



Sustainability, clean energy and the cloud

AIFED, December 2, 2024

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Amazon Climate Pledge

We invest in the future, and focus on the long-term.

Further and faster,
together

COMMITMENT

On September 19, 2019, Amazon and Global Optimism announced The Climate Pledge, a commitment to meet the Paris Agreement 10 years early

THE Paris...
CLIMATE 10 years
PLEDGE 10 years early

- Commitment to reach net-zero carbon by 2040
- Over 500 company signatories committed across 40 countries and 55 industries
- Signatories collaborating on joint action projects to drive change
- \$2B Climate Pledge Fund investing in pioneering climate technologies

2023 Amazon Sustainability Report

The 6th annual report highlights important sustainability-related progress and program updates

100%

Electricity consumed globally matched by renewable energy

#1

Corporate purchaser of renewable energy in the world

13%

Decrease in overall carbon intensity

41%

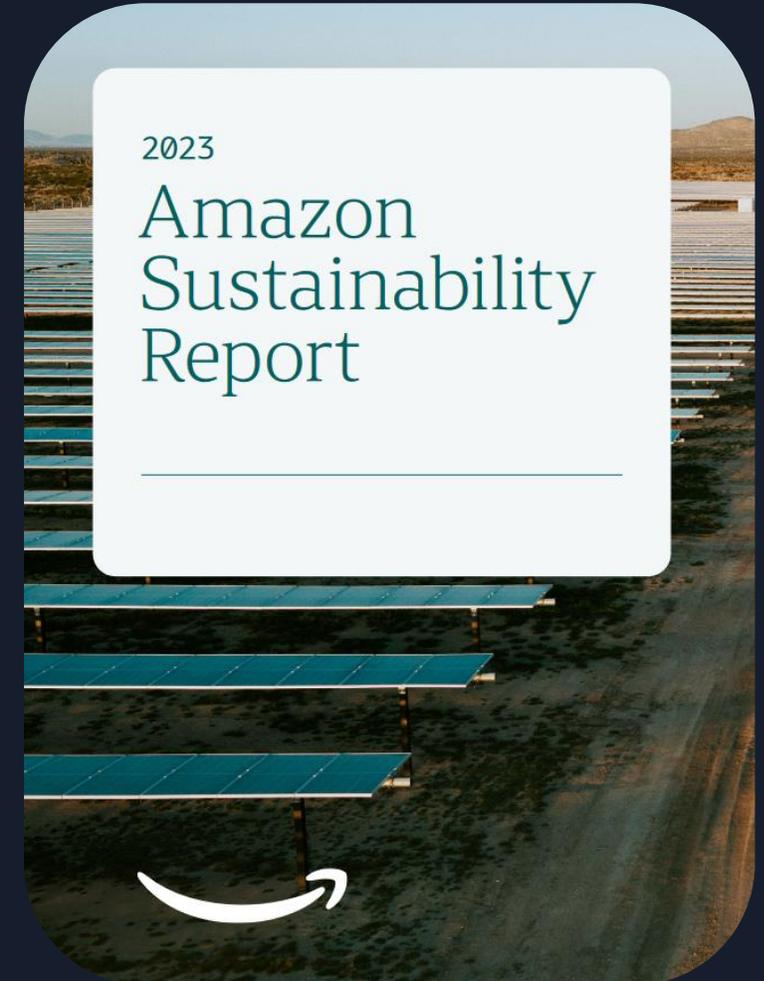
Progress towards AWS becoming water positive

3%

Reduction in absolute carbon emissions

680M

Packages delivered using 24K+ electric vehicles globally



Read the full report: <https://sustainability.aboutamazon.com/2023-sustainability-report.pdf>



Carbon-free energy goal

In 2023, Amazon achieved our goal to **match 100% of our global electricity use with renewable energy**, which we achieved by being the world's largest corporate purchaser of renewable energy.

500+

Global renewable energy projects (as of Jan 2024)

28+

Gigawatts of total renewable capacity (as of Jan 2024)

100%

Renewable energy reached across our business in 2023



PLN & Amazon to Develop 210 MW of Solar Projects in Indonesia



Dadan Kusidiana, Director General for Renewable Energy at the Energy Ministry, ESDM; Darmawan Prasodjo, President Director of PT PLN (Persero); and Carly Wishart, Managing Director, Data Center Planning & Delivery for Asia-Pacific, Japan & China, Amazon Web Services

The background of the slide features a dark blue field filled with numerous water droplets of varying sizes. Each droplet is outlined in a lighter blue and contains a small orange arc, resembling a progress indicator. A large, prominent white droplet with a thick blue outline and a large orange arc is centered in the lower-left quadrant. The overall theme is water and progress.

