



# How blockchain enables sustainability in supply chains

In collaboration with



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Blockchain technology provides transparency and traceability, meaning every transaction in the supply chain is recorded in a decentralized and immutable ledger. This enables stakeholders to track products from their origin to their destination and attain deep visibility into production processes to ensure that all parties involved are compliant with established environmental and sustainability standards.

Blockchain also lets companies know that their suppliers adhere to sustainable practices. For example, a company can use smart contracts to enforce certain conditions with its suppliers, such as using sustainable materials or reducing carbon emissions during transportation. These conditions can be automatically enforced through the blockchain network, ensuring that sustainability standards are met and verified throughout the entire supply chain.

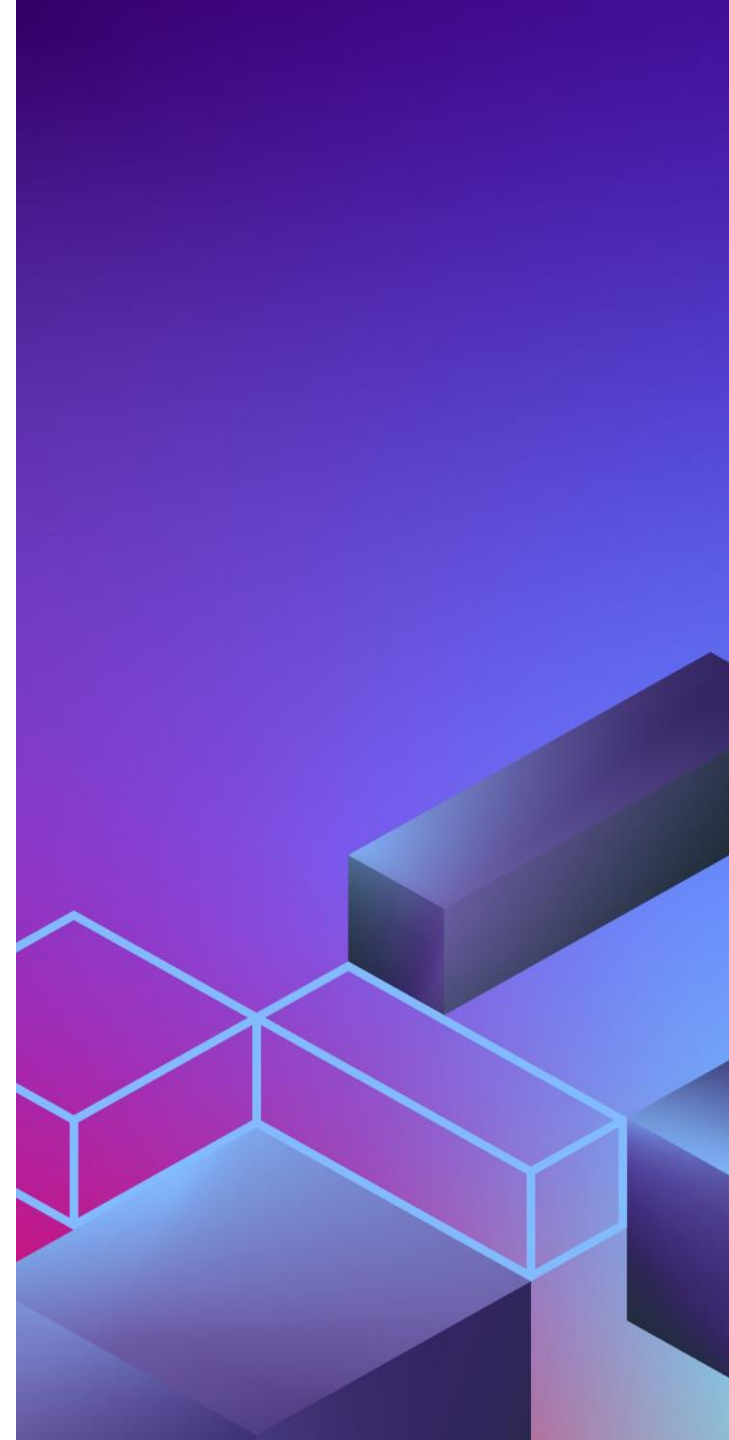
Overall, blockchain technology has the potential to revolutionize supply chain management by promoting sustainability and accountability across the value chain. By increasing transparency and traceability, it allows companies to make more informed decisions about their operations and promotes responsible business practices.

