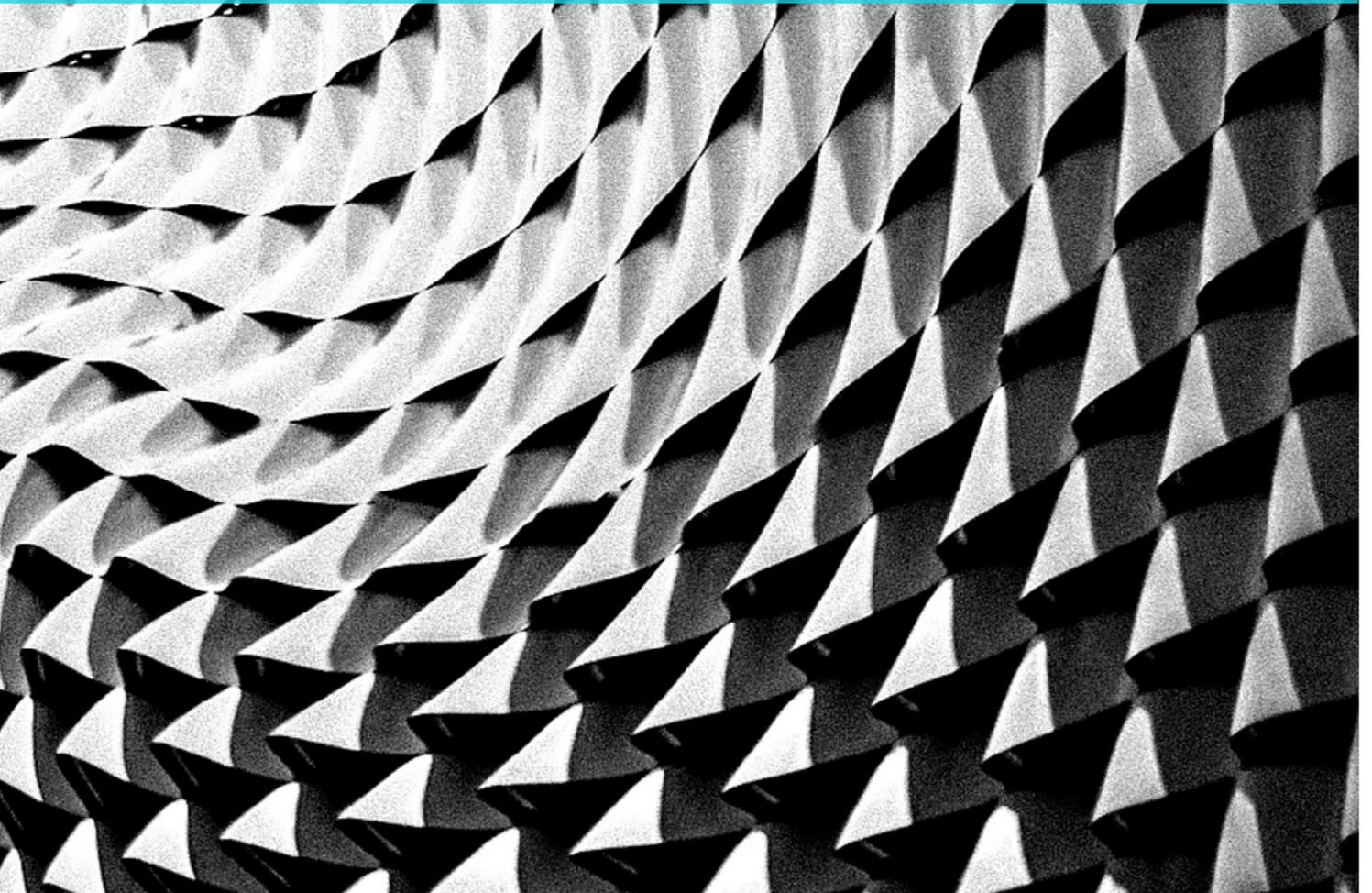


WHITEPAPER

The Data Usage Barometer:

How fintechs can square increasing use of data and energy-intensive technologies with net-zero commitments



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About this report

This report was produced by FINTECH Circle and explores the broad trends we expect to see across Fintech, as well as trends in specific focus areas. It is based on a survey of the FINTECH Circle network - including Fintechs, traditional financial services providers, consultants and professional Fintech investors, from around the world – as well as desk research and in-depth interviews with a range of experts:

Charlie Bronks *Head of ESG, Crown Agents Bank*

Simon Gotsch *Chief Risk Officer, PayU*

Kelly Perry *Group Head Sustainability, CMC Markets*

Richo Strydom *CTO, Crown Agents Bank*

Simon Weston *CEO, ICON*

Anthony Woolley *Non-Executive Director, Secretarium*

About FINTECH Circle

FINTECH Circle is a global platform of more than 216,000+ Fintech entrepreneurs, investors, finance professionals, academic & government representatives, and solution providers. The company launched Europe's 1st Angel Investor Network providing seed capital to the best fintech startups in the UK. FINTECH Circle also runs courses, webinars & innovation workshops for finance teams and C-level executives and publishes fintech thought-leadership titles. ■

About Bulk Data Centers AS

Bulk Data Centers deliver strategically located Nordic data centers that enable businesses to reduce costs and environmental impact with ultra-flexible, highly connected and scalable solutions. For organizations that want to be part of the climate change revolution, Bulk unlocks the unrivalled benefits of the Nordics — this includes access to multiple sources of 100% renewable energy without needing to make concessions on cost, performance, resiliency or scalability. ■

Foreword from Bulk

Ever since banks first went online, fintech has been evolving in front of our eyes, transforming our relationship with financial services. Today, you can open a bank account online without physically visiting a bank, trade stocks and shares at a click of a button and turn your smartphone into a digital wallet.