AWS water positive commitment

By 2030, AWS will return more water to communities than we use in our direct operations.

As of 2023, AWS is **41%** of the way toward water positive.

Indonesia: support for community water replenishment, and utility leak reduction

A data-driven approach to sustainability strategy, enabled by cloud computing



Sustainability **OF**
the cloud

Delivering a sustainable IT fleet – taking advantage of the cloud and AWS efficiency through migration



Sustainability **IN**
the cloud

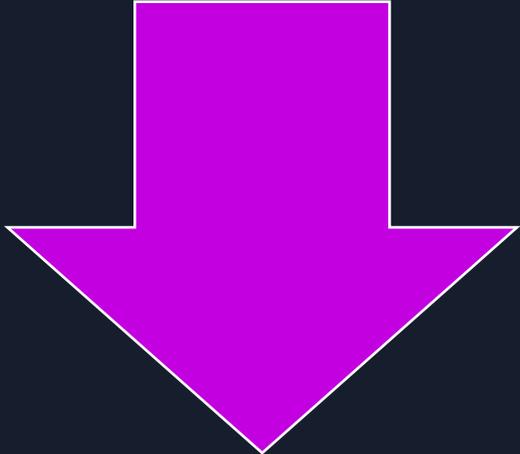
Optimizing workloads on AWS with the Sustainability pillar of the Well-Architected Framework



Sustainability **THROUGH**
the cloud

Deploying cloud-based solutions and advisory support to accelerate customer sustainability objectives

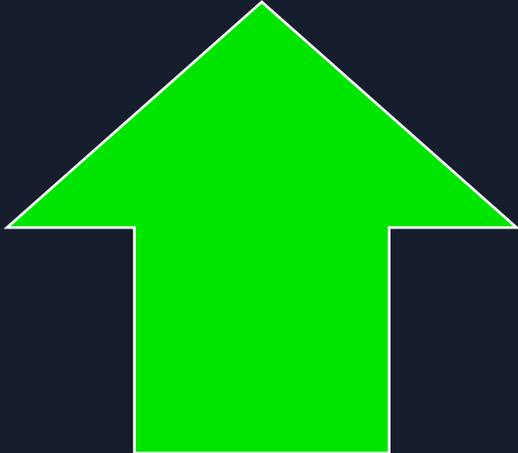
Sustainability of the AWS Cloud



Running workloads on AWS can **reduce the associated carbon footprint by up to 99%** when optimized



Running workloads on AWS is up to **4.1 times more energy-efficient** than on-premises