[Amazon Managed Blockchain](#) is a fully managed service that makes it easy to create and manage scalable blockchain networks using the popular open-source frameworks Hyperledger Fabric and Ethereum. Amazon Managed Blockchain reduces the overhead required to create a network, and allows for simple member management and maintenance of the network, enabling customers to quickly start building their decentralized applications.



## Five ways blockchain can promote sustainability

- 1. Increased transparency:** Blockchain technology provides a transparent and immutable ledger that allows all stakeholders (including regulatory bodies) in the supply chain to view and track transactions. This can help identify any unethical or unsustainable practices, which can be addressed promptly.
- 2. Improved traceability:** With blockchain, each product or material can be traced back to its origin, ensuring that it was produced sustainably and ethically. This helps companies verify that their suppliers are adhering to sustainable practices and guarantee the same to their end customers.
- 3. Greater accountability:** By using smart contracts, companies can enforce sustainability standards with their suppliers. These contracts automatically execute when certain conditions are met, providing a greater level of accountability throughout the supply chain.
- 4. Reduced waste:** Blockchain technology can help reduce waste by optimizing supply chain processes and reducing systemic inefficiencies. This not only saves costs but also reduces the long-term environmental impact of the supply chain.
- 5. Enhanced brand reputation:** By promoting sustainable and verifiable practices in their supply chains, companies can enhance their brand reputation and appeal to consumers who demand sustainability.



## Reducing the environmental impact across supply chains

By promoting sustainability practices and reducing waste, blockchain technology can help create a more environmentally friendly supply chain. Some areas where blockchain technology could have a significant impact include:

- **Reducing carbon emissions:** Blockchain technology can be used to optimize transportation routes and reduce inefficiencies in the supply chain to further help reduce carbon emissions associated with transportation.
- **Decreasing waste:** Blockchain technology can help reduce waste by improving inventory, visibility, and management, consequently reducing overproduction. It enables companies to track energy consumption at each stage, thereby identifying areas where energy is being wasted or used inefficiently.
- **Promoting sustainable practices:** By promoting transparency and traceability throughout the supply chain, blockchain technology can drive greater accountability while simultaneously creating incentives for all stakeholders. This will encourage companies to adopt more sustainable practices.
- **Improving energy efficiency:** Blockchain technology has the potential to optimize energy usage in supply chains by identifying areas where energy is being wasted so more efficient processes can be implemented.

The extent to which the environmental impact of a supply chain can be curbed will vary with the size and complexity of the supply chain, the sustainability practices currently in place, and the amount of waste generated. Still, there is significant potential for positive change.



## Removing the roadblocks to wider adoption of blockchain

Organizations face several challenges in adopting blockchain technology in their supply chains, including lack of knowledge and understanding and fear of high implementation costs. Other challenges include regulatory concerns and the need for standardization across different industries and supply chains.

Together, Infosys and Amazon—the world’s largest corporate purchaser of renewable energy—have established a joint blockchain solution designed to give organizations an affordable way to onboard blockchain technology into their processes and improve their sustainability efforts while streamlining their supply chain operations.

Built on Amazon Managed Blockchain, this joint solution allows businesses to track and trace products throughout their supply chain—from raw materials to finished goods. Businesses receive detailed time-stamped inputs at every step, giving them a complete and credible overview of their supply chain. This can be used to identify bottlenecks and monitor the consumption of fuel, energy, and other natural resources.





## Infosys sustainability provenance solution

The Infosys sustainability provenance solution is based on distributed ledger technology that enables a complete traceability of greenhouse gas emissions and other environmental parameters.

### Key drivers



Complexity in calculation of greenhouse gases (GHGs) and other environmental parameters because of variations in methodology, local conditions, and emission factors



Complexity/lack of end-to-end traceability across stakeholders in the value chain



Disparate systems and databases leading to disconnected processes



Manual paper-based information exchange that is prone to errors



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### Application features



Highly configurable products and registries



GHG and other environmental parameters calculations engine



Comprehensive track and trace



Tamperproof and immutable system of record



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### Benefits



Provides a comprehensive and integrated approach to addressing and achieving numerous sustainability goals



Tamperproof record keeping and secured sharing across different stakeholders, including regulators



Streamlined process of data collection and carbon footprint calculation



Improved process compliance and carbon footprint data validation



Auditable track-and-trace functionality



## Use case

### Track sustainable funds to engage donors and beneficiaries

This program, first implemented in 2022, promotes the use of blockchain-based solutions to facilitate the transparent transfer of funds and measurement of impact between donors and beneficiaries. This was a first-of-its-kind application of blockchain for social cause—specifically to preserve and grow the rainforests.