And this is only the beginning, with the latest data revealing the UK saw a 24% year-on-year increase in fintech investments in the first half of 2022, despite a global slowdown.¹

Central to this growth is data, and there is no industry more reliant on high-performing, always-on data centres than fintech companies, as they look to store and process an ever-growing volume of data for their customers.

Despite efforts to shed light on the relationship between fintech and data over the last few years, there remains a dearth of analysis on the thinking and intentions of those senior executives who are truly shaping the sector.

The lack of this data not only hinders growth for fintech companies but also those of data centre operators, whose >>

processes and capabilities are inextricably linked to supporting the growth of fintech. This report aims to address many of these gaps.

Together with the FINTECH Circle Institute, we have conducted a survey of industry leaders, the results of which highlight the drivers and concerns of a sector which has the capacity to truly transform our lives. ■

Warren Barrie

Global Sales Director,
Bulk Data Centers

“There is no industry more reliant on high-performing, always-on data centres than fintech companies, as they look to store and process an ever-growing volume of data for their customers”

Warren Barrie, of Bulk Data Centers

Increase in UK
Fintech investment

24%

H1 2022

1. <https://www.innovatefinance.com/news/levels-of-investment-in-uk-fintech-continue-to-increase-despite-global-slowdown/>

Executive summary

Data has transformed virtually every industry, with technologies such as artificial intelligence (AI) and machine learning (ML) giving businesses the tools to process data to better understand their organisations, supply chains and customers, as well as the wider sectors and markets they operate in.

As data usage grows, the IT and communications infrastructure that underpins it is also transforming, with better, faster connections and more options for data processing and storage. At the same time, growing concerns about climate change and high oil and gas prices have put a spotlight on the energy used to run high-intensity applications.

Against this backdrop, the FINTECH Circle Institute analysed responses from senior executives in financial and technology companies about their growing use of data-intensive technologies and corresponding data storage demands, and the knock-on impact on their costs and sustainability goals. ■

“Over a third of survey respondents had seen an increase of 50-100% in data usage and storage needs in past three years.”

- Two-thirds of respondents said AI will be vital to their future growth, with ML (a subset of AI that enables the building of AI-driven applications) being the second most selected at 41%.
- Over a third of survey respondents had seen an increase of 50-100% in data usage and storage needs in past three years. More than a third of survey respondents predicted a growth of at least two times in the next three years, with half of that group expecting an increase of more than five times.
- Data sovereignty and compliance (stability and security) are the top concerns over growing data usage and storage, selected by more than half of respondents, with about 40% also citing increased costs.
- Security is the top requirement for data storage and processing, followed by reliability, ability to scale and then cost.
- Over half of respondents said they are concerned about their company's environmental impact. An even higher number agree that it is a moral imperative to limit their company's environmental impact.
- Over half of survey respondents said their company has explored or plans to explore alternatives to their current data storage infrastructure - changing service providers, moving to a colocation facility overseas and/or seeking renewable energy to power data storage facilities.



Finance increasingly relies on data- and energy-intensive tech

As Europe experiences its worst drought in 500 years, the physical impacts of climate change and the need to reduce the emissions that create it have never been more apparent. At the same time, the price of oil and gas has skyrocketed, emphasising the importance of energy efficiency and a rapid shift towards renewable energy sources.

In this landscape, financial service and technology companies are joining the growing list of businesses making net-zero emissions pledges. While on the surface these industries seem low impact compared to sectors like manufacturing or transportation, their growing use of high-performance computing and rising data-intensity are increasing their energy use – and therefore emissions.

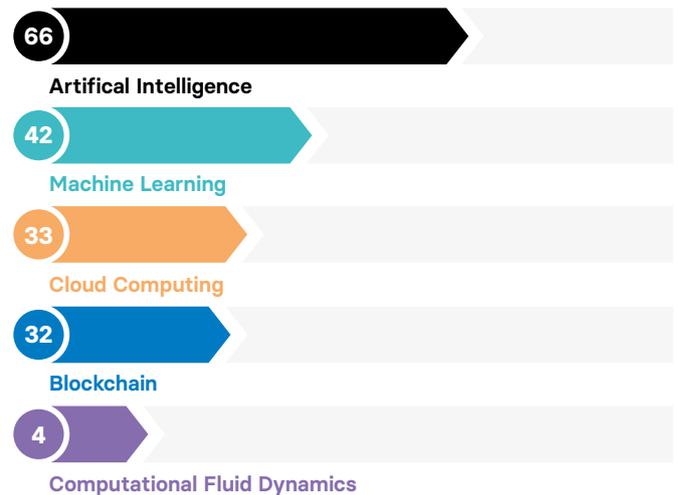
AI is one such data-intensive technology which is now being used extensively. It is utilised to streamline and optimise processes across financial institutions, such as quantitative trading and financial risk management. It has provided new ways to meet customer expectations for smarter, safer and more convenient ways to access, spend, save and invest money, for example by analysing data to make better product recommendations and powering chatbots to interact with and guide customers online.

