



Good for your business, good for the planet

Sustainability strategies to
build a more resilient world



Address your sustainability goals with the power of the cloud

Scroll over and click icon

Where is your organization on its sustainability journey?

I'm ready to:

Scroll over and click to learn more



Assess

Establish the foundation
to truly understand your
environmental impact

We must know where we are before we can
map where we're going.



Our vision for sustainability begins with global data standards

Our growing climate crisis demands that we conserve energy and water, reduce waste, and find ways to protect our ecosystems. But the most urgent challenge facing us globally may be to reduce our carbon emissions. And while governments and businesses across the globe are racing to set ambitious targets on a path to a net zero carbon future, we can't reach net zero if we don't actually know where we are. We need a common foundation to ensure that Scope 1, 2, and 3 emissions are measured in an accurate, consistent, and reliable way. Without global standards, it will be difficult for organizations to develop effective roadmaps to reduce their emissions without wasting time and money—and it will be difficult to know if our collective actions are making a difference.



We need more accurate carbon measurement, driven by data connections and automation.

At Microsoft, we're committed to accelerating global progress. We were a pioneer in committing to carbon neutrality for our own emissions and now, with the support of our world-class data science and research teams, we're applying the technology and frameworks we're using internally to help customers meet their sustainability ambitions. With experience and expertise in business applications, data and AI, common data models, and carbon accounting, we're helping organizations like yours break down data silos and remove ambiguity to gain a holistic understanding of the impact of your entire value chain.

[Understand carbon math >](#)

[Learn more about Microsoft sustainability leadership >](#)



Start focusing on carbon math



Each year, **humanity emits around 50 billion tons of greenhouse gases.*** That is more than nature can absorb. Learn how to track and minimize carbon emissions across scopes.

[Watch the video >](#)



Learn how Microsoft is calculating **Scope 3 emissions** in our value chain and how we empower customers with insights to inform their reporting.

[Download the white paper >](#)



To gain actionable insights into the impact of Microsoft cloud services on your environmental footprint, use the **Emissions Impact Dashboard**.

[Learn more >](#)

* "Greenhouse gas emissions," Our World in Data

Understand your emissions

Scroll over

Record and report your impact

Get started by connecting data to measure and monitor your environmental impact

Sustainability practices start with counting the things that matter. The intelligence gained makes it possible to report progress, reimagine fundamentals, drive systemic change, and accelerate sustainability.

With digital technologies, you can:



Capture and record data from telemetry, sensors, geospatial imagery, and emissions sources to measure and monitor the impact across your value chain



Analyze, visualize, and report your resource usage, your environmental impact, and your sustainability progress to stakeholders, regulators, and the public



Microsoft Sustainability Manager unifies data intelligence and enables organizations to more easily record, report, and reduce their environmental impact. The extensible solution can be integrated with virtually any business system. It breaks down data silos by automating data connections and calculations using the Microsoft Cloud for Sustainability data model.

This Microsoft Cloud for Sustainability solution enables comprehensive, integrated, and increasingly automated sustainability management for organizations at any stage of their sustainability journey. It allows organizations to gain visibility into the emissions activities of their entire enterprise and value chain, reliably report their impact and progress more efficiently, and access the intelligence required to refine and scale sustainability initiatives and transform their business, end to end.

[Learn more >](#)



Work with Microsoft and our ecosystem of global systems integrators to plan, design, and implement strategies to enable sustainable growth



Learn how Accenture helped a water utility predict and protect itself against the effects of climate change.
[Read the case study >](#)



See how Capgemini is helping customers accelerate their transition toward a low carbon future, as explained in Capgemini's Fit for Net-Zero Report.
[Watch the video >](#)



See how EY works with businesses to understand and respond to environmental risks and opportunities.
[Download the playbook >](#)



Find out how KPMG is helping businesses quantify the impacts, risks, and actions required to decarbonize and transform for a sustainable future.
[Learn more >](#)



[Find out why Microsoft is the leading platform provider of technology solutions for environmental challenges >](#)



Accelerate

Adopt more sophisticated solutions to reduce the impact of your operations, your buildings, and your supply chain

Find out how your company can minimize its environmental impact and build resilience using advanced analytics, visualization, and virtual models.

