A clean energy evolution is needed to sustain tech industry growth

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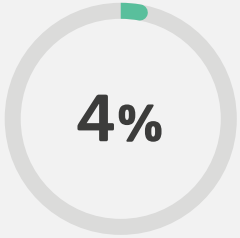
The ICT sector's global CO_2 emissions:



The energy-hungry tech industry has to find sustainable energy solutions.

Without them, it is vulnerable to price volatility and grid constraints — and it will not achieve its net zero goals. Can the industry secure its future by turning its innovation expertise to the carbon challenge?

The data-hungry technology industry is consuming ever more energy at the worst possible time. We are struggling to limit global warming while simultaneously dealing with a mounting energy crisis and rising electricity costs.

The information and communications technology (ICT) sector alone accounts for approximately 3–4% of global CO_2 emissions.[1] To make matters worse, the Covid-19 pandemic has dramatically increased demand as many real-life activities shift to the digital realm, and data traffic is set to grow even more with the onset of 5G.

For a supply that is both cleaner and cheaper, companies from across the industry need to embrace renewable energy through onsite generation or supply contracts, financed solutions such as power purchase agreements (PPA), battery storage, and digital tools for efficiency such as demand side response (DSR) and energy monitoring solutions.

[1] https://www.bcg.com/publications/2021/building-sustainable-telecommunications-companies

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Senior Vice President,
Salesforce

An industry looks for solutions

Data centres are a significant driver of emissions, responsible for an estimated 1% of global electricity consumption.[2] In the Netherlands, to take one example, the share is even greater — at 2.8% of the country's total power consumption.[3] This has prompted the government there to try to curb consumption by putting a cap on large-scale, or hyperscale, data centres.[4]

Energy-intensive organisations like these — and cloud-based organisations in particular — will have to change their ways. They need to map out energy strategies that can lead to net zero to meet government regulations and build resilience against volatile grid energy prices.

"Part of the advantage or attraction of a cloud business is that we take away the infrastructure from our customers — we own the infrastructure or support the infrastructure, then we deliver it as a service," says Dr David Dempsey, Senior Vice President of cloud-based software company Salesforce, which first committed to using 100% renewable energy in 2013. "So, it's up to us to control the carbon footprint of that infrastructure. That's what started us on our net zero journey."

Of course, the tech industry encompasses many different types of business. So success within the industry in cutting carbon emissions varies widely. UK telecommunications company Vodafone, for example, has been able to cut about a quarter of its emissions since 2017, partly by using AI to optimise its energy use.[5] And to take further steps towards its net zero ambitions in the UK by 2027, it announced, in partnership with Centrica, a 10-year power purchase agreement (PPA) to take a significant proportion of the 110MW electricity output from three solar farms under construction in England.

PPAs like this are an increasingly popular way to finance renewable energy projects, providing renewable energy generators with a source of income in increasingly volatile power markets. Traditionally more common in the US, PPAs are gaining traction in Europe as the current turmoil in energy markets reminds companies that they need to be able to cover their energy needs and keep costs stable.

[2] https://www.iea.org/reports/data-centres-and-data-transmission-networks
[3] https://www.dutchdatacenters.nl/thema-energie/
[4] https://www.datacenterdynamics.com/en/news/dutch-government-halts-hyperscale-data-centers-pending-new-rules/
[5] https://techmonitor.ai/leadership/sustainability/tech-industry-carbon-emissions-progress

Digital tools accelerate energy efficiency and the journey to net zero — and increase revenues

There are other steps that energy-intensive organisations in the tech industry can take to address price volatility in wholesale markets.

A quick win in the race to net zero is to increase energy efficiency by digitalising systems and monitoring energy use. Real-time data provided by the likes of Panoramic Power™ wireless sensors allows companies to manage their consumption, reduce spend, improve operational efficiency and reduce energy waste. This can then be combined with a platform such as Centrica Business Solutions' PowerRadar™, which gives organisations the ability to create customised sustainability reports to inform their energy and sustainability strategies.

Some of this digitalisation can begin even before the physical project is constructed. "We design our data centres in a digital twin environment, which saves time and money and helps to mitigate the impact on the planet by enabling us to ensure the system prioritises efficiency," says Lee Myall, CEO of high-performance data centre operator Kao Data. "Crucially, this also means that every piece of energy is used with the highest efficiency ratio possible. This is AI and digital technologies driving efficiency, right at the cutting edge."

DSR, meanwhile, supports the grid by balancing supply and demand at peak times. This is also creating efficiencies by enabling organisations to use less energy at peak periods of grid supply and more energy during off-peak periods. They can also shift their energy use to an alternative distributed energy source, such as onsite generation. And organisations can even use DSR services to increase revenues by using onsite energy assets to sell electricity back to the grid, showing that profit and planet are not mutually exclusive.

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Kao Data

Can the industry's leaders also lead on energy innovation?

Organisations with the most resources, such as Salesforce or Amazon,[6] can build renewable energy projects and commit to offtake from renewable projects, which will help to decarbonise the sector (and beyond) through scale.

"The really heavy lifting will have to be done by governments eventually," says Dr Dempsey. "But governments move slowly, so there's an onus on companies such as ours to be that interim solution, because we're very agile." Salesforce also frequently publishes white papers sharing their own learnings and best practices as buyers of renewable energy, and thereby supporting the knowledge base of the wider market.

More development of battery storage technology to balance the grid will also help to secure the tech industry's future. In 2020, a Google data centre in Belgium's Saint-Ghislain became the company's first to use batteries as power backup instead of a diesel generator.

"Thanks to the explosion in the EV world, battery technology is moving on at a rapid pace," says Kao Data's Myall. "Lithium-ion battery size and costs are going down, but energy densities are going up and up, which could provide them with the ability to play a different role in a data centre. In future, for example, we may see iterations of the technology which can keep a data centre going for days and might be enough to remove the generators completely.

"Today, companies have to build a product that is highly attractive, and being more sustainable inherently builds value into your business," adds Myall. "Depending on the technology used, maybe the payback time is a little longer, but the value of the business could be higher because its sustainability credentials are good — and customers value that greatly."

Digital communications and data storage and processing are only set to increase. This means that those companies that deal with these challenges now, through innovation and sustainable energy solutions, will be better positioned to compete over the long term.

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CEO,
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[6] https://www.aboutamazon.com/news/sustainability/amazon-extends-position-as-worlds-largest-corporate-buyer-of-renewable-energy

About Centrica Business Solutions

Partner with us for integrated energy solutions that accelerate your journey to a low-carbon future, balancing commercial success and environmental responsibility.

We analyse, finance, install, operate and optimise energy, working across every energy source to deliver efficiency, resilience and sustainability. The result is the right energy at the right price — and vitally, the right balance between what's good for your business and the planet we share.

Together we are part of the solution.

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