Two thirds of respondents said AI is the technology that will be most vital to their future growth, with ML the second most selected at 42%. >>

What technologies will be most vital to your future growth?

Select up to 2.

%



Source: FINTECH Circle

“AI can leverage available data and hence hugely impacts storage needs. We now need expensive hardware to store hundreds of terabytes of replicated data.”

Simon Weston, CEO, ICON

66%

said AI is the technology that will be most vital to their future growth

» Richo Strydom, CTO of Crown Agents Bank, a UK-regulated wholesale bank focused on payments and FX, uses AI in three ways. *“The first is transaction screening, and there it has made a big difference in the manual interventions that we need to be involved in. The second area is transaction monitoring, so fraud monitoring, etc. And finally, we use it for the automation of manual processes using robotics. These are tools that we will be heavily investing in the next few years to automate more of the manual processes that we have today.”*

According to Forbes, 70% of financial firms are using ML to predict cash flow events, adjust credit scores and detect fraud², as demonstrated by PayU, a payment service provider to online merchants. *“We increasingly use artificial intelligence and machine learning, most heavily in our credit business where our credit decision models are fully data-driven and AI-enabled,”* said Simon Gotsch, Chief Risk Officer. *“But we’re also using them more and more in payments, for fraud prevention and other optimisation challenges.”*

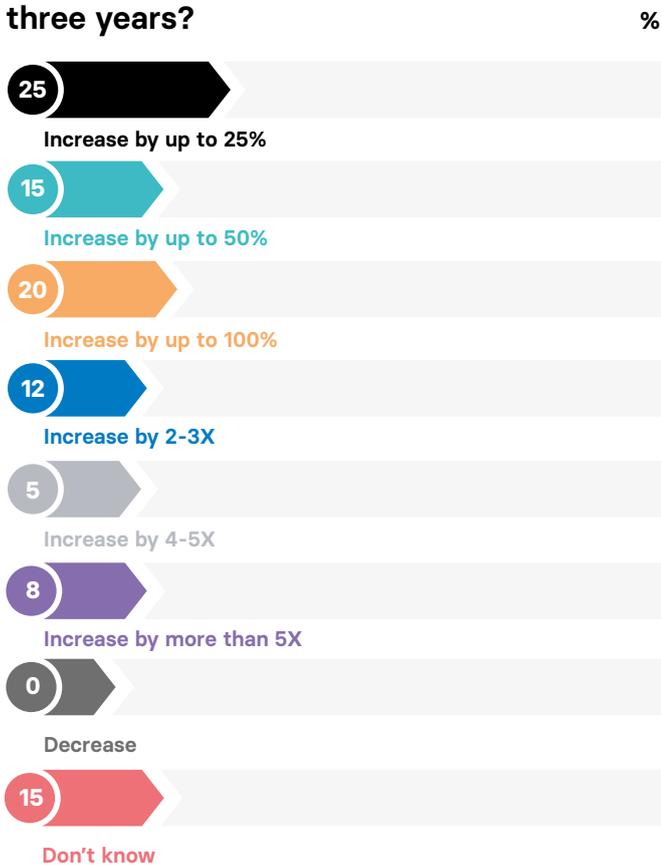
Blockchain, selected by 30% of survey respondents as being vital for their future growth, is also used to increase security »

and efficiency. By digitising the entire lifecycle of transactions, it makes governance more transparent and reduces the risk of fraud, decreasing processing times and cutting the risk of human error. This diminishes overall counterparty risk and therefore lowers capital requirements.

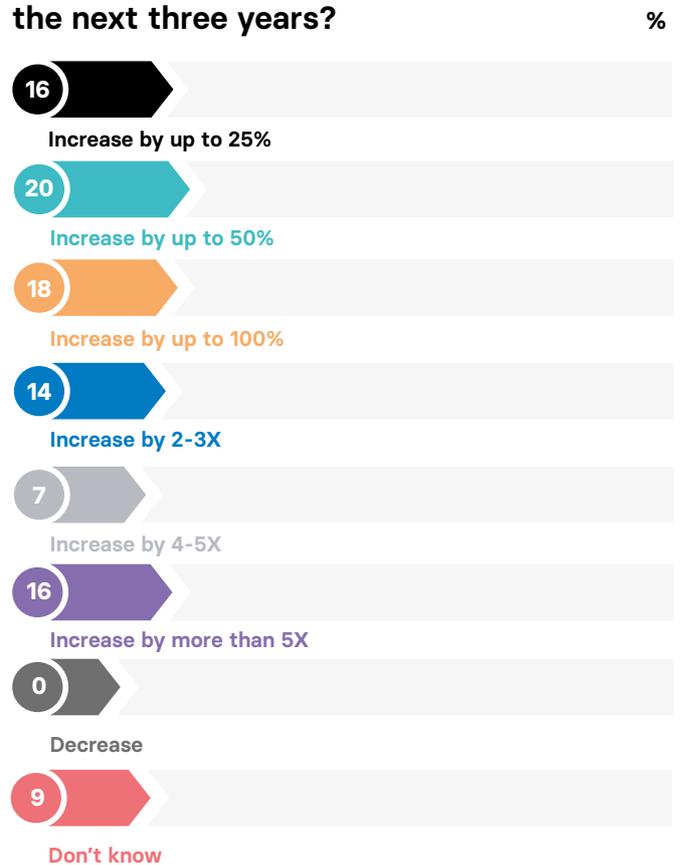
The benefits for financial institutions can be huge. According to Jupiter Research, blockchain will enable banks to realise savings on cross-border settlement transactions of up to \$27 billion by the end of 2030, reducing costs by more than 11%.³

The increased use of these technologies has resulted in an exponential growth in data processing and storage requirements. In the next three years, over a third of survey respondents predict an increase of at least two times, with half of that group expecting an increase of more than five times. ■

How have you seen your data usage and storage needs scale over the last three years?