[Find partner solutions >](#)





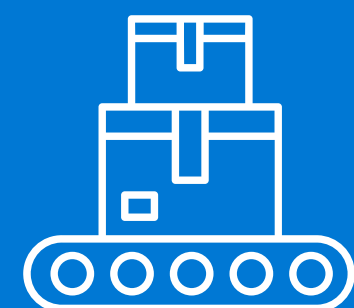
Maximize operational efficiencies

Reduce the impact of your operational processes and of the buildings and spaces you occupy—creating energy efficiencies and reducing carbon emissions, water consumption, and waste.

Using data intelligence and digital feedback loops, you can interpret data, test scenarios, glean insights, and identify opportunities to enhance efficiencies and advance your goals. These initiatives often reduce operating costs, too. With the combination of edge computing, artificial intelligence, and robust partner solutions, we can go further, faster to reduce our impact on the environment.



[Sustainability in smart buildings >](#)



[Sustainability in supply chains >](#)



Rolls-Royce is taking an active role in helping its customers—airlines that choose Rolls-Royce engines for their fleets—reduce the carbon they produce.

Processing, modeling, and interrogating flight data enables Rolls-Royce to optimize the carbon output of its intelligent engine platform. To efficiently manage the magnitude of data they are processing, the team adopted an Azure-based solution. Now, artificial intelligence, machine learning, and advanced analytics generate insights to help Rolls-Royce and its customers optimize operations and reduce fuel.



The scalability and elasticity of Azure **enables the team to process terabytes of data quickly** to drive emissions reductions

Azure enables the team to run **more than 100 simulations simultaneously in just minutes**, versus running one simulation at a time in an on-premises

Accelerating the transition to a zero-carbon future
[Watch the video >](#)





Smart building efficiencies

Reduce resource consumption and carbon emissions in your buildings and spaces.

Vasakronan Idun

Vasakronan is Sweden's largest real estate company and a global leader in sustainability. To reduce operating costs, the company focused on finding energy efficiencies with an Azure IoT solution—and adding Azure Digital Twins enabled more complex data analysis. By focusing on sustainability improvements, the company has reduced its vacancy rate while simultaneously driving net-new asset value. Already a carbon-neutral organization, Vasakronan now aspires to become climate neutral across its entire value chain, including construction efforts and tenant activities, by 2030.



With Azure IoT, the company has **reduced electricity fees for many buildings from 36 to 50 percent**

Vasakronan **expects to save USD700,000 annually** in energy consumption costs alone using Azure Digital Twins

Small sensors add up to big ROI for Vasakronan
[Watch the video >](#)

Brookfield Properties



Brookfield Properties is one of the world's largest commercial office landlords, at the forefront of creating and operating mixed-use "live, work, and play" ecosystems. When they built a 2.1 million-square-foot building in New York City, they explored the use of digital twin technology with Microsoft partner Willow to create a virtual model of the building to transform it into an intelligent network. This gives its operations team and tenants the ability to monitor and manage energy usage, equipment function, lighting, temperature, and air quality.

