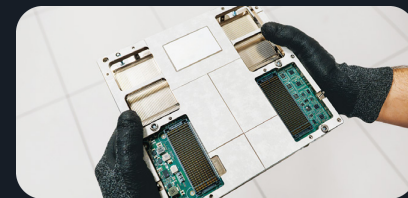


2025

Amazon Sustainability Report



AWS Summary



About AWS

AWS is the world's most comprehensive and broadly adopted cloud offering, with millions of global users depending on it every day. To build a more sustainable business for our customers and for the world we all share, we are designing data centers to provide the efficient, resilient service our customers expect while minimizing our environmental footprint—and theirs.

The data within this summary reflects progress from January 1 through December 31, 2025, unless otherwise indicated. All financial figures are reported in U.S. dollars (\$), unless otherwise stated.



Learn more about Amazon's overall progress in our [2025 Sustainability Report](#) ↴

How to Navigate This Report

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- > A link within the report
- ↴ A link to a download

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At our data centers, new components are being rolled out that combine advances in power, cooling, and hardware to help reduce energy and water consumption.

Learn more about our [cover photos](#) >

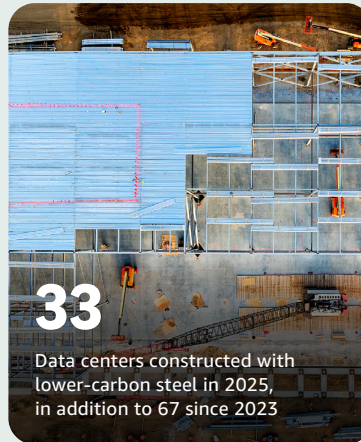
2025 Year in Review

As we reflect on 2025, we are proud of our achievements. We have continued to strengthen our environmental practices, enhance our value chain, support our employees and communities, and foster a safer, more inclusive workplace.



1.14

Global Power Usage Effectiveness for AWS data centers, better than the public cloud industry average of 1.25



225K

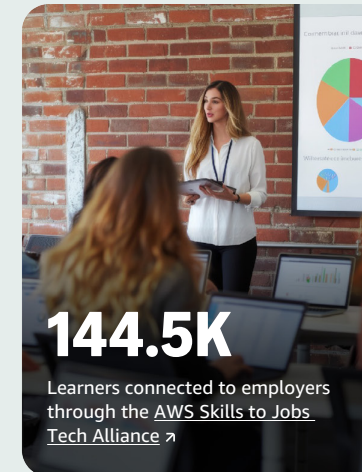
Metric tons of CO₂e prevented by reusing and reselling data center hardware since 2020

Goal

AWS will be water positive across data centers by 2030, returning more water to communities than we use in our direct data center operations

75%

Of the way toward meeting our data center water positive goal



0.12

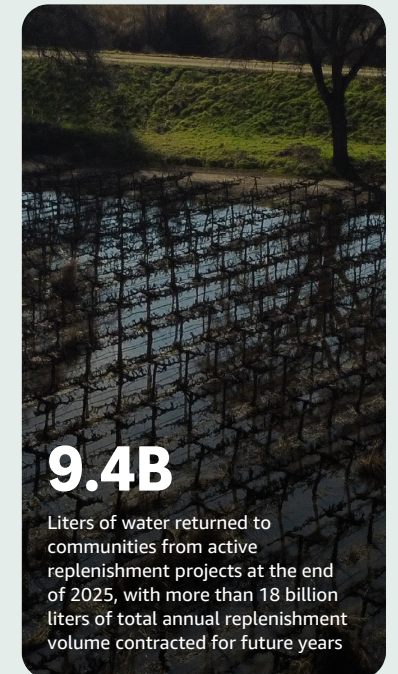
L/kWh global Water Use Effectiveness for AWS data centers, improved 20% from 2024 and 52% since 2021

\$17.9M

In AWS cloud and AI technology distributed for education

14.4K

Unemployed or underemployed individuals trained through AWS re/Start 12-week training sessions



AI for Sustainability

From the recommendation engines that personalize shopping experiences to the AI-powered robots that optimize order fulfillment in our warehouses, we have developed and deployed artificial intelligence (AI) and machine learning (ML) models to power customer experiences and internal operations for over 25 years. One of our longest-standing examples of using AI to make customers' lives easier is Alexa, our AI assistant, which launched more than a decade ago.

AI for Efficiency

We use AI to improve efficiency and address sustainability challenges across our value chain. Not only do we develop and deploy our own AI solutions, we also support partners, industry organizations, and coalitions through funding, accelerator programs, and collaborative initiatives. For example, in 2025, our [Amazon Sustainability Accelerator](#) welcomed Greyparrot, which has developed a computer vision system that observes waste conveyor belts to identify and categorize more than 110 different types of waste in real time.

AI for Innovation and Access

We also focus on democratizing access to the benefits of AI and helping develop AI expertise globally, empowering others to address the world's most urgent and complex challenges. The Idaho National Laboratory and Lawrence Livermore National Laboratory are using our AI technology to help advance the next generation of safe nuclear energy. The [AWS Education Equity Initiative](#), a

\$100 million, five-year investment in AI technology, expands access to education and technical skills globally. We also help reduce barriers to deploying fast, capable AI with our cost-effective [Amazon Nova](#) portfolio of AI models and services, designed to help customers move from experimentation to reliable production at scale.

Responsible AI

As we continue to scale our AI capabilities and democratize access to the benefits of AI, we also take responsibility for mitigating the risks of our technology. Our policies and tools provide guardrails for deploying AI in our infrastructure. We actively collaborate to advance standards for responsible AI, through efforts such as the G7 AI Hiroshima International Process Code of Conduct, the U.S. Artificial Intelligence Safety Institute Consortium, and the Frontier Model Forum. We also developed a [Frontier Model Safety Framework](#) that outlines the protocols we follow to ensure that the frontier models we develop do not exceed specified risk thresholds without appropriate safeguards in place.

Although AI can increase energy and water demand in data centers, we are pioneering designs such as [configurable liquid-to-chip cooling](#) that substantially reduce both. We are committed to sourcing [carbon-free energy](#) and returning more [water to our communities](#) than we withdraw for our data center operations. Additionally, we [pay for the full electricity costs of our data centers](#) while making substantial investments in building new energy generation and transmission infrastructure that benefits our broader communities.

At the root of this work is our core belief that AI is not just a tool but can be a turning point for sustainability when it is developed and deployed responsibly. We provide details on our efforts to leverage AI for sustainability and improve the sustainability of AI throughout this summary. Click on the links in the infographic to the right to learn more.

Scaling AI across Our Value Chain



Waste and Circularity

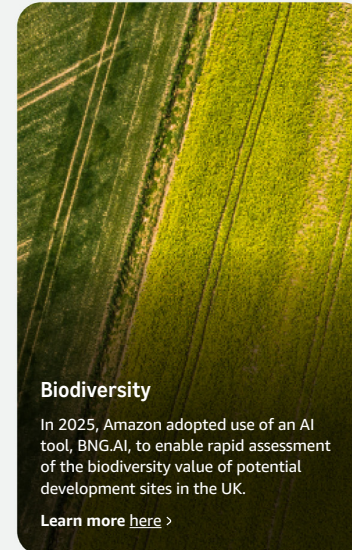
In 2025, we began using AI-powered robots to demanufacture AWS equipment, securely disassembling servers into components to be securely reused or recycled.

[Learn more here >](#)

Responsible Supply Chain

AI modeling tools help identify suppliers at higher risk of not meeting our Supply Chain Standards, streamlining processes and aiding our experts to prioritize which suppliers to audit.

