European businesses have an opportunity to improve their competitiveness and emerge stronger from the COVID-19 crisis while contributing to a more sustainable planet. A sustainable cloud journey is an imperative first step.

Now more than ever, CEOs need to prioritise a cloud-first approach to enable their companies to transform quickly and thoughtfully.

The COVID-19 crisis has raised the level of urgency. In the years before the crisis, European companies invested less and more slowly in digital transformation than their global peers. When asked after the crisis hit, 70 percent of European business leaders wished that they had modernised their IT systems faster.¹ Cloud creates the critical technology backbone that companies need to support resilience, drive scale and power faster innovation and time to market.

With growing cost pressure, public cloud positions companies to deliver on financial targets as well. We’ve seen up to 30–40 percent total cost of ownership (TCO) savings.² Drivers like greater workload flexibility, better server utilisation rates and more energy-efficient infrastructure all make public cloud more cost efficient than enterprise-owned data centres.

It’s not surprising that many companies are prioritising public cloud migration today. Data centre capacity in Europe increased by 24 percent in 2019, with another 14 percent growth expected in 2020, despite delays in project delivery due to COVID-19.³
Sustainability through scale

But this double-digit growth comes with a price. In 2015, the electricity consumption of servers and data storage products in the European Union (EU) was estimated to reach 55 Terrawatt-hours (TWh) in 2020 and 78 TWh in 2030, corresponding to ca. 2 percent of the total consumption in the EU.

The uptake of advanced artificial intelligence (AI) applications will accelerate the energy demand for computing power. Training a single neural network model today can emit as much carbon (CO₂) as five cars in their lifetimes. And the amount of computational power required to run large AI training models has been increasing exponentially, with a 3.4-month doubling time.

If Europe is to achieve its emissions targets (see Figure 1), as well as accelerate digital transformation, the cloud must be sustainable. The EU Commission noted in its 2020 Digital Strategy that data centres and telecoms are responsible for a significant environmental footprint, and “can and should become climate neutral by 2030.” The Digital Strategy also notes that public cloud providers should be transparent about their environmental footprint.
As early as 2008, the European Commission initiated the EU Code of Conduct for Energy Efficiency in Data Centres. This voluntary initiative aims to reduce the energy consumption of data centres through ambitious energy efficiency measures. Since its start, 350 data centres have joined the Code of Conduct, as well as 255 endorsers, who are vendors, consultants or industry associations. Participants should continuously monitor energy consumption and adopt energy management to look for continuous improvement in energy efficiency.14

Europe’s early action and high ambitions demonstrate that it is ahead of the sustainability agenda curve. It has adopted a net-zero target for 2050 in law, and countries like Norway aim to achieve this by 2040. In the Green Deal, it has set out a comprehensive policy framework for achieving this target, accompanied by significant financing: 30 percent of its recovery budget is to be spent on green initiatives. It positions European businesses for a unique opportunity to increase their competitiveness and emerge stronger from the crisis while contributing to a more sustainable planet.

European business leaders can only deliver on this opportunity if their move to cloud is sustainable—and if cloud powers their sustainable business strategy.

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**Figure 1**: Europe’s emission reduction targets

<table>
<thead>
<tr>
<th></th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European Union</strong></td>
<td>55% GHG emissions (compared to 1990 levels)</td>
<td>Net zero/carbon neutrality</td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>40% consumption of fossil fuels (compared to 2012)</td>
<td>Net zero/carbon neutrality</td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td>55% GHG emissions (compared to 1990 levels)</td>
<td>Net zero/carbon neutrality</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>33% GHG emissions (non-ETS, compared to 2005 levels)</td>
<td>‘Full decarbonisation’</td>
</tr>
<tr>
<td><strong>Spain</strong></td>
<td>20% GHG emissions (compared to 1990 levels)</td>
<td>Net zero/carbon neutrality</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td>57% GHG emissions (compared to 1990 levels)</td>
<td>Net zero/carbon neutrality</td>
</tr>
</tbody>
</table>
Migrating to cloud sustainably

Cloud migration can deliver the double benefit of simultaneously reducing costs and carbon emissions.

The benefits can be substantial but it all depends on how the migration is approached. Migrations to the public cloud can reduce carbon (CO₂) emissions in Europe by 14.5 million tons of CO₂ per year. This is equivalent to 21 percent of emissions from all flights within the European Economic Area in 2019. It also represents approximately two-thirds of the total annual emissions reductions targeted by the European Commission through its Renovation Wave strategy, which aims at optimising energy performance of the building sector, the largest energy-consuming sector in Europe.