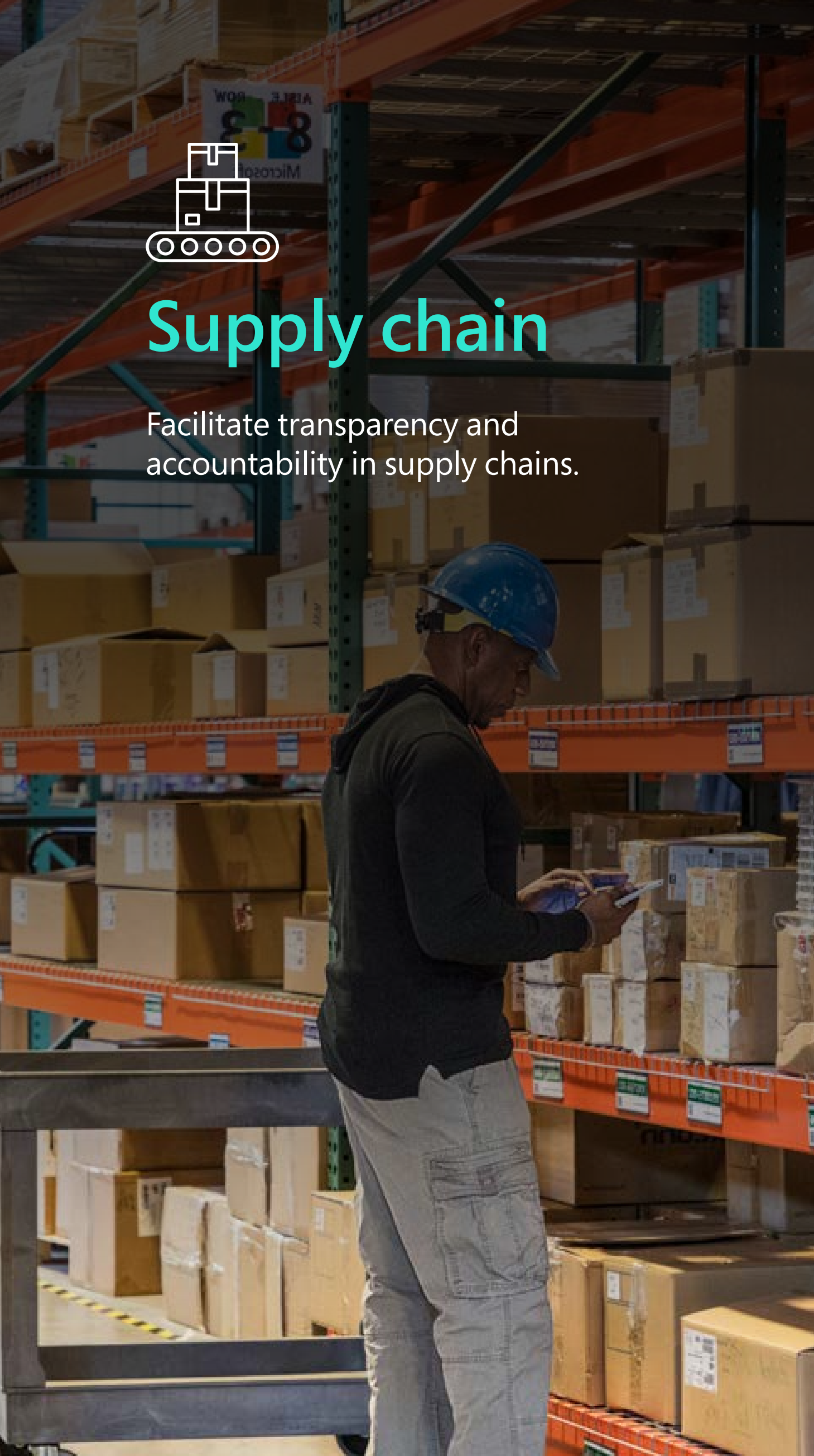


Managers can **better understand and manage assets when equipped with real time data and analytics** from an entire building or building portfolio

Digital twins enable trend analysis and predictive maintenance to finetune equipment efficiencies, minimize energy waste, and reduce emissions

Optimizing systems and equipment to maximize energy savings
[Read the story >](#)





Supply chain

Facilitate transparency and accountability in supply chains.

LAND O LAKES

For years, Land O' Lakes managed research plots manually—planting and collecting data by hand. But now, Azure-powered machine learning and AI deliver better insights faster using computer modeling, algorithms, and replicated trials. The research plots are used to validate digital models. And the insights help farmers take more targeted, cost-effective actions to improve growth conditions—maximizing yield potential by planting the right seed varieties and nutrients, optimizing fertilizer investments, and ensuring accurate output ratio to meet demand properly, all while lowering the farm carbon footprint.