[Learn more here >](#)



Human Rights

In 2025, Amazon used AI to transform data into actionable insights to inform priorities, due diligence, and decision making across our global supplier network.

[Learn more here >](#)

Employee Experience

To improve access to benefits and compensation information, we enhanced our internal A to Z app and website with an AI assistant, Aza, that offers easily accessible and personalized information about benefits, health care, and paid time off.

[Learn more here >](#)

Responsible Business Practices

Recognizing the transformative potential of AI, we embed eight priorities for responsible development and deployment of AI in our policies, frameworks, and tools.

[Learn more here >](#)

Water

We were a founding partner in the launch of the Water-AI Nexus Center of Excellence, a collaborative effort to advance water sustainability for AI infrastructure.

[Learn more here >](#)

Recognizing the transformative potential of AI for people and communities worldwide, we are dedicated to fostering its safe, transparent, and responsible development and deployment. Our [responsible AI approach](#) is guided by eight priorities:

- **Fairness:** Evaluating the impact of AI on different groups and broader societal issues
- **Explainability:** Understanding and evaluating system outputs, such as responses
- **Privacy and security:** Appropriately obtaining, using, and protecting data and models
- **Safety:** Preventing harmful system output and misuse
- **Controllability:** Having mechanisms to monitor and steer AI system behavior
- **Veracity and robustness:** Achieving correct system outputs, even with unexpected or adversarial inputs
- **Governance:** Incorporating best practices into the AI supply chain, from technology providers to consumer applications
- **Transparency:** Enabling consumers and companies to make informed choices about their engagement with an AI system

The policies and frameworks that set expectations for Amazon's and our customers' development and deployment of AI and ML reflect these priorities. The [AWS Responsible AI Policy](#) applies to AI and ML services, features, and functionality provided by or through AWS. Our [Frontier Model Safety Framework](#) establishes the processes Amazon uses to identify, assess, and manage potential severe risks that could arise as we develop more advanced and highly capable frontier AI models.

We also provide our internal teams and our customers with the tools and services they need to design, build, and

operate [AI systems responsibly](#). [Amazon Bedrock Guardrails](#) and [Model Evaluation in Amazon Bedrock](#) make it easier to introduce safeguards, prevent harmful content, prevent hallucinations, and evaluate models against safety and accuracy criteria. [Amazon Nova Canvas](#) applies an invisible watermark to all images it generates to promote the safe, secure, and transparent development of AI technology and help reduce the spread of disinformation. The detection solution can also check for the existence of the watermark, helping customers confirm whether an image was generated by Nova models. In addition, many of our [AI Service Cards](#) provide transparent documentation on intended use cases and limitations, responsible AI design choices, and deployment and performance optimization best practices for our AI services and models. This documentation helps AWS customers build their AI applications safely and evaluate models against key safety and accuracy criteria. We also provide guidance to customers using AI in the AWS cloud through [the Well-Architected Framework Responsible AI Lens](#).

To protect against performance flaws, we test our AI systems and models using a variety of techniques, including engaging human testers to probe an AI system for flaws in an adversarial style, automated benchmarking against publicly available and proprietary datasets, human evaluation of completions against proprietary datasets, and more. Testing our frontier models helps maintain alignment with our eight priorities for responsible AI.

To promote data quality and evade potentially harmful prompts in our Amazon Nova frontier models, we implement a comprehensive approach that models both prompts and responses and spans pre-training, evaluation, and deployment.

We support AI safety and risk assessment and mitigation by engaging with organizations like the National Institute of Standards and Technology, including with its AI Consortium and Center for AI Standards and Innovation.

We also work with multi-stakeholder organizations, such as Thorn and the Frontier Model Forum, and actively participate in initiatives such as the [G7 Hiroshima AI Process Reporting Framework](#).

Through initiatives such as [Amazon Scholars](#), our team of AI and data scientists collaborate with leading academic institutions to tackle complex, evolving, and emerging responsible AI challenges, and help inform how we design, build, and operate our AI services. We accelerate our work in AI safety through initiatives such as our [Amazon AGI San Francisco Lab](#) and the [Amazon Nova AI Challenge](#). These channels enable us to leverage the work of subject matter experts and discover promising approaches toward aligning our frontier models.

As we integrate AI into our operations, we recognize that responsible AI use extends beyond how we deploy these technologies to how they are produced. The development of AI systems depends on physical and human infrastructures that carry environmental and human rights risks—from sourcing rare earth minerals and critical materials for hardware, to energy and water consumption in data centers, to labor conditions for data annotation and content moderation workers whose work underpins model training.

We are focused on addressing these upstream effects as part of our broader sustainability goals. Our Supply Chain Standards, human rights due diligence program, supply chain social audit processes—which extend to services vendors, including data annotation providers—and minerals sourcing policy and program together form the foundation of this effort. We are working to apply these established frameworks to the supply chains that support AI services, assessing environmental and human rights risks associated with AI-related hardware and services. We recognize that industry-wide standards for production-side AI effects are still evolving, and we will engage with emerging frameworks, report transparently on our

progress, and contribute to greater accountability across the sector.

Learn more about how Amazon is [building AI with responsibility in mind](#)

How AI Benefits Communities



In 2025, we integrated cloud and AI technology across community initiatives to automate processes, analyze community sentiment, and enable data-driven decisions. In addition to leveraging AI in ways that directly inform our work, we also equip nonprofit partners and organizations reaching underserved audiences with tech-enabled tools to scale their impact. In 2025, we:

- Provided more than 50,000 learners globally with access to foundational AI skills via AWS Educate, hands-on learning with PartyRock and Quick, and access to AWS AI certifications and Udacity Nanodegree through [AI & ML Scholars](#)
- Supported 575 customers in education, health, and climate with AWS cloud and AI technology
- Provided AWS cloud and AI training to over 100 customers from 34 countries through Amazon's Social Entrepreneur Accelerators
- Invested \$1 million in 43 organizations and projects to identify practical AI solutions that advance the United Nations Sustainable Development Goals

Learn more about how we are integrating [AI across community initiatives](#)



Climate and Energy

We have a responsibility to lead meaningful climate action and carbon emissions reductions. Our approach is grounded in climate science and centers on [The Climate Pledge](#), our commitment to reach net-zero carbon emissions across our global operations by 2040. We use our scale and resources to drive transformative progress across our operations and supply chain, while demonstrating that ambitious climate action can align with exceptional customer service, business growth, good jobs, and thriving communities.

We aim to achieve net-zero carbon emissions through decarbonization of our operations and supply chain, then neutralizing any residual emissions. Amazon's approach spans five areas:

- **Addressing emissions from purchased electricity** by driving data center and building efficiency and investing in carbon-free energy, including solar, wind, nuclear, and battery storage
- **Reducing supply chain emissions** by engaging suppliers to set targets and reduce emissions, embedding lower-carbon materials in our buildings, and scaling lower-carbon fuels in our logistics network
- **Decarbonizing our direct operations** through delivery efficiency, electric vehicles, lower-carbon fuels, and lower-carbon heating and cooling systems
- **Scaling carbon neutralization** to account for residual emissions through nature-based solutions, carbon removal technologies, and [super pollutant abatement](#)

- **Driving collective action** through The Climate Pledge, joint action projects, climate finance, innovation investment, and policy advocacy

Optimizing Global Cloud Infrastructure

When businesses and governments choose our data centers, they are choosing infrastructure purpose-built to do more with less energy. Our customer obsession drives us to deliver the highest performance with the lowest possible energy use. That means every AI model trained, every application hosted, and every workload processed runs on some of the most efficient infrastructure in the world.