How much do you expect your data usage and storage needs to grow over the next three years?



Source: FINTECH Circle

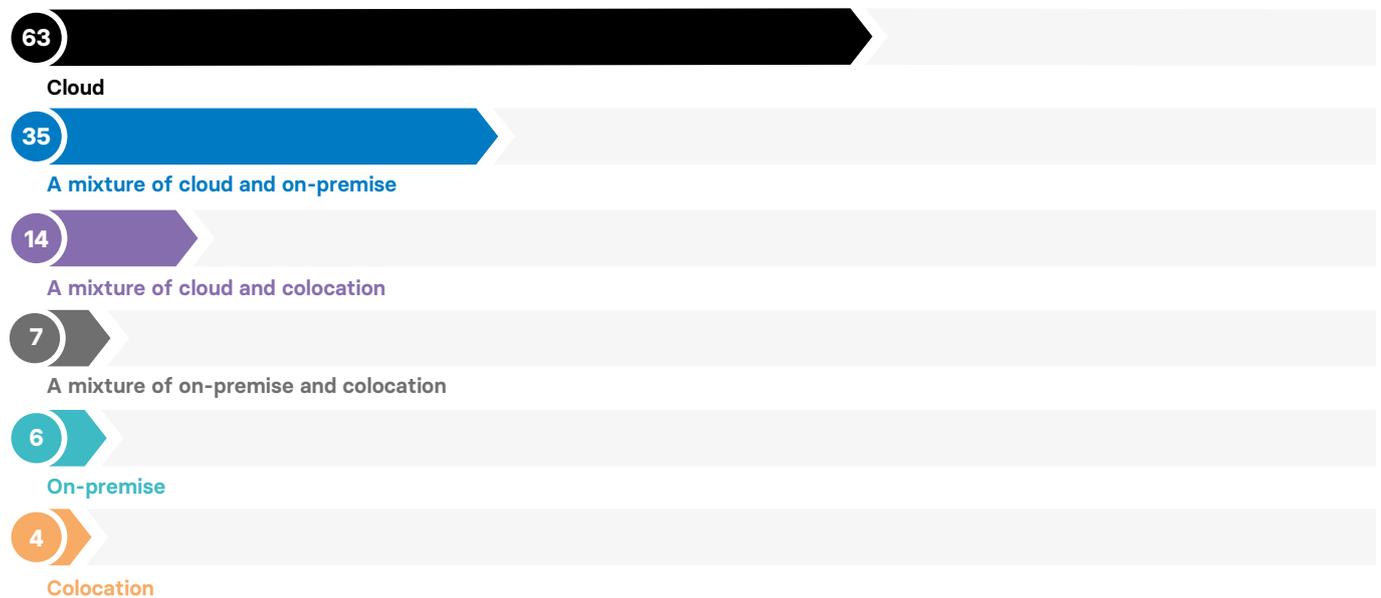
2. <https://www.forbes.com/sites/louiscolombus/2020/10/31/the-state-of-ai-adoption-in-financial-services/>

3. <https://www.juniperresearch.com/press/blockchain-deployments-save-banks-27bn-by-2030>

Where to store and process all that data?

Companies have four options for storing their data – on-premise, in the cloud or with a data centre (colocation), or a combination of those solutions (see box for the advantages and disadvantages of each). The survey found that almost all respondents are using cloud but half of those are doing so in combination with on-premise or colocation (hybrid cloud). >>

Where is your data stored? *Select all that apply*



Source: FINTECH Circle

Choosing on-premise, cloud or colocation

Companies traditionally stored their servers on-premise and some continue to do so for all or part of their data because they value keeping control and having fast access, or may need to do so for compliance reasons. However, being in control means being responsible for everything – capital expenditure for the servers, premises and running costs, as well the staff to manage it.

Moving data storage to the cloud is less labour intensive, easy to scale and can be much lower cost. However, there is a lack of transparency with redundancy, operational efficiency and security. Some compliance regulations prohibit certain types of data from being hosted in the cloud and where the vendor is located may be an issue of data sovereignty. There also have

been horror stories of hidden fees causing companies to rack up significant bills for using more expensive compute instances, not turning off unused resources, overprovisioning storage performance and capacity, and fees for data egress (transferring data out of the cloud)

With colocation, companies still purchase the computing hardware (and are responsible for that equipment) but the provider supplies the physical facility and everything that requires, like power, cooling and security. Capex costs are lower than with on-premise but higher than for the cloud, however running costs can be more predictable than cloud provision with those additional, variable fees. While having servers off premise reduces access, colocation provides greater reliability, redundancy, scalability and flexibility.

» Hybrid cloud and multi-cloud strategies can help to manage some of the disadvantages posed by relying solely on one cloud provider, but it also adds complexity to managing costs. It also can be difficult to track costs and budget appropriately if a company has multiple teams working with cloud resources (as many do).