AI insights help farmers make better decisions, for **healthier crops and better yields**

Data and analytics are helping farm communities **increase their profit potential and develop more sustainable processes**

Pioneering agricultural innovation to improve food supply
[Read the story >](#)

Danfoss

Danfoss, a heating and cooling appliances manufacturer, expanded its offerings to a software as a service (SaaS) solution to help food retail customers become more efficient. It developed a cloud-based solution, built on Azure, enabling grocery stores to monitor temperatures with sensors and more tightly control energy efficiency across grocery chains – improving food quality and reducing costs. Equipment data visibility and scalability enables the manufacturer to better understand equipment performance and improve operational efficiencies.



Customers have **saved an estimated 30 percent on energy costs** and **reduced food waste by 40 percent**

Real-time visibility into equipment operations could reduce equipment service costs by 35 percent

Monitoring food storage temperatures to save energy
[Read the story >](#)





Carbon: Grid-interactive infrastructure

Integrate systems to accelerate decarbonization of the energy grid.



Microsoft partnered with SSE Airtricity, Ireland's largest provider of 100 percent renewable energy and a part of SSE Group, to install and manage a large number of internet-connected solar panels on school rooftops. The software tools aggregate and analyze real-time data on energy generated by solar panels with existing grid connections. The solution demonstrates an alternative mechanism for corporations to achieve sustainability goals and reduce the carbon footprint of the electric power grid.



The schools use **electricity generated by the solar panels**, which reduces their utility bills

The panels power the equivalent of 68 Irish homes for a year and **abates the equivalent of 4.6 million pounds of carbon emissions over 15 years**

Increasing green energy one rooftop at a time
[Read the story >](#)



Vattenfall is a leading European energy company with a strong commitment to support organizations aspiring to go carbon-free. Fulfilling a pledge to operate entirely on renewable energy is a challenge in today's energy markets since there has been no way to match demand and supply for energy at the time that it's needed. However, a 24/7 renewable energy matching solution piloted by Vattenfall and Microsoft is now available to the public. The solution traces electricity from renewable sources to provide information to electricity customers on the source of their energy on an hourly basis.



24/7 matching of consumption to production drive true market demand for renewable energy

In the pilot at Microsoft's Stockholm headquarters, **94 percent of total office building energy consumption was matched** with Swedish wind and 6 percent matched with Swedish hydro power

Enabling real-time renewable energy matching
[Read the story >](#)





Water: Managing water flows

Manage water use and quality throughout municipal and business systems.



Lillestrøm sits at the confluence of three rivers in the largest inland delta in Northern Europe. Surrounded by forests and water, the municipality is concerned about maintaining its natural assets and providing a sustainable environment for its 87,500 citizens. To effectively protect waterways, manage wastewater, and keep people and wildlife safe from the effects of flooding, the municipality needed a single platform that featured powerful, adaptable interfaces that could help turn raw data into focused, accessible, and actionable information. It adopted an end-to-end data solution powered by Microsoft Azure, visualized through Power BI, and communicated via Microsoft Teams.



Edge intelligence enables the team to target engineering effort with **greater accuracy, make smarter decisions on maintenance and repairs**, and better identify priorities

Fixing a single leak of 0.5 liters per second can prevent a recurring monthly loss in the range of \$2,800; savings can be substantial since the **average water loss through pipe leaks in Norway is 30 to 40 percent**

Turning water data into action
[Read the story >](#)



A historic drought in 2018 brought the issue of sustainability into full focus for Puur Water & Natuur (PWN), a Netherlands-based water utility, which supplies 1.5 million citizens with water. To better manage their water resources, PWN worked with Accenture and Avanade to migrate their data modeling and other systems to the Microsoft Azure cloud. PWN can now easily correlate data on variables such as water quality, supply and usage to mitigate environmental impacts and educate customers on water conservation.