To meet strong customer demand, in 2025 we added more data center capacity globally than any other company, including more than 1.2 gigawatt (GW) in Q4 alone, and we expect AI and cloud services to continue growing.



As we grow, we invest relentlessly in efficiency. When a business moves from an on-premises data center to AWS, [research](#) estimates that data is processed 4.1 times more efficiently.¹ Our custom-designed chips—including Trainium3 for AI model training—offer over five times higher output tokens (i.e., AI-generated responses) per megawatt (MW) of power and four times better performance per MW than its predecessor, while maintaining the same latency or response time per user. We also collaborate with partners like NVIDIA, whose GPU architectures power a broad range of AI workloads across AWS, building on more than 15 years of joint innovation. Together, these investments enable customers like Anthropic and OpenAI to scale their most demanding AI workloads with greater energy efficiency.

Beyond silicon, we drive efficiency through software and process improvements that optimize server utilization across our fleet and by developing more efficient network architecture using our custom networking components. We also continue scaling [configurable liquid-to-chip cooling](#) in both new and existing data centers. Instead of cooling entire buildings, we deliver precision cooling directly where heat is generated—at the chip. This approach reduces mechanical energy consumption compared to traditional cooling methods by up to 50% during peak cooling—without increasing water usage on a per MW basis.

To track and provide transparency on how efficiently our data centers use energy, we measure Power Usage Effectiveness (PUE)—a ratio where 1.0 would mean that every watt of electricity goes directly to computing, with nothing lost to cooling, lighting, or other overhead. In 2025, AWS's global data centers achieved a global PUE of 1.14, nearly 9% better than the public cloud industry average of 1.25 and 30% better than the on-premises enterprise data center average of 1.63.² Our scale allows us to achieve higher resource utilization and energy efficiency than organizations using their own hardware.

The AWS Energy Management System program standardizes our continual energy efficiency improvement efforts

globally. Amazon data centers and services in 35 countries—including all of our data centers in Europe, the Middle East, and Africa (EMEA), Singapore, and Indonesia—were ISO 50001 Energy Management certified in 2025.

Learn more about [AWS regional PUE](#) and [ISO 50001](#)

We also use [AI](#) to identify underperforming equipment and operational opportunities. As of the end of 2025, 820 Amazon buildings used AI tools to monitor HVAC and water utilities.

Scaling Carbon-Free Energy

Amazon has invested billions of dollars scaling carbon-free energy, which has enabled more than 712 projects in 30 countries as of January 2026—including 80 new projects in 2025—representing 42 GW of carbon-free energy capacity, enough to power 13 million U.S. homes for a year and avoid 48 million metric tons of CO₂e once fully operational.³ These investments enabled Amazon to match 100% of the electricity consumed by our operations with renewable energy sources for the third year in a row.⁴

Carbon-free energy includes renewable energy technologies, such as wind and solar farms, on-site rooftop solar systems, hydroelectric, geothermal, and nuclear energy. There is no one-size-fits-all solution when it comes to transitioning to carbon-free energy, and we believe that all viable and scalable options should be considered. As the energy needs of our business and customers continue to grow, we are investing in carbon-free energy that can both help power our operations and bring new sources of energy to the grid in communities around the world.

The transition to carbon-free energy creates meaningful economic opportunities in communities where energy projects are built and operated, while also driving the modernization and resilience of energy infrastructure.

In 2025, an independent research study commissioned by Amazon [confirmed](#) that AWS data centers in the U.S. pay the full costs of electricity, without raising costs for other ratepayers, and generate surplus revenue that utilities can use to invest in grid improvements for customers.

BloombergNEF continues to recognize Amazon as one of the world's leading corporate purchasers of carbon-free energy, in addition to building the largest carbon-free energy portfolio of any corporation globally. In 2025, we achieved:

- 131,000 GW-hours (GWh) of carbon-free energy production annually.
- 375 utility-scale projects in Amazon's portfolio globally, including 264 solar, 109 wind, and two nuclear projects as of January 2026.
- 10 new carbon-free energy projects announced in the U.S. as of January 2026, which will add 5.5 GW of capacity to the grid once fully operational. In total, Amazon has announced 291 projects across 30 states, which will bring 25.6 GW of expected capacity to the grid once fully operational.
- 55 new carbon-free energy projects announced in Europe as of January 2026, which will add 1.4 GW of capacity to the grid once fully operational. In total, Amazon has announced 287 projects across 15 countries, which will bring 10.7 GW of expected capacity to the grid once fully operational.
- 11 new carbon-free energy projects in Australia and three in India—announced as of January 2026, adding more than 565 MW of capacity in Australia and 581 MW in India, respectively.

To meet our climate commitments and growing energy demands—particularly for AI and cloud services—we are building a diverse carbon-free energy portfolio through

solar, wind, and nuclear investments. In the future, we will report on the percentage of carbon-free energy used to power our operations.

Scaling nuclear power is one of our top priorities, while we continue to invest in wind and solar capacity and explore other technologies like geothermal, hydro, and battery storage. Amazon is working with utilities, regulators, and nuclear technology companies to explore ways to improve the safety and output of traditional nuclear plants and supporting development of small modular reactors (SMRs)—advanced nuclear reactors with a small physical footprint that enables faster construction and closer proximity to power grids.

Amazon has made an investment in SMR developer X-energy to help bring 5 GW of new nuclear energy to the U.S. grid by 2039. As part of this initiative, Amazon is helping build one of the first modular nuclear reactor facilities in the U.S. The project, the Cascade Advanced Energy Facility, is a collaboration with Washington State utility Energy Northwest and X-energy. In 2025, Amazon and X-energy also agreed to collaborate with South Korea's Doosan Enerbility and Korea Hydro & Nuclear Power to accelerate the deployment of new SMRs in the U.S. We also [expanded our existing nuclear energy relationship with Talen Energy](#), which will provide 1,900 MW of carbon-free nuclear power through 2042, with options to extend. These long-term contracts provide price stability for nuclear facilities, helping prevent the kind of market-driven shutdowns that have removed nuclear capacity from the grid.

We are continuing to expand battery capacity to collect and store carbon-free energy to use when other energy sources may be unavailable—such as at night or during periods of high demand—to support grid stability. By the end of 2025, Amazon had 15 solar energy projects paired with battery energy storage systems, representing 2.3 GW of capacity, up from 2.1 GW in 2024.

Reducing Embodied Carbon in Our Buildings

Building construction is a major driver of carbon emissions due to the embodied carbon generated from the manufacture, transportation, installation, maintenance, and disposal of building materials. We track the embodied carbon of our building construction materials through collaboration with our building contractors and suppliers.⁵

We are investing in and scaling lower-carbon building materials. In 2025, 40 AWS data centers incorporated lower-carbon building materials, such as lower-carbon concrete, steel, and aluminum, avoiding nearly 104,000 metric tons of embodied CO₂e compared to traditional construction materials.

- **Lower-carbon steel:** We constructed 33 data centers with lower-carbon steel in 2025, in addition to 67 since 2023.
- **Lower-carbon concrete:** We constructed 39 data centers with lower-carbon concrete in 2025, in addition to 74 since 2023.
- **Lower-carbon copper:** In early 2026, Amazon agreed to be the first customer for Rio Tinto's lower-carbon copper produced using Nuton bioleaching technology.