When choosing where to store/process their data, survey respondents said their top requirements were security, reliability, ability to scale and cost-effectiveness. Going forward, their top concern was data sovereignty and compliance (stability and security), but nearly 40% of respondents also cited increased costs and increased consumption/environmental impact.

Anthony Woolley, Non-Executive Director of Secretarium, agreed that security is key. *“I think there’s a strong and growing trend around how do we really secure and keep data private when it’s being hosted by third parties, whether that’s in the cloud or elsewhere.”*

He added that data sovereignty is also vital. *“What’s important for us is to know where the data is - just saying it’s in the cloud and you don’t actually know which physical country your data is in can be a problem.”*

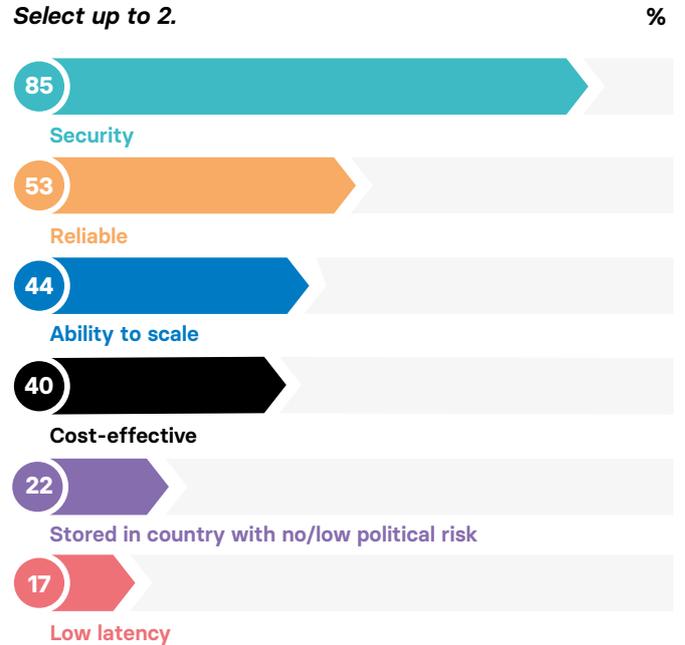
This is of particular importance in financial services, which often has strict regulations where data is held and processed and how secure it is. *“Especially in our industry, where you process personal data, there are increasingly more restrictions where this data can be located,”* said Mr Gotsch of PayU.

“But in addition to ensuring data storage is safe and compliant with local regulation, cost is also an important factor, as well as the environment,” he said. *“The environment is the main driver here.”*

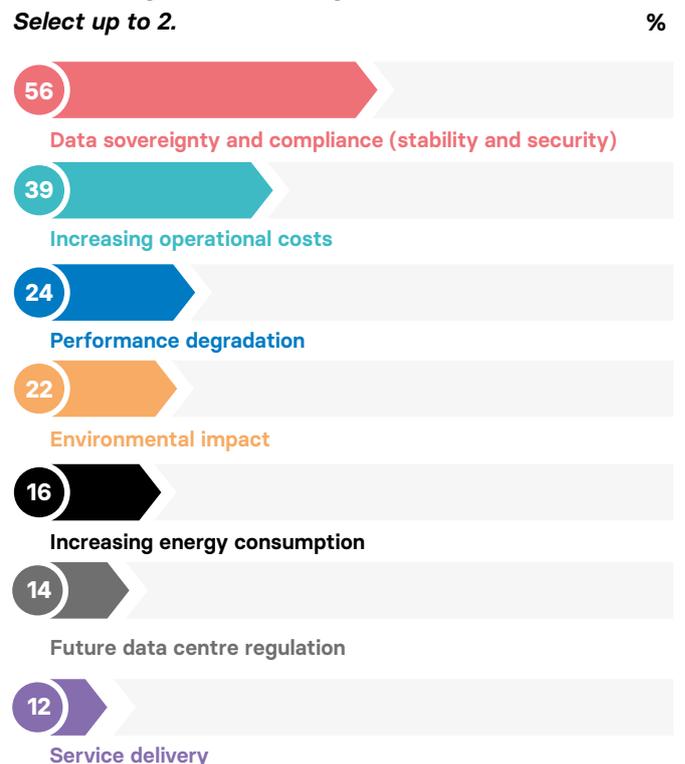
Cost, energy consumption and environmental impact are linked – more energy used means higher costs and greater environmental impact. Data centres are expected to consume 13% of the world’s energy by 2030, that translates to 6% of the world’s carbon footprint. For information-intensive companies, data centres can be half of their corporate carbon footprint, according to McKinsey.⁴

Susanne Chishti, CEO of FINTECH Circle, concluded: *“As the finance and fintech sector consumes ever more energy due to the use of AI and high-performance computing, we need to ask if our company data is stored and processed not just in the way that is best for our business but in a way that is best for the environment as well.”* ■

What are your top requirements for your data storage?



What are your key concerns over growing data usage and storage?



4. <http://public.dhe.ibm.com/software/uk/itsolutions/optimizeit/greenhub/carbon-managment/pov-mckinsey-report.pdf>

Source: FINTECH Circle

Data storage becomes political

Recent political unrest triggered soaring energy costs and supply shocks, forcing a rethink of energy use in the EU and beyond. In May the EU unveiled a €210 billion plan for ending its reliance on Russian fossil fuels by 2027, and at the same time hasten its shift to green energy, with a deadline of 2050 to reach net-zero.