The Azure-based solution provides the data and analytics PWN needs to **maintain a high-quality water supply** for years to come

PWN can now **quickly create test environments in Azure**, enabling quick innovation to better manage water resources

Visualizing data to drive innovation
[Read the story >](#)





Waste: Circular economy

Transform the production, use, and disposal of products and materials with closed-loop systems.



For over 100 years, multinational Bühler Group has been manufacturing industrial equipment and technology to automate the production of nutritional products. Now, when customers connect their industrial equipment and automation software to the Bühler Insights platform, they can access and explore their technology data at a granular level and visualize the data intelligence required to optimize production processes. With the help of the Bühler Insights platform and Microsoft Azure, Bühler's customers are finding new ways to optimize their operations, reducing waste and energy usage while increasing output.



Bühler aims for **50 percent reductions in waste, water, and energy** across customer value chains by 2025

The solution is improving **overall equipment effectiveness, increasing plant safety, and boosting plant power consumption**

Driving more sustainable production with intelligent insights
[Read the story >](#)



Construction and demolition produce one of the largest waste streams worldwide. Dutch nonprofit Madaster saw an opportunity to reduce waste going to landfill by providing a public online library of registered and catalogued building materials. Madaster developed an Azure-based technology platform that provides raw materials with an identity that is linked to a location and registered in a materials passport which can be generated for a building, construction object, or portfolio. Materials passports describe the materials used in a building, how and where they are used, their value, and approximately when they'll become available for reuse. The Madaster Platform allows materials to be recycled, resold, and reused to drive more sustainable construction decisions.



Material passports make it easier to **reuse materials, minimize waste, and reduce the cost** of material consumption

Visibility into materials' circularity potential helps managers **forecast costs and improve cost efficiencies and return on investment**

Facilitating circularity of building materials
[Explore the solution >](#)





Ecosystems: ESG insights

Analyze complex data to better understand climate risk and address ESG goals.



For a long time, Munich Re has been using analytical models that can calculate weather risks with an unbelievably large number of parameters. Now, Munich Re is improving the efficiency and quality of risk assessments by using advanced analytics to aggregate several petabytes of weather and climate data in the cloud. Predictive models and simulations empower the team to understand climate change trends, associated risks, and opportunities to mitigate risk.



Azure enables Munich Re to **improve the analysis of the risks** of change resulting from climate change

The team has **increased processing speed and reduced costs** with the power of the cloud

Applying innovation to weather risk analysis
[Read the story >](#)



Agriculture represents 15.4 percent of Guatemala's GDP and more than half of its exports, but many farmers still live in poverty, and limited access to finance and access hinder agricultural development. Microsoft and Banrural teamed up to create a platform that integrates the latest advances in technology, agriculture, and finance to improve productivity, mitigate risks, and improve agricultural practices of Guatemalan farmers.



Aggregating and visualizing climate and geospatial data helps banks and farmers make better decisions

The solution helps farmers **anticipate or contain risks, make data-driven decisions, and instill sustainability best practices**

Improving productivity and mitigating risk in agriculture
[Read the story >](#)



Build for the future with experienced solution providers

Microsoft provides the technology platform to support your sustainability journey end to end, and our partners bring deep industry expertise about what to analyze, how to interpret the data, and how to deliver insights in ways that will be most useful to our customers.

Together with our partners, we're exploring new ways to use advanced analytics, machine learning, and virtual models to understand your impact, test various scenarios, and create more targeted and effective sustainability strategies.