Engaging with Suppliers

AWS engages with our suppliers across the semiconductor and electronics manufacturing industries to set emission reductions roadmaps and to increase the adoption of carbon-free electricity. AWS is also a member of SEMI's Semiconductor Climate Consortium (SCC) and worked to increase access to carbon-free power and decarbonization standards and tools for the semiconductor industry.

Engaging with Customers

[AWS Sustainability Console](#), an AWS service that incorporates and replaces the previous Customer Carbon Footprint Tool, allows customers to measure, track, and reduce their estimated environmental impact across AWS services. The methodology behind sustainability calculations (e.g., carbon footprint and allocation to customers) is third-party verified and publicly available. Customers can access granular data by AWS region, service, usage account, and fiscal year, among others, across Scope 1, 2, and 3 carbon emissions, in convenient formats such as dashboard visualizations, comma-separated values files, and APIs. [Learn more about AWS Customer Carbon Footprint Methodology](#).



At Baldy Mesa Solar and Storage Project, located in Adelanto, California, machine learning models predict when and how the project's battery unit should charge and discharge energy back into the grid.

Water

Water is a shared and increasingly constrained resource, especially in high- and extreme-stress regions affected by climate change, population growth, and evolving technological demands. AWS prioritizes responsible water use, using only what we need, managing it efficiently, and standing up water replenishment projects that restore water to the communities where we operate.

Collective Action for Water Resilience



Collective action drives meaningful progress toward solving water challenges, reflected by Amazon’s co-founding of a new initiative, the [Water-AI Nexus Center of Excellence](#) ⁷, where water utility providers, researchers, and technology companies develop and share best practices to advance water sustainability. The Water-AI Nexus has a dual purpose—advancing water sustainability in AI development while harnessing AI to solve critical water challenges. It seeks to support collaborators in developing innovative solutions, enhancing water efficiency, adopting more sustainable water sources, supporting community reuse projects, and investing in replenishment projects.

Learn more about the [Principles for Sustainable Water Use by Data Centers](#) ⁸

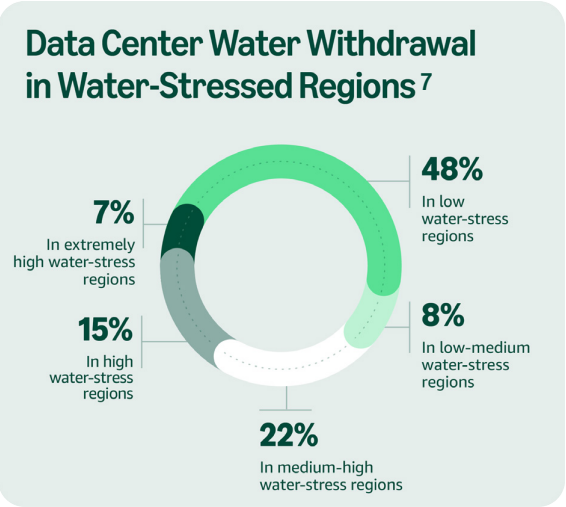
Water Positive Data Centers

In 2022, AWS announced our goal of being water positive—returning more water to communities than we use—across global direct data center operations by 2030. By

the end of 2025, we achieved 75% of this goal, up from 53% in 2024. We measure progress using our [Water Positive Methodology](#) ^{9,6}

To meet our water positive goal, we are working to minimize water use, source more sustainable alternatives, and invest in water replenishment. We aim to reduce total water withdrawals by improving our water efficiency, measured as Water Use Effectiveness (WUE), the liters of water withdrawn per kilowatt-hour (kWh) of IT load on average.

We prioritize reducing water use in regions with the highest water stress, which is defined by World Resources Institute’s (WRI) Aqueduct Water Risk Atlas as the measurement of the ratio of total water demand to available renewable surface and groundwater supplies, where higher values signal greater competition among users. In 2025, AWS’s global leased, owned, and shared data centers withdrew 9.4 billion liters of water. In 2025, 48% of our total water withdrawals for our leased and owned data centers occurred in regions classified as low water stress, and 22% occurred in regions classified as high or extremely high water stress.



Advancing Water Efficiency

We design AWS data centers to be highly water efficient, using about one-seventh of what an average data center withdraws. Where weather permits, we use Direct Evaporative Cooling, which requires water for less than 10% of the year. By using cooling water sparingly and more efficiently, we reduce our electricity demand year-round—with the greatest reductions occurring during peak summer conditions when grid stress may be the highest. In some of our highest water stressed regions, including the Middle East, South Africa, and India, we do not use any water to cool our data centers.

Modern AI chips generate significantly more heat than traditional servers. These chips must be packed closely together to exchange data quickly, which concentrates heat in ways that outside air alone cannot always address.

We developed the In-Row Heat Exchanger (IRHX), which captures heat directly from high-density AI hardware at the rack before the heat spreads, reducing how often water-based cooling needs to run. As we add more AI racks with IRHX, we expect a 9% reduction in water use compared to evaporative air-cooled data centers once fully operational.

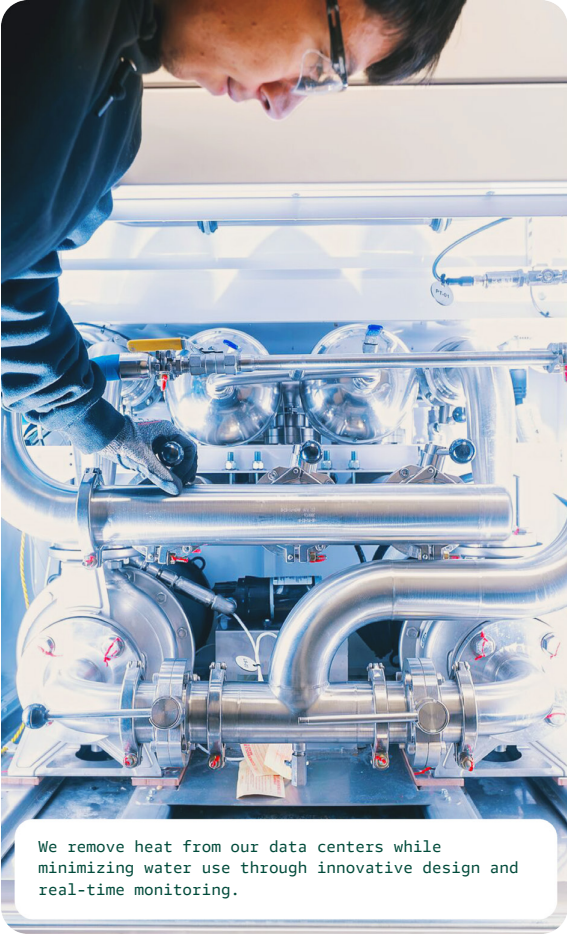
In 2025, we also scaled smart-metering technology across our global data center portfolio, enhancing real-time consumption monitoring that identifies leaks so they can be repaired, preventing further water losses.

Collectively, these and other efforts reduced our global cooling water use by 938 million liters in 2025, enabling reduction of our global data center WUE to 0.12 liters per kWh, a 20% improvement from 2024 and a 52% improvement from 2021.

To further reduce dependence on external water sources, we operate on-site cooling water treatment systems to recirculate water more often through our cooling systems. As of the end of 2025, 31 of our data centers incorporated on-site water treatment.

Water Use Effectiveness in AWS Data Centers

	2021	2022	2023	2024	2025	% Δ YoY
Water Use Effectiveness (L/kWh)	0.25	0.19	0.18	0.15	0.12	-20%



We remove heat from our data centers while minimizing water use through innovative design and real-time monitoring.

