable finance products to help reach their sustainability goals. Through an examination of company green bond frameworks, we found that common eligible projects for financing include (1) energy efficiency improvement, measured in power usage effectiveness (PUE); (2) renewable energy solutions; and (3) the greening of buildings, benchmarked by building efficiency certifications. These cover a good range of material climate issues for data centres.

What is not as common in these frameworks but requires increasing attention is water management, as our analysis shows a need for data centres to tackle risks around water stress and local community relationships. That said, when establishing its sustainable finance framework, a company needs to have a good breadth and depth of eligible project areas that address environmental concerns and not ignore any issues that can introduce more risks in the long term.

Green bond framework and impact metrics of companies with data centre operations

Equinix

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> Green buildings: design, construction, and maintenance of buildings (including data centres) that achieve a certain certificate or have a design of average annual PUE at or below 1.45 	<ul style="list-style-type: none"> Data center that is certified (type of scheme, certification level, sqm/sqft certified) Design average annual PUE (no.) (site-level) Emissions avoided (mtCO2e) over a building's lifetime or annually Embodied carbon quantified (kg CO2e/square foot by project)
<ul style="list-style-type: none"> Renewable energy: generation, procurement, and conversion to clean fuel 	<ul style="list-style-type: none"> Electricity from clean and renewable energy (MWh) Percent renewable energy for global portfolio (MWh renewable / MWh electricity consumption) Annual emissions reduced/avoided (mtCO2e)
<ul style="list-style-type: none"> Energy efficiency: improvements of efficiency (a 2% per annum improvement in a site's power usage, or a top 15% score based on the US ENERGY STAR Industry benchmark; innovative cooling systems, technology optimizations) 	<ul style="list-style-type: none"> Energy savings (MWh/year or over project lifetime) GHG emissions avoided (mtCO2e) Operational average annual PUE (no.) (site-level)
<ul style="list-style-type: none"> Sustainable water and wastewater management: water-efficient cooling solutions, infrastructure upgrades, etc. 	<ul style="list-style-type: none"> Water use savings (gallons) Reclaimed (greywater or rainwater) water used (gallons)

Source: Company data

NTT

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> Energy efficiency: Highly efficient and power-saving data centres: PUE under 1.5 	<ul style="list-style-type: none"> Volume of CO2 emissions (tCO2)
<ul style="list-style-type: none"> Green buildings: design, construction, and maintenance of buildings (including data centres) that achieve a certain certificate, or buildings with a power-saving evaluation of AAA based on the Tokyo Building Environment Plan 	<ul style="list-style-type: none"> Name of green property, certification level, etc. Volume of CO2 emissions (tCO2)
<ul style="list-style-type: none"> Renewable energy: renewable power generation 	<ul style="list-style-type: none"> Power generation capacity/actual volume (GWh) Volume of CO2 emissions reduced (tCO2)

Source: Company data

Digital Realty

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> Green buildings: projects that contribute to the receiving of green building certificates 	<ul style="list-style-type: none"> Name and information of projects that have achieved certification
<ul style="list-style-type: none"> Energy and resource efficiency: improvement of the energy or water efficiency of a building, a building subsystem, or land by at least 15% from a determined baseline 	<ul style="list-style-type: none"> MWh of energy efficiency savings
<ul style="list-style-type: none"> Renewable energy: Renewable energy and low carbon energy supply solutions including generation, procurement, and storage 	<ul style="list-style-type: none"> MWh of renewable energy produced

Source: Company data

Alphabet

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> • Energy efficiency: design, construction, operation, and maintenance of facilities (data centres of a PUE of less than 1.5; server, storage, or networking efficiency and utilization) 	<ul style="list-style-type: none"> • Trailing 12-month (TTM) PUE
<ul style="list-style-type: none"> • Clean energy: Renewable energy generation, storage, and procurement; equity investments in renewable energy projects 	<ul style="list-style-type: none"> • Annual GHG emissions reduced/avoided (tCO₂e) • Renewable energy capacity commitments (MW)
<ul style="list-style-type: none"> • Green buildings: design, construction, and maintenance of buildings (including data centres) that achieve a certain certificate 	<ul style="list-style-type: none"> • office space that is Gold or Platinum LEED-certified (sqm)

Source: Company data

Apple

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> • Energy efficiency: energy efficiency projects intended to reduce emissions in new or existing infrastructure 	<ul style="list-style-type: none"> • Lifetime carbon benefit (tCO₂e)
<ul style="list-style-type: none"> • Renewable energy projects 	<ul style="list-style-type: none"> • Renewable energy capacity (MW)

Source: Company data

Amazon

Highlights of eligible projects related to data centres in green bond frameworks	Example impact reporting metrics
<ul style="list-style-type: none"> • Renewable energy: generation, procurement, renewable energy storage installation 	<ul style="list-style-type: none"> • Renewable energy capacity commitments (MW)
<ul style="list-style-type: none"> • Sustainable buildings: design, construction, and maintenance of buildings (including data centres) that achieve a certain certificate 	<ul style="list-style-type: none"> • Square footage built that is Gold or Platinum LEED-certified