#### Goals:

- Enable Indigenous people, who safeguard one-third of the world's tropical forests, to receive a higher percentage of global funding to fight climate change.
- Enhance transparency into utilization of funds and validation of project milestones.
- Reduce overall administrative costs to enable maximum fund direction to the right cause.

#### Value proposition:

- Secure mobile transactions with data encryption at transit and motion using GIS, sensor-based systems.
- Build real-time visibility into transfer of funds and project updates in the ecosystem.
- Enable continuous feedback in the ecosystem.
- Pave the way to build a carbon-neutral ecosystem.



## Use case

### Track carbon and water footprints in the agricultural supply chain

This solution, implemented in 2022 for the UN's Food and Agriculture Organization, won the AWS re:Invent 2022 Sustainability Partner of the Year Award for EMEA. The solution was developed and deployed to track and trace carbon emission for a global intergovernmental agency. The project was developed in close partnership with AWS and Infosys. This award acknowledges the innovation and commitment demonstrated by AWS and Infosys in achieving client sustainability goals using next-gen technology like blockchain.

#### Goals:

- Design and develop a tamperproof ledger to track the footprints of carbon, water, and other key resources throughout production, transportation, storage, ripening, and retail of agricultural commodities.
- Ensure consistency in calculations across the agricultural ecosystem. GHG emissions and water usage calculations can be complicated due to variations in chosen methodology, adjustments to local conditions, and several other factors.

#### Value proposition:

- More quickly realize sustainability goals through improved visibility and tamperproof tracking of carbon footprints.
- Reduce audit costs through improved integrity of sustainability data.
- Enhance brand value through simplified and transparent digital experiences.
- Enable migration of carbon-positive ecosystems to carbon-neutral ecosystems.