[Learn more about our sustainability partners >](#)

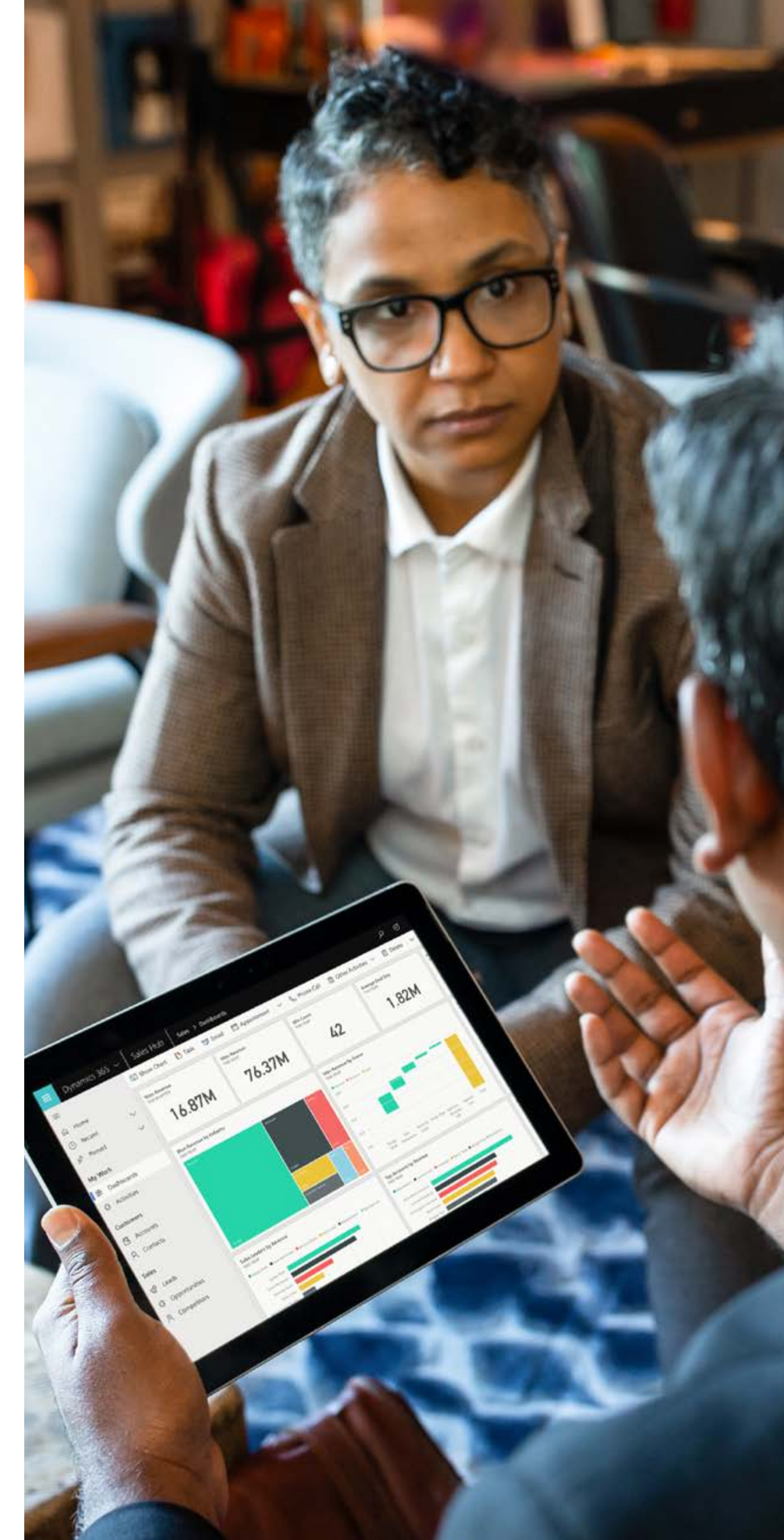
[Explore industry solutions >](#)

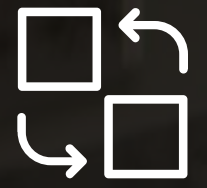


Transform

Reimagine your systems and models to create a more resilient future

Examine some of the ways you can embrace digital sustainable transformation, and some of the lessons we and our solution providers have learned in our own sustainability journeys.