We also collaborate with peers through technology transfer and sharing best practices to improve water efficiency in shared facilities. For example, we collaborated in Singapore to implement a sidestream water treatment system that treats cooling tower water for reuse, reducing overall fresh water demand.

Scaling Responsible Water Sources for Cooling

AWS leads the [top 10 data center operators](#) in the [number of locations utilizing reclaimed water](#), wastewater that has been treated to high standards for safe reuse in cooling systems. In 2025, 26 AWS data centers used reclaimed water for cooling, preserving 849 million liters of potable water for communities and ecosystems.

As of the end of 2025, we have contracted 13 utilities to supply reclaimed water for cooling at 130 data centers across six countries. Altogether, we expect these commitments to preserve 6 billion liters of fresh water for community use annually. Across both operating and contracted reclaimed water systems, we plan to invest \$1 billion in public water infrastructure and treatment upgrades.

We also capture rainwater on-site to further reduce reliance on potable water. As of the end of 2025, AWS had installed rainwater collection systems at 14 data centers in six countries, with nine new systems added in 2025.

AWS data centers work directly with local water utilities, government agencies, and policymakers to establish and expand reclaimed water supply programs worldwide. In many regions, existing regulations do not explicitly allow reclaimed water for data center cooling, requiring us to collaborate with stakeholders to establish new use-case classifications and precedent-setting supply agreements. In Hong Kong, China, we achieved policy breakthroughs with the Water Supplies Department, which had previously restricted cooling towers to fresh water use

only, paving the way for broader regional adoption of reclaimed water for cooling. In Virginia, U.S., we worked with Loudon Water to enable reclaimed water use in direct evaporative cooling systems, a first in the state, and have since partnered with central Virginia counties to develop similar frameworks. In Mississippi, U.S., AWS became the first data center operator to commit to reclaimed water for cooling, working with Canton Municipal Utilities and Madison County Wastewater Authority to preserve 314 million liters of potable water annually while establishing a scalable model across the state.

Water Replenishment

AWS's investments in water replenishment projects increase water access, availability, and quality by restoring watersheds and bringing clean water, sanitation, and hygiene services to water-stressed communities.

At the end of 2025, Amazon had invested in 45 replenishment projects globally, which we expect will collectively return more than 18 billion liters of water annually once completed. In 2025, water replenishment projects returned 9.4 billion liters of water to communities.

Learn more about Amazon's [water stewardship efforts](#) and [water replenishment portfolio](#)



Where weather permits, we use Direct Evaporative Cooling, which requires water for less than 10% of the year. In some of our highest water stressed regions, including the Middle East, South Africa, and India, we do not use any water to cool our data centers.

Waste and Circularity

AWS data centers face distinct waste and circularity challenges, involving specialized hardware with complex lifecycles.

We draw on an industry standard waste management hierarchy that prioritizes prevention, then reduction, reuse, and recycling. To support this hierarchy, we seek to embed circular principles into our operations. We work to prevent waste from the start—through better product and packaging design, inventory management, and material sourcing—and reuse, repurpose, or donate items whenever possible. When materials cannot be reused, we prioritize recycling, followed by energy recovery, with landfill as a last resort. We also engage suppliers to reduce waste in our products and partner with organizations and local municipalities to improve recycling infrastructure and advance the transition to a more circular economy.

Maximizing Resource Efficiency in Data Centers

We focus on three pillars to embed circularity in our data center operations: design better, operate longer, and recover more. Through smarter design, extended component lifecycles, and responsible end-of-life management, AWS data centers reduce waste, avoid carbon emissions, and keep valuable materials in circulation.

Cloud circularity begins with design. AWS focuses on designing data center equipment that operates longer,

avoids excess materials, and enables repair and reuse—minimizing waste from the start. In 2025, we continued enabling additional data center hardware components to be reused, including central processing units. We are also steadily increasing the use of recycled content into components, such as piloting air-cooled heat sinks with 50% recycled aluminum.

When possible, we seek to use equipment for as long as it is operationally efficient. We are continually improving operational capabilities and extending the life of functional equipment. AWS programs have avoided the purchase of over one million new hard drives since 2023.

We prioritize improving repair, reuse, and recycling practices to recover more value from decommissioned data center assets. We leverage Amazon's re:Cycle Reverse Logistics (RRL) to securely assess used data center hardware for repair, refurbishment, and reuse, allowing equipment to be redeployed into inventory or sold to third parties. Since this program was launched in 2020, reverse logistics vendors like RRL have enabled Amazon to source retired components for reuse in data centers or for resale, which prevented 225,000 metric tons of CO₂e.⁸

For components that cannot be reused, we use RRL hubs, along with specialized vendors, to increase the amount of critical raw materials extracted and recovered. In 2025, RRL retained UL Solutions' highest Zero Waste certification (Platinum level) for its Ireland facility and is pursuing certifications across additional reverse logistics locations.⁹

Extending equipment life and accelerating recovery through technology remains a top priority. In 2025, RRL facilities began using AI-powered robots to demanufacture AWS equipment. The machines, developed by robotics start-up Molg, securely disassemble servers into components to be securely reused or recycled. The partnership started in 2024, when Amazon invested in Molg's seed round through [The Climate Pledge Fund](#).⁷



AWS prioritizes keeping functional drives in use for as long as possible, avoiding early retirement of healthy and working hard drives.

Biodiversity

Biodiversity—the variety of living species on Earth and the habitats, ecosystems, and natural processes that support them—is essential to planetary health, community well-being, and long-term business resilience. Yet habitat loss from the expansion of agriculture, urban areas, and infrastructure has led to a decline in biodiversity around the world. The complexity of measuring ecosystem and habitat health, limited supply chain traceability across countries and regions, and inconsistent biodiversity regulations complicate efforts to reduce biodiversity loss. Amazon recognizes the urgency of this crisis and the important role companies can play to prevent habitat loss or conversion and restore biodiversity.

Amazon's approach to biodiversity follows a mitigation hierarchy that prioritizes avoidance and reduction of high-value habitat loss or conversion, focused on three areas: mitigating biodiversity loss in building construction—seeking to avoid and minimize impacts related to siting, constructing, and operating our facilities; reducing habitat conversion and restoring biodiversity in our supply chain—working with suppliers to restore biodiversity; and restoring biodiversity in our communities—contributing to nature conservation and restoration in sensitive ecosystems, supported by our \$100 million commitment through the [Right Now Climate Fund](#).

Amazon supports scaling science-based solutions to address biodiversity challenges. As one example, we commissioned the creation of the [European Biodiversity Metric \(EBM\)](#), an open-source measurement method for assessing continental Europe's natural habitats to help

advance biodiversity protection efforts across Europe and demonstrate that rigorous biodiversity assessment can be integrated into business foundation at scaling.