Four-fifths of survey respondents said that they are concerned about the impact of geopolitics on energy supply and/or costs. However, few are anticipating that geopolitics (along with the need for climate transition) will lead to greater regulation of data storage. Only 14% of survey respondents cited future data centre regulation as a key concern over growing data usage and storage.

However, the EU Commission has taken note of data centres' growing energy use and carbon emissions. It is reviewing existing legislation and creating new initiatives to push data centres toward the goal of being carbon neutral by 2030 – using both the power of its purse to encourage energy efficiency and sustainability monitoring, and the threat of taxes or fees on carbon emissions.

New regulations will mean the type of energy used by a data centre will matter and new accounting rules will restrict the use of emission offsetting. So, if a company is trying to decide >>

where to locate its data storage, the emissions emitted by data centres in each location should be taken into consideration to avoid a financial penalty. For example, the average data centre in London, which produces 2,925.84 Metric Tons CO₂eq for 1MW, would be subject to levies that a data centre in Norway, which runs on hydropower and emits just 227.76 Metric Tons CO₂eq for the same energy use, will not.

In the UK, data centres' growing energy usage is also becoming political, as it is putting them into competition with housing development. The average UK data centre consumes enough energy to power 5-10,000 homes, and in south-east England – home to half of Britain's data centres and where the housing shortage is most severe – power grids are unable to cope with greater demand.⁵

“If I think about the current geopolitical situation in Eastern Europe and the imposed sanctions on Russia from governments around the world...my view is we're naturally being pushed in a positive direction. A real opportunity to make further investment into clean energy solutions and move away from fossil fuels.” said Kelly Perry, Group Head Sustainability of CMC Markets. *“Businesses in Europe have the opportunity to harness this and consider alternative energy providers and start the transition to a low-carbon economy and scale up quickly.”* ■

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Kelly Perry, of CMC Markets

5. <https://www.telegraph.co.uk/technology/2022/08/01/energy-vampires-sucking-britains-grid-dry/>

Moving up the boardroom agenda

Survey respondents are more cognizant of the need to meet current and future regulations on carbon emissions and/or energy consumption, with over a quarter citing it as a key risk for company boards.

According to Ms. Perry of CMC Markets: *“Sustainability is being driven in a few key areas, one of the key drivers are the regulators. As policy makers evolve and standardise their reporting frameworks, the requirements around ESG data become more sophisticated. Therefore, a company’s ESG disclosure and reporting is increasingly more important in order to meet the growing demand of the regulators. Which means a natural evolution of ESG rating agencies and reporting against them will also evolve.”*

“The other key drivers towards responsible business practices are the investor community, who are demanding more transparent ESG disclosures, these too will continue to evolve. So, a company needs to consider the non-financial disclosures of the business and provide a consistent and clear ESG narrative to the investor community. It makes sense to get a head start on this, before investors demand even more detailed ESG data sets. A business that can demonstrate a track record has an advantage.”

Shareholders and consumers are becoming more concerned about the environmental impact of the companies they invest in and buy from. Correspondingly, survey respondents point to addressing their ESG concerns as a growing priority. Over half said they are worried about the impact of their company’s increasing energy use and environmental impact on their reputation.

An even higher number of respondents agreed that it is a moral imperative to limit their company’s environmental impact. This is another reason why many companies are making >>

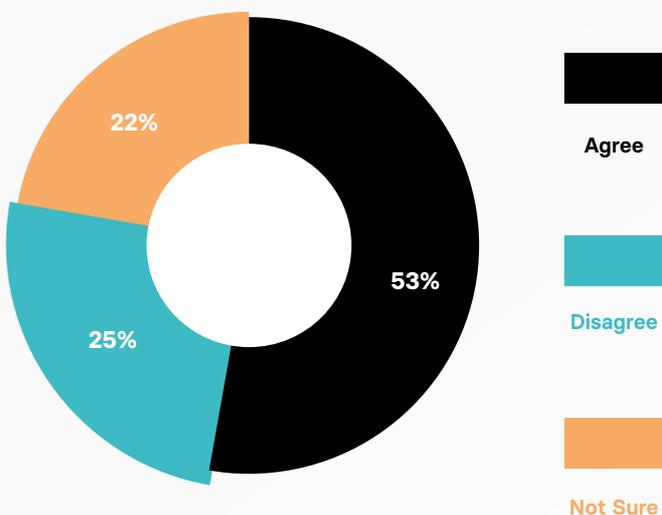
changes – to demonstrate their integrity to employees. Mr. Strydom of Crown Agents Bank said: *“Our ESG focus is a really good way to attract top talent because it’s very topical for engineers.”*

Despite the factors pushing companies towards greater environmental responsibility, about 40% of survey respondents said their company has emission reduction targets, with a further 13% stating their company has environmental sustainability initiatives but no clear emissions reduction plan. >>