Replace high-footprint resources with low-footprint ones



When global manufacturing firm Ingevity inherited outdated systems from its former parent company, it began planning a complex migration from an on-premises datacenter to the cloud for alignment with Ingevity's environmental sustainability values. Ingevity chose the scalable, highly secure, and robust Azure platform and worked with Microsoft partner Protera for data consolidation and management. With Microsoft Azure, Ingevity now has much more visibility into its optimized infrastructure and the flexibility to spin up new systems in days, not weeks.



Within an accelerated timeframe and with no user disruptions, Ingevity **moved 74 terabytes of data, 180 systems, and 462 network devices serving sites in 23 countries** to the cloud

Moving from a capital expenditure model to an infrastructure as a service model **adds flexibility and saves money**

Building resilience in the cloud
[Read the story >](#)



The City of Antwerp faced increasing congestion, aggravated by the need for roadway repairs. To head off gridlock, the city cooperated with mobility expert Be-Mobile to design and build a solution that guides traffic to off-street parking, provides mobility insights, suggests alternative transport modes, and implements an intermodal routing platform. Looking at the data and real-time analysis required to enable smart accessibility, the team realized that the city's existing on-premises server network would be cost-prohibitive, which led the city's decision to house the solution in Microsoft Azure.



Azure offered the unified data hub and processing power the city needed to deliver real-time intermodal routing advice to users.

With the scalability of Azure, the city has the **flexibility to handle fluctuations in peak traffic periods**, and it provides the building blocks to add data streams or features in the future.

Unifying data in the cloud
[Read the story >](#)





Reduce your footprint in the cloud

Moving on-premises workloads to the cloud can boost efficiencies, security, and sustainability for your organization. In fact, Microsoft Azure can be up to 98 percent more carbon efficient than on-premises options, and Microsoft renewable energy purchases make Azure up to 93 percent more energy efficient than on-prem servers, adding up to savings for Azure customers.*

Azure sustainability starts at the datacenter and extends to AI-driven products and local projects. We are continually adopting innovative practices to minimize the environmental impact of our datacenters—reducing energy use while providing higher processing power and helping to eliminate water consumption.

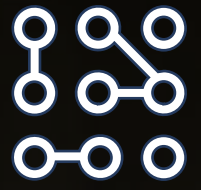
Azure also provides the foundational platform for sophisticated sustainability solutions that drive operational efficiencies in organizations through systems integration, automation, or even autonomous controls.

[Learn more about the sustainability benefits of Microsoft Azure >](#)

[Learn more about Azure-powered partner solutions >](#)

* Efficiencies depend on your specific server usage, renewable energy purchases you make, and other factors. For details, check out "The carbon benefits of cloud computing."





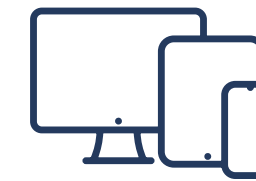
Use technologies that are sustainable by design

Microsoft products are conceived, built, operated, and retired with sustainability in mind. And customers receive built-in sustainability benefits inherent in all Microsoft products and services, since Microsoft commitments result in measurable environmental and economic advantages.



Seek opportunities to adopt cloud and AI services to cut your energy consumption, reduce physical footprints, and enable the design of sustainable products and solutions.

[Learn more >](#)



Prioritize sustainable device purchases.

Device sustainability starts with design and extends through responsible sourcing, device use, and end of life management. All Surface devices meet or exceed international energy efficiency requirements.

When you invest in Windows, Surface, Xbox, and Microsoft intelligent devices and PC accessories, you support numerous sustainability benchmarks, including our plan to achieve zero waste for our direct operations, products, and packaging by 2030.

[Learn more about device sustainability at Microsoft >](#)



Empower employees with flexible work tools.

Reducing travel, including daily commutes, can help curb carbon emissions and combat climate change. Microsoft 365 delivers industry-leading productivity apps, including Microsoft Teams, which is enabling hybrid work models and virtual events.