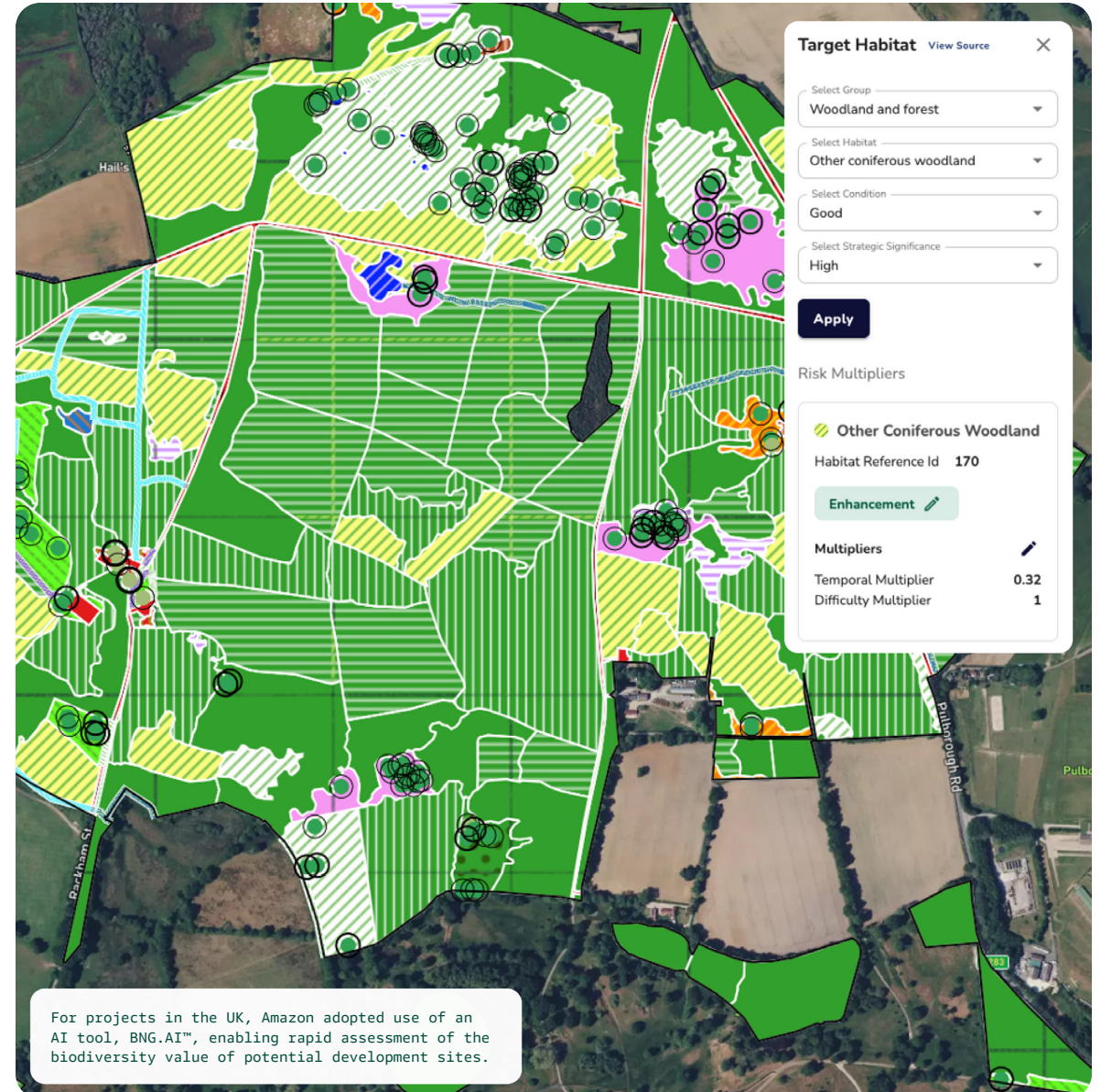
Mitigating Biodiversity Loss in Building Construction

To help mitigate potential effects on natural habitats from Amazon's built environment in our retail operations and data centers, we are continuing to develop metrics, guidance, and tools that promote best practices for preventing habitat loss and enhancing on-site biodiversity.

We have also developed a biodiversity mitigation framework, setting out rules and mechanisms for avoidance, minimization, and compensation.

In 2025, Amazon evaluated 40 new sites in the UK to assess the potential change in biodiversity value of a site upon development. Our use of a new tool, BNG.AI™, allowed for rapid evaluation of the biodiversity value of potential development sites. This third-party solution uses satellite imagery, AI, and machine learning to identify and assess habitat type and condition, enhancing the speed, accuracy, and overall efficiency of biodiversity assessments.

In 2025, Amazon also evaluated biodiversity conditions at 55 new sites outside the UK, implementing the approach developed in the UK.



Human Rights

Amazon's value chain affects millions of people globally, including those beyond our direct operations. With this scale, we have an important role to play in supporting human rights and the fundamental dignity of the people throughout our value chain, including our employees, suppliers and their workers, customers, and communities connected to our business.

We work to create an environment where our employees and individuals within our value chain are treated with respect, understand their rights, and feel empowered to speak up. To drive continued improvement, Amazon regularly evaluates and updates our policies, programs, and frameworks that identify, assess, and address salient human rights risks.

Amazon respects internationally recognized human rights as defined by international standards and frameworks developed by the United Nations (UN) and the International Labour Organization (ILO), including the [UN Universal Declaration of Human Rights](#), the [Core Conventions of the ILO](#), and the [ILO Declaration on Fundamental Principles and Rights at Work](#).

Developing and Maintaining Strong Policies and Standards

Amazon's [Global Human Rights Principles](#) reflect our commitment to respecting human rights across all business activities. In January 2025, Amazon updated these principles to align with evolving priorities, international standards, and industry best practices. In addition, Amazon's [Supply Chain Standards](#) set clear expectations for supplier conduct, including AWS suppliers. Amazon's [Modern Slavery Statement](#) details our progress and ongoing efforts to combat modern slavery.

Identifying, Assessing, Prioritizing, and Addressing Risk

To empower individual businesses to own their human rights due diligence, Amazon has established an enterprise-wide methodology and created tools for each business to identify and prioritize business-specific salient risks.

In 2020, Amazon conducted an enterprise-wide human rights saliency assessment to identify salient human rights risks under international standards.¹⁰ Since then, Amazon has conducted a growing number of business-specific due diligence assessments. We deployed Amazon's in-house risk identification methodology to AWS in 2024. In 2025, we completed a refreshed AWS assessment, expanding our analysis upstream to better understand and act on risks associated with raw materials in our supply chain.

Engaging with Stakeholders

We collaborate with stakeholders and industry partners to accelerate both local and global efforts. In 2025, AWS served in a leadership role on the Steering Committee of Tech Against Trafficking, a coalition of technology companies collaborating with global experts to help

eradicate human trafficking using technology, leading efforts to develop a comprehensive forced labor data standard, supporting the creation of actionable gap analyses, and championing public-private partnerships that improve the global response to human trafficking.

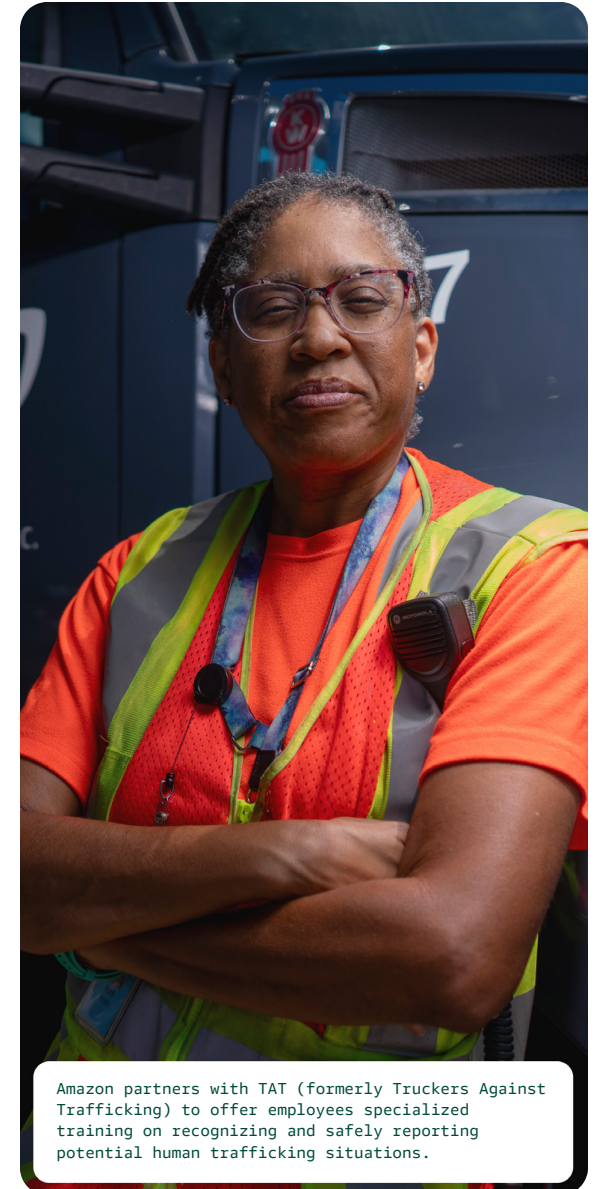
Improving Access to Effective Grievance Mechanisms and Remediation