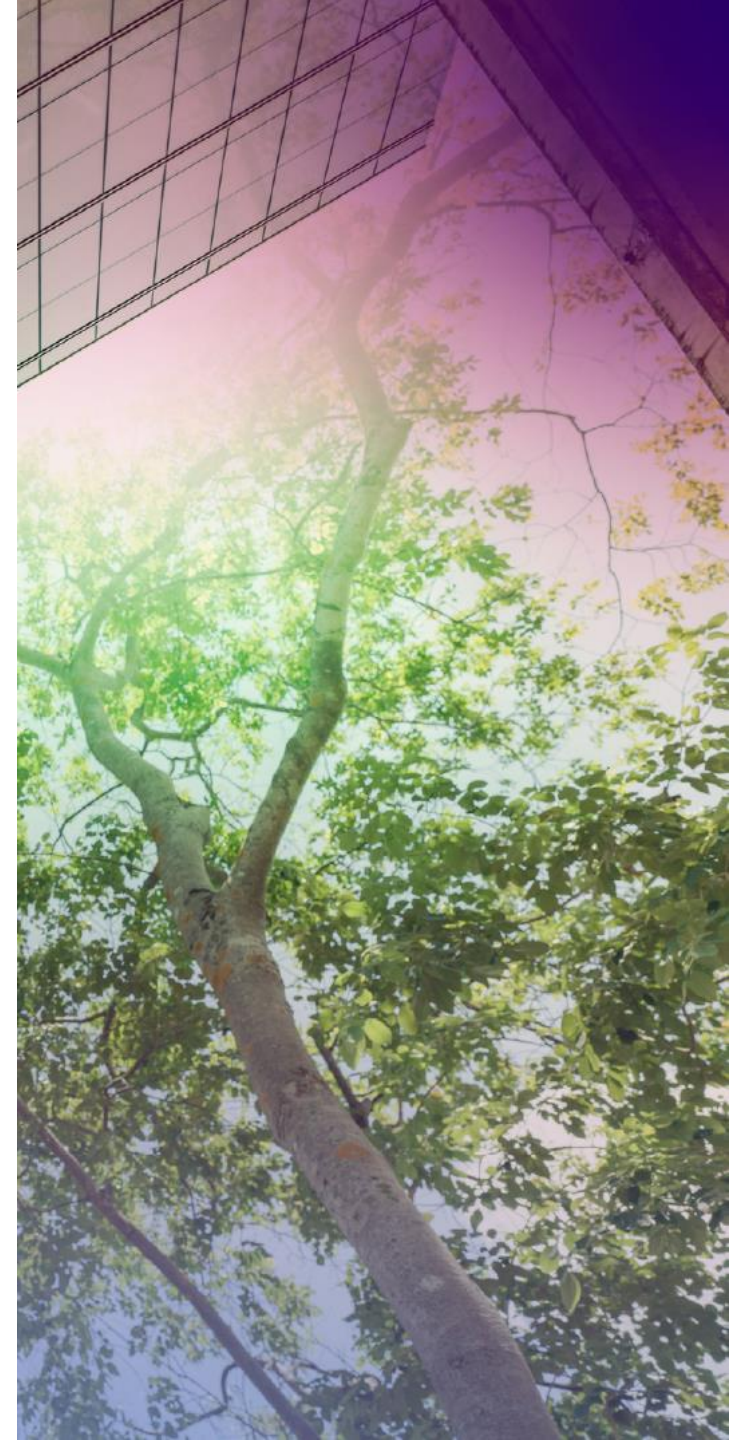
## Focus on ESG compliance

In recent years, there has been a growing recognition of the urgent need to address the social, environmental, and economic challenges facing our planet. As a result, governments and international organizations around the world are implementing new regulations and policies aimed at promoting sustainable practices and reducing the negative impacts of human activity on the environment.

From the EU Green Deal to the UN Sustainable Development Goals, the focus on sustainability is more prominent than ever before. These regulations are not just recommendations; they are becoming mandatory for businesses in various industries and Regions. This shift toward mandatory sustainability requirements is a clear indication that businesses must now take a more proactive approach toward sustainability if they wish to remain competitive and meet the expectations of consumers, investors, and regulators.

### Some of the regulations which focus on sustainability and circular concepts include:

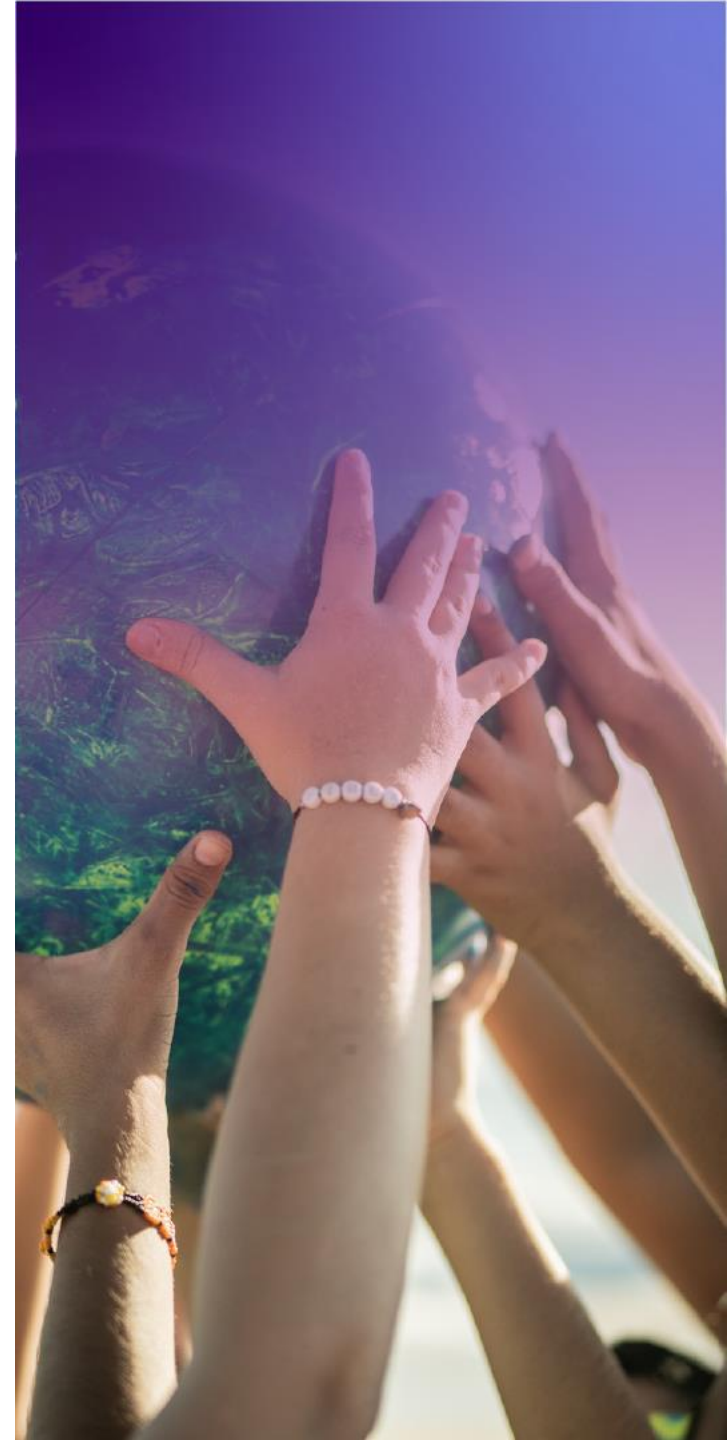
- European Green Deal
- European Battery Passport
- California's SB 1383
- UK's Resource and Waste Strategy
- Ellen MacArthur Foundation's New Plastics Economy Global Commitment