[Learn more >](#)





Remove your footprint

In order to address our global climate crisis, we need to drastically reduce carbon dioxide and other greenhouse gas (GHG) emissions. But reductions won't be enough. We must also remove large amounts of carbon from the atmosphere to avert the worst social, economic, and environmental impacts of a rapidly changing climate.

Explore lessons we learned from an early corporate purchase in the global carbon removal marketplace.

[Read the white paper >](#)

Innovation spotlight: Northern Lights



Carbon capture and storage can reduce net carbon output in geographies and industries where quick reductions are difficult.

Northern Lights, a joint project between Norway, Shell, Equinor, and Total, uses offshore drilling technology to return liquified carbon, captured at industrial capture sites in the cement and waste-to-energy sectors, to below the sea floor. Microsoft will build the technology platform to catalyze a new business ecosystem around carbon management.

The solution stores **1.5M tons of liquid CO2 annually**, with total lifetime **potential of 100M tons**

The software platform is **based on open-source principles** to unlock innovation and inspire other solutions

Driving the energy business model with carbon capture

[Read the story >](#)





Adopt new business models

Use digital technologies to meet your customers' growing expectations for sustainable products and services and reimagine your processes and practices to create more organizational resilience.

flowe

Flowe, a startup founded by Banca Mediolanum, developed a banking app designed to motivate customers to add sustainability and well-being to practices to their lives. The app applies the power of data analytics and artificial intelligence to win over and engage an influential customer segment—millennials—via targeted content and insights.



Azure enables **easy integration with legacy and third-party systems**

Platform **agility and scalability enables the team to test, pivot, and enhance** their platform seamlessly

Using AI to nudge users toward sustainability
[Read the story >](#)

outokumpu

Outokumpu, a leading global stainless-steel manufacturer, is digitalizing their largest factory in Finland, end to end, with a platform built on Azure. The solution enabled them to shift the culture of the company from experience-based, intuitive decision-making to data-based decision-making – closing skill gaps between operators and improving efficiency gains. The solution has also helped them improve their already low environmental footprint.



Savings on electricity, energy, and the time of the processes in its operation **all contribute to lower carbon emissions**

The initiative **increased output from this facility by 10-15 percent** and **reduced quality defects by up to 40 percent**

Using data to minimize the environmental footprint of stainless steel
[Read the story >](#)





Explore the Planetary Computer

Watch the video



We're building the Planetary Computer to provide insights into complex questions about air, water, and land management.

Our multi-petabyte catalog of key geospatial data sets is publicly available for use in consistent, analysis-ready formats accessible through intuitive APIs as well as directly available via Azure Storage. And partners all over the world are building applications on top of the Planetary Computer platform, providing actionable information critical to sustainability practitioners.

Check out the open-source tools that make this useful for organizations seeking public satellite images or environmental monitoring data to support sustainability decision-making.

[Learn more >](#)





Microsoft commitment to sustainability

Microsoft is committed to becoming carbon negative, water positive, and zero waste.

Scroll over icons to learn more



With decades of experience prioritizing sustainability practices, Microsoft is collaborating with organizations and experts around the world to help set best practices and science-based standards.

Through Microsoft Cloud for Sustainability, we're empowering organizations to accelerate sustainability progress and business growth by bringing together a growing set of ESG (environmental, social, and governance) capabilities from Microsoft and our global ecosystem of partners.

Together, we're enabling organizations to gain the transparency and insights they need to manage their environmental footprint, embed sustainability through their organization and value chain, and make strategic business investments that drive value.

Alongside other global sustainability leaders, we're advocating for policies to achieve corporate and societal goals, and we're investing in training, carbon markets, and climate equity projects to help drive the transformation we need.

[Read our Environmental Sustainability Report >](#)

Together, we can build a more sustainable future, harnessing the power of technology.

Learn more at microsoft.com/sustainability >