Amazon provides multiple channels for employees to share feedback and voice any concerns. These employee engagement and communications channels include MyVoice, Connections, and the Amazon Ethics line.

All employees, contractors, suppliers, customers, and community members can share feedback and concerns through our [Human Rights and Environmental Complaints Form](#), available in 19 languages globally. In 2025, Amazon redesigned the form to include both anonymous and signed-in reporting options, improving transparency and usability.

Advancing New Technology

Innovation strengthens our ability to address human rights risks at scale. With a global network of thousands of suppliers, we are developing AI tools to enhance accountability in upholding our standards. In 2025, Amazon explored AI tools to enable more effective risk assessment, audit processing, and decision-making processes across our complex supplier network. As we continue developing and testing this technology, we maintain human oversight and expertise.



Amazon partners with TAT (formerly Truckers Against Trafficking) to offer employees specialized training on recognizing and safely reporting potential human trafficking situations.

Employee Experience

Amazon strives to be Earth's best employer by supporting the health, wellness, and growth of more than 1.5 million full- and part-time employees worldwide. Amazon offers competitive wages, comprehensive benefits, and upskilling programs that support career growth and prepare employees for future opportunities to meet our vision of helping all employees grow, thrive, and connect.

To improve access to benefits and compensation information, we enhanced the A to Z employee app and website—available in 66 countries—with an AI assistant, Aza, that offers easily accessible and personalized information about benefits, health care, and paid time off. In 2025, 95% of employees accessed the mobile app or website monthly.

Upskilling Our Employees

We are building a strong pipeline of talent to fill current and future in-demand jobs at Amazon by continuously working to enhance our AWS upskilling programs.

[AWS Grow Our Own Talent](#) ↗ helps individuals with nontraditional experience and backgrounds develop skills needed for AWS data center roles through on-the-job training and placement opportunities.

The [AWS Intelligence Initiative](#) ↗ is a 12- to 14-month rotational onboarding and technical upskilling program for engineers supporting Amazon Dedicated Cloud regions.

[AWS Skill Builder](#) ↗ helps turn AWS skills into career growth. Through in-demand cloud and AI skills practical training and validation, employees can prove what they've learned through industry recognized credentials.

Learn more about [our educational programs](#) >

Together at Amazon: Building Community and Connection

We are dedicated to building the best products and services for the most globally diverse employees, customers, and communities in the world. Amazon's strategy is to move beyond traditional supplemental programs and create scalable systems that work for everyone, by design, serving our workforce of more than 1.5 million full- and part-time employees worldwide as well as the customers, partners, and communities we reach. Building systems that address unmet customer needs and work for people around the world is a shared responsibility across Amazon.

Responsible Supply Chain

We are committed to providing products and services that are produced or supplied in a way that respects human rights and the environment, and protects the fundamental dignity of workers. Amazon identifies and addresses supply chain risks by maintaining a robust management system that includes a supplier audit program, business-unit-specific human rights and environmental due diligence, support for effective grievance mechanisms, and remediation support.

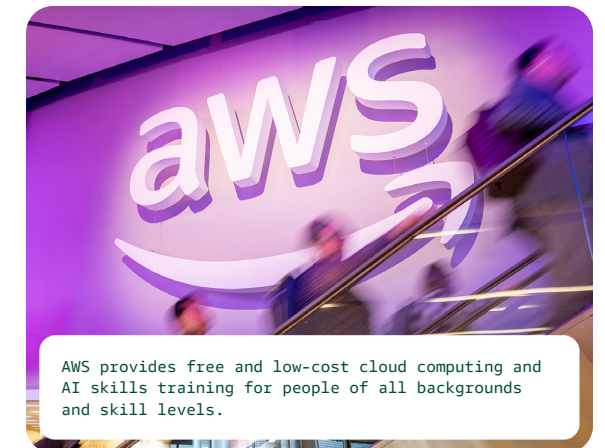
Amazon's [Supply Chain Standards](#) ↓ underpin this approach, which also includes identifying country- and supplier-specific risks and implementing site-level requirements to build suppliers' capacity to meet our standards. These standards are available in 23 languages and detail expectations for all suppliers of goods and services for Amazon, including AWS service providers, vendors, contractors, and subcontractors. Products and services delivered to Amazon must be manufactured, produced, or provided in accordance with these standards. We require our suppliers to hold their own suppliers, subcontractors, recruitment agents, and labor agents to applicable laws and these standards.

To enhance the ability of our experts to identify issues and categorize audit results more quickly and accurately, we have been using [AI audit processing tools](#) ↗. An early version of one of these tools processed audit reports 79% faster than manual review processes.

Supplier Transparency and Risk Assessment

Throughout our complex global supply chain, we continue to increase supplier transparency through supply chain mapping and industry collaboration.

In 2025, we analyzed materials flow across AWS's upstream supply chain to track materials from raw material extraction through end of life. By combining this material flow data with human rights risk assessments, we can identify where the most severe risks may exist in our supply chain and focus our due diligence efforts on the areas that matter most, including our approach to avoiding conflict minerals.



AWS provides free and low-cost cloud computing and AI skills training for people of all backgrounds and skill levels.

Communities

AWS aims to create positive outcomes in our communities using our global scale and operational strengths. We focus on two things: improving customers' lives and contributing to the fabric of communities.

Education and Skills-Building

We support learners of all ages to develop skills needed for future jobs. The [AWS Education Equity Initiative](#), a \$100 million, five-year investment in cloud and AI technology, expands access to education and technical skills globally. In 2025, we launched Future Ready—a \$2.5 billion initiative to equip 50 million people with the skills they need for the future of work by 2030. This new upskilling initiative benefits Amazon employees, students, and many others because we believe that in a rapidly changing economy, people deserve the tools to adapt, build a career, and thrive.