## How blockchain can facilitate ESG factors

As the world becomes increasingly aware of the need for companies to adopt ESG (environmental, social, and governance) standards in their operations, blockchain technology is emerging as a potential solution. Blockchain technology can facilitate the implementation of these standards by providing immutable data storage, trustless transactions, and smart contracts that are capable of automatically enforcing ESG regulations.

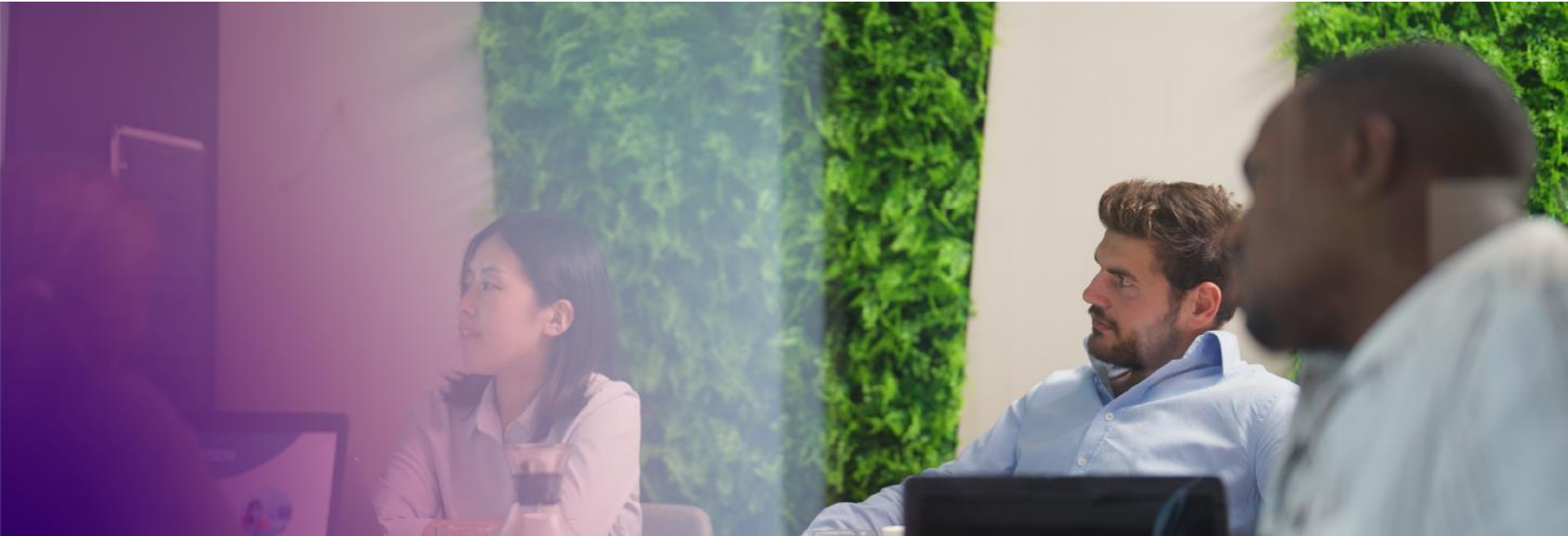
When information is stored on a distributed ledger system, such as a blockchain network, companies can ensure that all stakeholders always have access to accurate and up-to-date information about their operations. This means that any changes or updates made to company policies related to environmental protection or social responsibility will be instantly visible across all stakeholders, making it easier for companies to track compliance with various regulations related to their industry's ESG requirements.