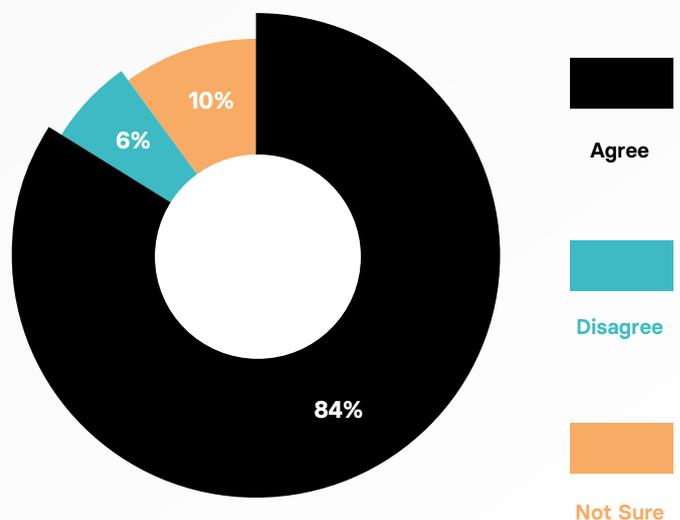
“Sustainability is being driven in a few key areas, one of the key drivers are the regulators. As policy makers evolve and standardise their reporting frameworks, the requirements around ESG data become more sophisticated. Therefore, a company’s ESG disclosure and reporting is increasingly more important in order to meet the growing demand of the regulators.”

Kelly Perry, of CMC Markets

I am worried about the impact of my company’s increasing energy use and environmental impact on our reputation.



I believe it is a moral imperative to limit my company’s environmental impact.



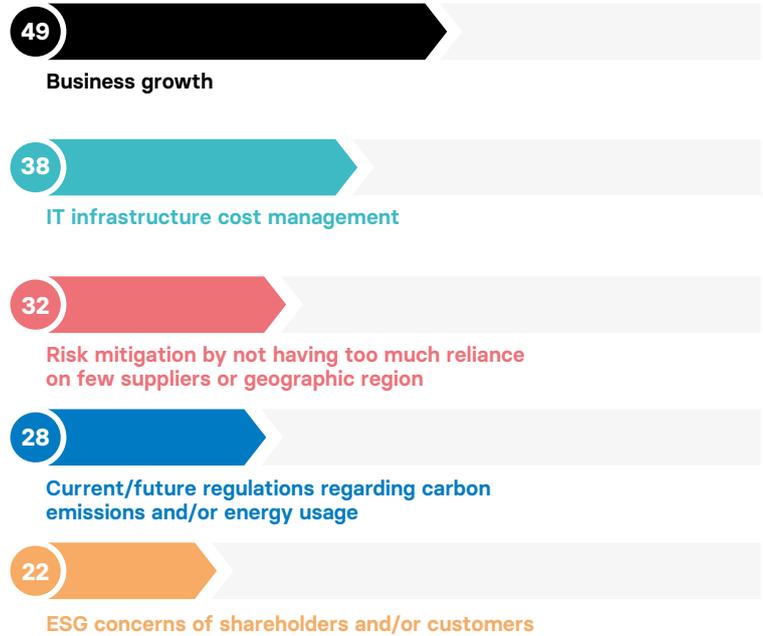
>> This may be due to perceived difficulties in squaring environmental goals with their focus on business growth – the top concern of boards relating to their data requirements. IT infrastructure cost management is their second biggest worry. The challenge is how to scale a business – with corresponding growth in data usage and storage - while managing costs.

Boards are also focussed on concerns regarding data requirements that relate to risk, such as not relying on a few suppliers or a geographic region. Concerns about reliability, service levels and cost are encouraging companies to diversify their data storage providers. ■

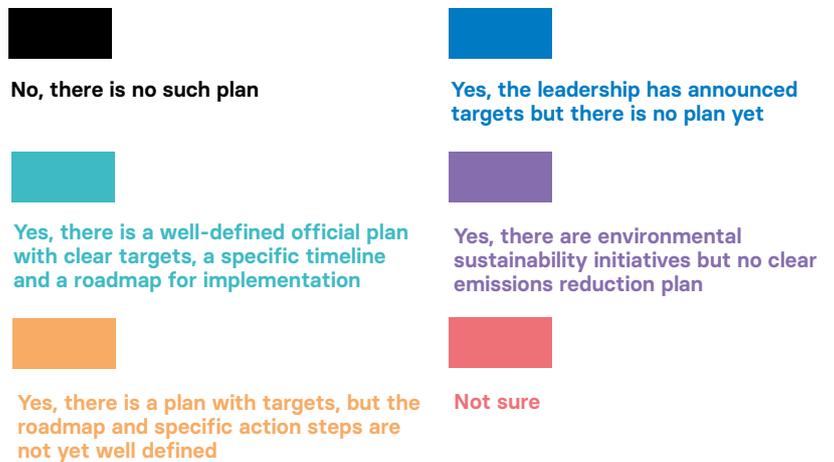
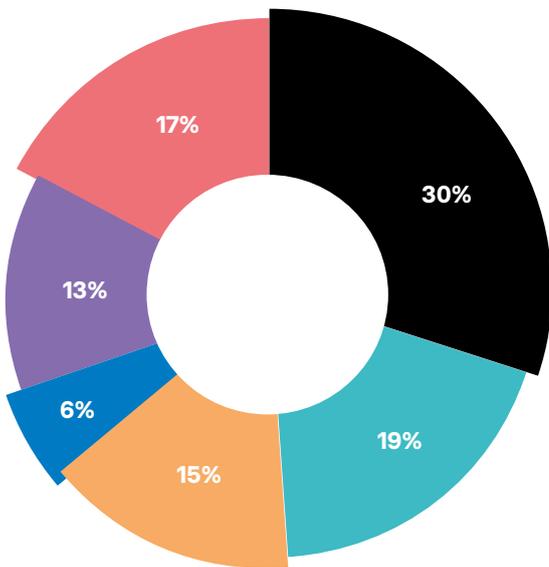
What are the top concerns of your board relating to data requirements?