In 2025, we:

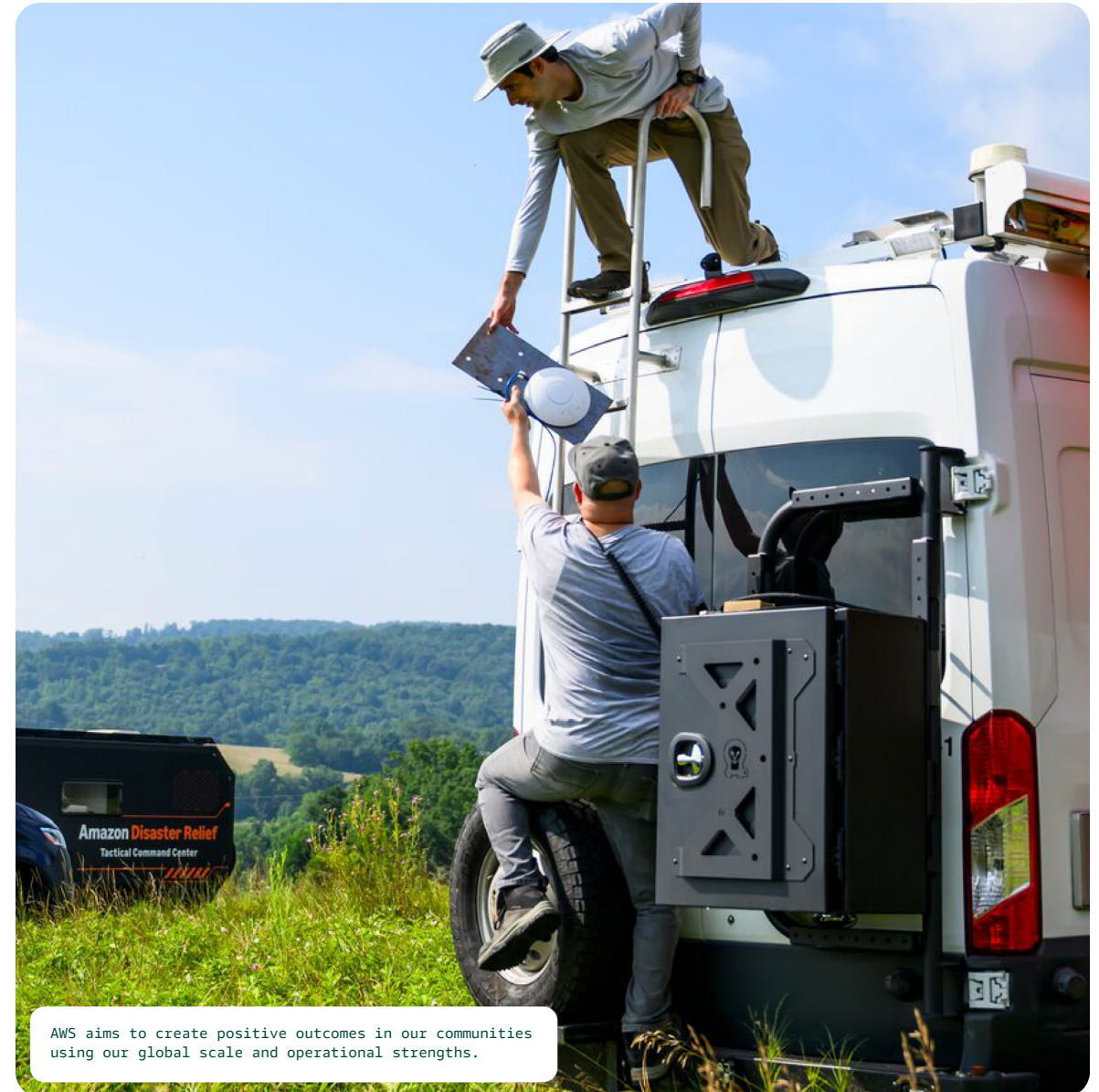
- Connected 144,500 learners to employers through the [AWS Skills to Jobs Tech Alliance](#)
- Reached 5.8 million students through the childhood-to-career computer science program, [Amazon Future Engineer](#)
- Launched 26 community funds and allocated more than \$21.1 million in hyper-local funding globally
- Trained 14,400 unemployed or underemployed individuals through AWS re/Start 12-week training sessions
- Distributed \$17.9 million in AWS cloud and AI technology for education

To expand cloud and AI technology, the [AWS Machine Learning University educator enablement program](#) provides faculty at community colleges, minority-serving institutions, and historically Black colleges and universities with the skills and resources to teach data analytics, AI, and machine learning concepts, building a diverse pipeline for in-demand jobs of today and tomorrow. Through the [AWS AI and ML Scholars program](#), we have provided access to foundational skills in AI to 50,000 learners globally. As part of the [White House's Pledge to America's Youth](#), Amazon will support AI skills training for 324,000 learners and enable AI curricula for 2,000 U.S. educators by 2028. Additionally, [AWS Academy](#) provides higher education institutions with a free, ready-to-teach AI and cloud computing curriculum that prepares students to pursue industry-recognized certifications and in-demand technology jobs.

Learn more about our [skills training programs](#) and [STEM Education programs](#)

Disaster Relief

We provide technology solutions to partners responding to emergencies, including kits to restore online access, portable mapping devices for search and rescue, and technology that prevents drones from interfering with firefighting aircraft. Amid three natural disasters in 2025, we deployed AWS cloud technology to help local governments and organizations stay connected and provided over \$1.2 million in AWS cloud and AI technology for disaster resilience efforts, including supporting Watch Duty, which runs its wildfire tracking service on AWS.



AWS aims to create positive outcomes in our communities using our global scale and operational strengths.

Endnotes

1. On-premises refers to organizations running hardware and software within their own physical space.

2. PUE measures the energy consumed by a data center to power computing equipment, cooling, and other data center infrastructure to support operations. A lower PUE value indicates greater efficiency. The theoretical minimum PUE of 1.0 would imply that all the energy consumed by a data center is being used to power computing equipment and that none is wasted on cooling or other infrastructure. Industry averages are as estimated by the International Data Corporation, [2H24 Datacenter Trends: Sustainable Datacenter Builds and CO₂ Emissions](#) ↗ Doc # US51911924, January 2025. AWS efficiency data are as estimated in [research](#) ↴.

3. Carbon-free energy includes electricity generated from sources that produce no direct carbon emissions—such as wind, solar, nuclear, hydroelectric, and geothermal—as well as site energy contracts and green tariffs with local utilities that add new renewable projects to the grid.

4. As detailed in our [Renewable Energy Methodology](#) ↴, we calculate the percentage of our electricity consumption that is matched with renewable energy by adding the amount of energy generated from renewable energy projects enabled by Amazon plus renewable energy in the grids where Amazon operates then dividing by Amazon's global electricity use.

5. The embodied carbon calculation uses the Carbon Leadership Forum's (CLF) 2021 baseline. CLF baselines represent an estimate of industry-average GHG emissions for construction materials manufactured in North America.

6. We measure progress against this goal by adding together reused water and water from replenishment and dividing that number by total water withdrawal minus water from sustainable sources, multiplied by 100%, as described in our [Water Positive Methodology](#) ↴.

7. The water stress levels in this chart use WRI's 2030 business-as-usual baseline scenario, consider source water stress, and cover only leased and owned data centers.

8. Carbon emissions abated from reuse and resale of data center hardware.

9. UL's Zero Waste to Landfill methodology defines Silver-level sites as those diverting 90%–94%; Gold-level sites as those diverting 95%–99%; and Platinum-level sites as those diverting 100% of waste, according to the UL 2799 standard.

10. The concept of salience uses the lens of risk to people, not to the business, as the starting point, while recognizing that where risks to people's human rights are greatest, there is often strong convergence with risks to the business.

On the cover

Image 1: AWS invests relentlessly in the efficiency of our data centers. We design AWS data centers to be highly water efficient, using about one-seventh of what an average data center withdraws.

Image 2: AWS is taking a direct-to-chip approach, which puts a “cold plate” directly on top of the chip. The liquid runs in tubes through that sealed plate, absorbing the heat and carrying it out of the server rack.

Image 3: Our custom-designed chips—including Trainium3 for AI model training—offer better performance per MW than its predecessor, while maintaining the same latency or response time per user.