Companies beginning their cloud journey confront several questions when considering options for green cloud: Which cloud provider? What level of migration is required to meet needs today and tomorrow? And, for European businesses in particular, which cloud-driven innovations should be prioritised? Thoughtful choices will determine the sustainability benefits that can be achieved.

Select with purpose

Cloud providers set different corporate commitments towards sustainability, which in turn determine how they plan, build, power, operate and retire their data centres.

Firstly, it is critical to understand the commitment of the cloud provider to sustainability. Have they set ambitious, science-based goals to reduce emissions?

Secondly, it is important to understand how the provider’s data centres are being powered. What is the source of electricity, the renewable power mix and the cloud provider’s support for developing new renewable generation sources rather than purchasing carbon offsets? Does the provider offer the possibility to match energy usage with 100 percent renewable energy purchases, ideally in real time? Microsoft, for example, has partnered with Swedish utility Vattenfall to develop a first-of-its-kind solution, providing customers with a new level of transparency into their electricity consumption, making it possible to go from year-based to hourly-based data on the source of origin.
Then, it is equally important that the provider is committed to continuously improving the energy efficiency of its infrastructure. Providers can also seek opportunities to adopt a circular approach to hardware through designing for longevity and recycling at end of use.

Finally, it is important to look for providers that offer transparency into the carbon footprint of their services. Look for customer-facing services like carbon calculators or granular cloud lifecycle emissions reporting that help companies monitor their cloud footprint.

**Build with ambition**

The greater the ambition, the greater the reduction in carbon emissions that can be achieved through cloud migrations (see Figure 2).

Infrastructure as a service (IaaS also referred to as “lift-and-shift”) migrations without major redesign can reduce carbon emissions by more than 84 percent compared with conventional infrastructure. Reductions can be pushed even higher—by up to a whopping 98 percent—by designing applications specifically for the cloud.

**Figure 2:** Reducing carbon emission (estimate ranges based on Accenture research and analysis)
Europe’s potential differential rests primarily in using cloud-based solutions to unlock greater financial, societal and environmental benefits through cloud-based circular operations and sustainable products and services.

By combining cloud with fourth industrial revolution (4IR) technologies, leading companies promote better outcomes for consumers and society, while creating value for their business. This has been especially true for data-rich sectors. Let’s look at two examples.

Traffic congestion

New technology solutions for intelligent traffic management, such as smart traffic lights controlled by predictive modelling software, have shown their effectiveness in small-scale pilots. In early applications in the Netherlands, time spent in traffic fell by 20 percent, with a CO₂ emission reduction of similar magnitude. Were drivers to share data from their routing apps and in-car communication systems with intelligent traffic-management systems, the time savings and CO₂ emission reductions could rise to 30 percent or more. All of this is only possible with cloud-based solutions for data management and exchange.

Such cloud-enabled traffic management solutions can significantly boost the competitiveness of Dutch businesses and bring value to society. Based on current trends, the roll-out of intelligent traffic management systems across the Netherlands is expected to unlock US$947 million of value annually in 2030, according to Accenture’s Total Value Canvas analysis. This value represents time and costs savings for road users and businesses, and environmental and health benefits for society. If, however, businesses and government accelerated adoption—and
made the technology even more effective—the value created could triple to US$2.8 billion annually.17

**Food waste**

Automated food waste monitoring technology and smart bins offer a range of insights to help households and the hospitality sector cut back on food waste—a problem costing UK society US$22.1 billion per year and resulting in 20 metric tons of CO₂ emissions.18 For example, Winnow’s cloud-based solutions use AI and analytics tools to help chefs cut food waste in commercial kitchens. Using computer vision, the company’s system harvests large volumes of food waste images which are used to train a predictive model. Winnow saves kitchens 3–8 percent on food cost and drives an ROI of two to 10 times in less than a year. Accelerating the adoption of automated waste monitoring technology to 70 percent of UK households and restaurants can release US$2.1 billion of trapped value for UK households, business and society, saving over 700,000 tons of food waste and reducing CO₂ emissions by 2.7 metric tons annually.19

## Positioning EU as a leader in green cloud

The decisions businesses make about their cloud journey today will directly determine the benefits they can realise for their competitiveness and the environment. Those that choose wisely will gain unprecedented levels of innovation. The potential outcome? A greener planet as well as a greener balance sheet. Europe has a unique opportunity to position itself as a leader in green cloud. It can become the place to be for cloud infrastructure that is responsible and sustainable, due to two key factors:

1. A growing number of European businesses are now monitoring the carbon impact of their procurement.
2. The regulatory environment stimulates the responsible use of data and investments to reduce greenhouse gas emissions.

This, in turn, can accelerate the digital transformation of European businesses, as well as spark a wave of innovation for European cloud-enabled sustainability solutions.
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