Source: Company data

Impact reporting—the disclosure of both use-of-proceeds allocation and the improvement of environmental impact—is a crucial practice to boost issuer sustainability credibility. For instance, Equinix allocated \$3.66bn of green bond use of proceeds as of June 2022, with almost 98% dedicated to lowering the design average annual [power usage effectiveness](#) to 1.45 or below. Equinix’s annual average PUE decreased from 1.54 in 2019 to 1.46 in 2022. Comparatively, Alphabet’s cumulative \$5.69bn of ESG bond allocation has been mainly toward green buildings (48%), clean energy (31%), and energy efficiency (18%). On the back of their green bonds, Alphabet has reported that 25mn tonnes of CO₂ equivalent has been avoided through renewable energy power purchase agreements (PPAs), and 807,000 square metres of LEED Platinum-certified office space.

While the reported data already shows a fair level of company commitment to sustainability reporting, there is still great room for improvement. This includes:

- Disclosing more detailed data across metric categories. According to a survey by Uptime

Institute covering more than 700 companies in the data centre industry, 88% of the respondents report IT or data centre power consumption, 71% report on PUE whereas only 41% report on water usage and 34% disclose renewable energy consumption.

- Choosing a good combination of absolute data (e.g. water usage amount) and ratios (e.g. water usage energy intensity), as well as further breakdowns of data by product, operation, project, or geography.
- Reporting separately on data centre decarbonisation results, but also contextualising data centre numbers in the bigger picture of a company's entire operations.

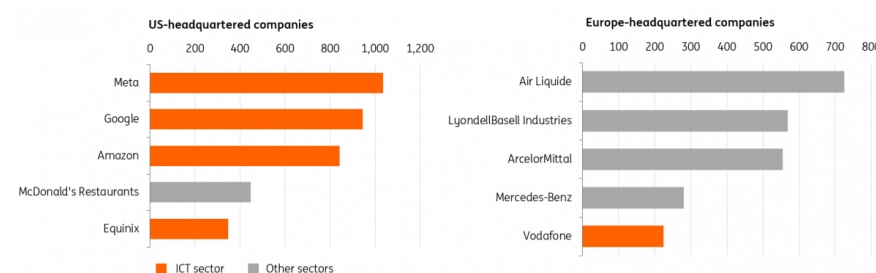
Finally, reporting metrics need to be updated as needed. For instance, if a company has been consistently achieving a low PUE number, then it might need to add further metrics to reflect ongoing sustainability efforts more precisely.

Most companies also acquire and publish third-party assurances of green bond allocations, and this will enhance investor confidence that the use of proceeds is indeed going into eligible green projects indicated in companies' sustainable finance frameworks. In an environment where greenwashing is increasingly criticised and less tolerated, it is important for issuers to provide assurances to investors that the proceeds of loans and bonds have been allocated to high-quality projects, with the desired associated impact.

Ramping up investments in renewable energy

In addition to the increased energy efficiency, data centres substantially rely on renewable energy—through the buying of power purchase agreements (PPAs) and direct investment—to achieve carbon neutrality targets. Google, Amazon, Meta and Microsoft have all committed to this goal and are among the largest corporate purchasers of renewable energy along with other data centre operators such as Equinix.

Top Corporate Power Purchase Agreement (PPA) buyers in 2023 (January to Mid-September, in MW)



Source: ING Research based on Bloomberg New Energy Finance

As a result, large technology companies have mostly achieved 100% use of renewable electricity, while Equinix and Digital Realty powered 96% and 62% of their operations with renewable energy in 2022, respectively. It is also no surprise then that 21% of data centre executives say that the opportunity to buy more renewable energy is the biggest driver of data centre sustainability in the next five years.

The purchase of renewable energy and robust sustainable finance frameworks will further develop the sustainable finance market. First, data centre companies can choose to use sustainable

finance to support the investment aimed at becoming more environmentally friendly. Second, the large demand for renewables (through power purchase agreements) can also spur clean electricity developers to finance capacity expansion.

One could perceive the procurement of green energy by data centres as a problem because it is a scarce commodity. Nevertheless, one reason the sector procures green energy is that margins allow it to do so. Moreover, the companies have the scale and willingness to sign large PPA contracts. It shows that the sector is relatively profitable and growing fast, which enables the transition to a green and digital economy.

Authors

Coco Zhang

ESG Research

coco.zhang@ing.com

Diederik Stadig

Sector Economist, TMT & Healthcare

diederik.stadig@ing.com

Jan Frederik Slijkerman

Senior Sector Strategist, TMT

jan.frederik.slijkerman@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 <http://www.ing.com>.