## Building a circular economy with blockchain

Circular economies seek to reduce waste and maximize resources by reusing materials and products rather than simply discarding them. One of the core elements of a circular economy is traceability and transparency. Blockchain-based distributed ledger systems provide an immutable record of all activities related to the production and movement of goods throughout their entire life cycle. By tracking products' origin points as well as their current owners at any given time, companies can ensure that they are sourcing materials responsibly while also keeping track of where those materials end up after use. These records could potentially be used to verify compliance with sustainability standards set forth by industry regulators or other stakeholders such as NGOs or consumers who demand ethical sourcing practices from companies they do business with.

Learn more about [waste management and the circular economy](#).



## Conclusion

Sustainability has become an increasingly important and urgent issue for companies in recent years. It requires meeting the needs of businesses, their customers, and society at large, without compromising the ability of future generations to meet their own needs. Companies that prioritize sustainability understand that they have a responsibility to minimize their impact on the environment, conserve natural resources, and promote social and economic well-being.

By adopting sustainable practices, companies can reduce waste, cut costs, increase efficiency, and build stronger relationships with customers and stakeholders who value environmental and social responsibility. Ultimately, sustainable companies are better positioned for long-term success in a world where consumers are increasingly conscious of environmental issues and demand ethical business practices from the brands they support.

Infosys, a global leader in technology services and consulting, is, along with AWS, helping clients create a reliable, trusted, and sustainable network of stakeholders, partners, and suppliers for their businesses. We are driving enterprise-wide adoption of blockchain-powered business networks across industries by building meaningful commercial/incentive models for all stakeholders in the ecosystem.

Infosys and Amazon Managed Blockchain offer a powerful solution to enhance overall sustainability efforts for organizations. With its decentralized and immutable properties, this solution provides greater visibility into supply chains, enabling accurate tracking of the provenance, authenticity, and carbon footprint of goods, and sustainability practices of supply chain participants. Adopting this solution can be a critical step toward reducing waste, conserving resources, and promoting environmental responsibility.



## About Infosys

Infosys is a global leader in next-generation digital services and consulting. Over 300,000 of our people work to amplify human potential and create the next opportunities for businesses and communities. With over 40 years experience in managing the systems and workings of global enterprises in more than 50 countries, we expertly steer clients as they navigate their digital transformation. With an AI-powered core, we empower the business with agile digital at scale and drive continuous improvement with always-on learning from our innovation ecosystem. We are deeply committed to being a well-governed, environmentally sustainable, and inclusive organization where diverse talent thrives.

## About AWS

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud solution, offering more than 200 fully featured services from datacenters globally. Millions of customers—including the fastest-growing startups, largest enterprises, and leading government agencies—are using AWS to lower costs, become more agile, and innovate faster.

## Better together

Infosys brings together AWS capabilities needed to drive business and IT priorities through comprehensive cloud offerings, from setting up of the foundational layers to managing the complete infrastructure and application stack. With a suite of AWS services, industry blueprints, and solutions, Infosys has successfully completed hundreds of cloud transformation programs, and enabled enterprises to increase business agility and improve the resilience of IT landscapes.



## Learn more

For more information about unlocking the business value of blockchain, explore these resources.

**AWS** provides knowledge and tools for organizations of all sizes and across all sectors to build and implement solutions that meet their sustainability goals.

<https://aws.amazon.com/sustainability/>

If you want to learn more about Managed Blockchain, please visit the [Amazon Managed Blockchain](#) site. To get started with Managed Blockchain, [contact the Managed Blockchain team](#) for a free consultation.

**Infosys** surveyed 2,500 executives and ESG experts. ESG is no longer a nice to have but a business necessity.

<https://www.infosys.com/about/esg/insights/esg-radar-report.html>

Read about more [enterprise use cases for blockchain](#).