Select up to 2.

%

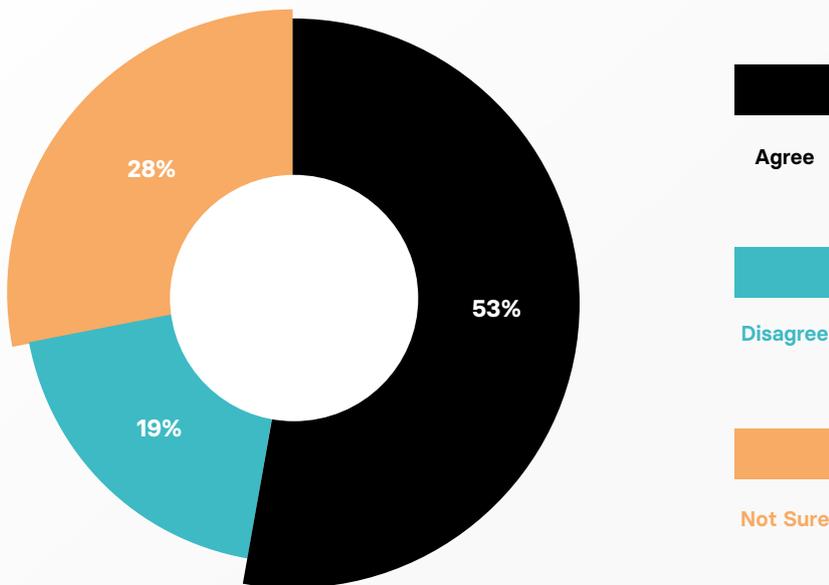


Does your company have a plan to achieve net-zero emissions or emission reduction targets?



Sustainability driving change

My company has explored/plans to explore alternatives for our data storage.



Source: FINTECH Circle

Over half of survey respondents are exploring the idea of changing service providers, with significant numbers considering moving to a co-location facility overseas and/or seeking renewable energy to power data storage facilities.

"Energy, waste and water management are key considerations for reducing our carbon emissions. So how we measure energy use will 100% play a part in our decisions about data storage," said Ms. Perry of CMC Markets. *"Our consideration for future office locations includes reviewing buildings that are BREEAM accredited 'excellent' or 'outstanding' as a way of reducing our own energy management. In terms of data centre moves, this is also going to be a key consideration for our energy management and reducing emissions."*

But with many providers of different services touting their green credentials to attract business, there is a concern about "greenwashing" - when an organisation spends more time and money on marketing itself as environmentally friendly than on actually minimising its environmental impact.

Mr Gotsch of PayU highlighted the need to do your homework about data storage providers. *"We are now mapping all the* >>

different data and cloud services from the perspective of their ESG profile, including the type of energy that's being consumed, because a Microsoft or Amazon in India might use an available energy mix that is maybe not as green as it is in other locations," he said.

Green certificates can help. They are official records proving that a specified amount of green electricity has been generated so companies can ask data storage providers to prove their green credentials.

However, it can be difficult to get all of the information needed to assess suppliers. *"A more comprehensive and stronger quality data set about the suppliers' ESG activities is required which is not there yet, but I think that's coming. Then you can factor that data into the decision-making process when you choose suppliers,"* Charlie Bronks, Head of ESG at Crown Agents Bank, said. *"I think it'll go from having ESG considerations as a 'nice to have' to being a 'mandatory' decision-making criterion. And I think the existing suppliers will be highly motivated to improve their carbon footprints, and they'll improve their environmental offering."* ■

Connecting sustainability, cost and business growth

Our interviewees are actively looking at both sustainability concerns and cost considerations in their choice of data storage provider.

Mr. Weston of ICON said: *"We appreciate the ESG benefits from using green energy and, presumably, more efficient data centres will inevitably be less expensive as well. So price and then on top of that ESG requirements will increasingly, influence our choice of provider."*

Successfully integrating sustainability and digital transformation within a business can lead to cost-savings and higher than average operating margins. This is demonstrated by a comparison of the accumulated energy costs of a 20MW workload for a 10-year contract in a data centre in Norway vs London. Norway's lower unit cost for electricity savings over 10 years makes it up to 50% less expensive than London.

"I think the sheer economics will, hopefully over time, drive people towards hosting their data where there's a lower environmental impact, not just because of that lower impact but actually the economics as well," Mr. Woolley of Secretarium said. *"We are interested in locations that give us cost efficient, energy efficient, and therefore environmentally efficient solutions for hosting our data."*

While data-intensive technologies like AI are becoming even more vital to growth and success - customers, shareholders, employees and regulators are becoming more demanding in terms of net-zero commitments. At the same time, rising energy costs are making decisions about energy consumption vital to business survival. In this environment, companies must look at their options for data storage provision, recognising that a shift to renewable energy can cut costs, mitigate risks as well as reduce carbon footprints. ■

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50%

less expensive than London

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