How using cloud technology can help your organization meet sustainability goals

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The right cloud technology leads to more sustainable IT and business operations. As a foundation for innovation, the cloud supports the delivery of sustainable products, services, and business models, and gives organizations the opportunity to transform themselves with sustainability at the core of their operation.

Technology and sustainability were among the top 10 priorities of CEOs in 2023, according to Gartner. Business leaders say they view both as important drivers of growth and innovation, and increasingly they're using technology to achieve their sustainability goals.

Cloud technology has an important role to play here, and has the potential to address, mitigate, and help solve some of the biggest sustainability challenges. The scope of the cloud's role in sustainability is highlighted in a recent series of AWS Institute masterclasses.

If companies start out on the right trajectory with their cloud deployment plan, they can accelerate their sustainability improvements and progressively achieve four gains:

1. More sustainable IT delivery
2. More sustainable business operations
3. Creation and delivery of more sustainable business models, services, and products
4. Thorough organizational transformation, with sustainability at the core of their operation

More energy-efficient IT delivery

AWS data centers are 3.6 times more energy efficient than a typical US enterprise data center and up to five times more energy efficient than the average in Europe.

So, when customers deploy technology using AWS Cloud infrastructure, they not only harness benefits but also pass them on to their customers in the form of measurable supply-chain sustainability improvements.

Amazon overall has committed to reaching net-zero carbon by 2040, 10 years ahead of the Paris climate agreement. Net-zero carbon is when you take the same amount of CO2 from the atmosphere as you put in.

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We lead this drive with the following aims:

- Match all of our electricity used in our operations with 100 percent renewable energy by 2025, five years ahead of our original 2030 target.
- Enable more than 400 renewable energy projects to generate enough renewable electricity to power the equivalent of 20.8 million European homes.
- AWS will become water positive by 2030, returning more water to communities than we use in our direct operations.

And Amazon has been able to decouple business growth from CO2 emissions, as I explain in IT operations and efficiencies, the second part of the AWS Institute Sustainability Masterclass series. In 2022, for the first time, Amazon reduced CO2 emissions by 0.4 percent even though growth was 9 percent year-over-year.

Digital asset monitoring helps cut carbon footprint

Most companies' carbon footprints are not generated predominantly by IT operations but through their wider use of resources. The cloud can help target improvements here, too—for example, by creating efficiencies through digital asset monitoring.

When a Coca-Cola bottling plant in Turkey created a digital twin (virtual representation) of the facility, it could model its entire bottle-washing process and then simulate and compare different settings. Once it implemented optimal settings at the physical plant, the company saw a 20 percent annual energy savings and a 9 percent reduction in water consumption. It's also saved an estimated 34 days in processing time annually.

The cloud can help companies pinpoint and drive all kinds of new sustainability-related efficiencies through the capture and analysis of data from digital sensors, the use of machine learning (ML), and the implementation of efficient building management, to name a few.

The AWS Sustainability Insights Framework further allows companies to analyze data from across their various resource-management systems, utility data, and more, so they can devise new targets and include findings in corporate sustainability reports.

Innovation

Achieving sustainability offers an economic opportunity worth $12 trillion by 2030, according to McKinsey. The potential starts with imagining the future—because much of the innovations that the world needs to transition to a net-zero economy from 2030 to 2050 do not yet exist. We must then work to overcome the constraints that businesses face today.

These constraints are a powerful focus for innovation. There are significant opportunities to drive innovation through the reuse of existing resources in a circular economy.

Several companies are working on recycling programs for batteries. Other innovative projects use geospatial data from satellites to optimize vegetation, water flow, biodiversity, and soil health across regions.

Transformation

Beyond targeted innovation, modern cloud technology presents opportunities for organizations to reinvent themselves with sustainability at the core of their operation. Arup, an engineering group, promotes environmental regeneration, biodiversity, and conservation of resources in its projects to achieve “more sustainable development in the built environment.”

Research suggests that $44 trillion of annual economic output depends on the natural environment, such as clean air and water, pollination, and forest cover. And while companies typically do not directly pay for them, they cannot be taken for granted, so organizations need to consider the materiality of biodiversity in their operations.

Islands make good laboratories for innovation, and the Naxos Smart Island project in Greece targets not just a more sustainable environment but also smart solutions linked to mobility, primary healthcare, and the transport of goods. The project—backed by the Greek government, local authorities, and the U.S. Embassy—will upgrade existing infrastructure, such as the local marina, energy grid, and water management systems to support smart infrastructure management.

Progress toward greater sustainability, aided by the cloud, begins with understanding an organization’s starting point and its scope for improvement. The potential for transformation is extensive once companies have set their course and are able to measure and interpret existing sustainability data, identify ways to optimize everyday operations, and introduce new innovation, business models, and mission statements.

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