Asia Pacific: Carbon reduction opportunity

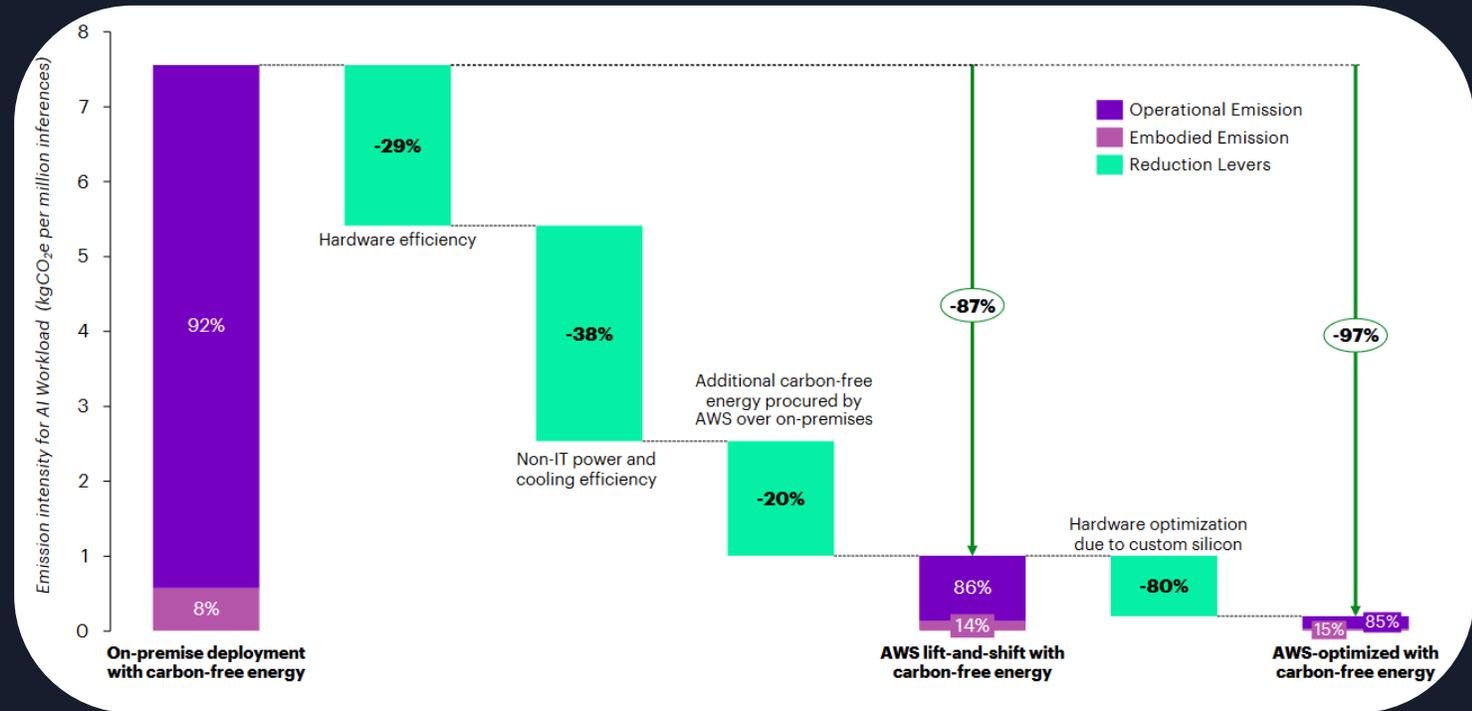
AWS enables up to **97% lower carbon emissions** when compute-heavy workloads are optimized on AWS vs. on-premises

87% lower carbon emissions when compute-heavy workloads are run as-is on AWS vs. on-premises, due to:

29% from hardware efficiencies

38% from non-IT power and cooling efficiencies

20% from additional carbon-free energy procured by AWS compared to on-premises



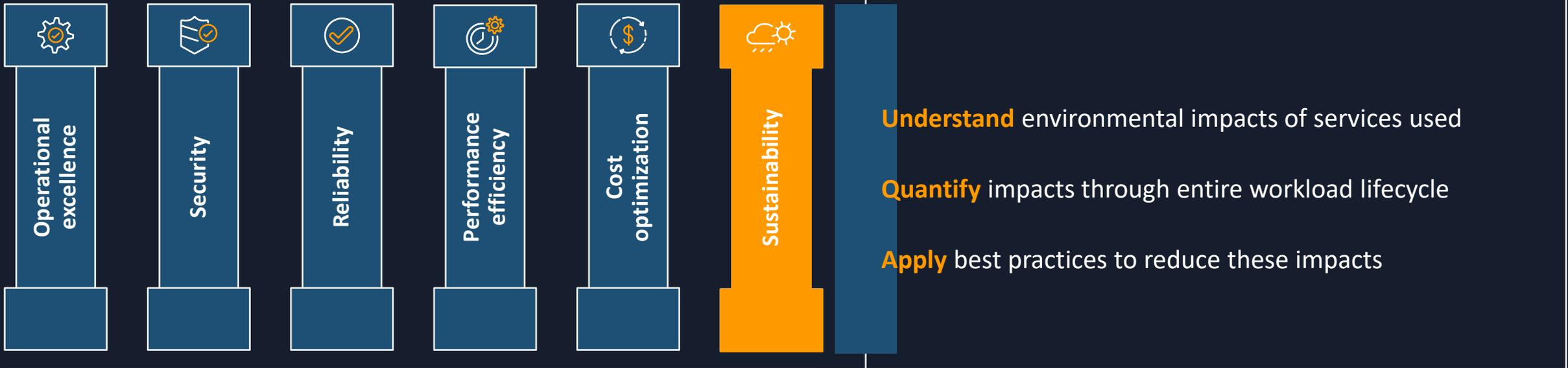
Find the report at https://sustainability.aboutamazon.com/carbon_reduction_aws.pdf



Optimize: AWS well-architected for sustainability

Business need

Time to value for feature delivery of **sustainable** products

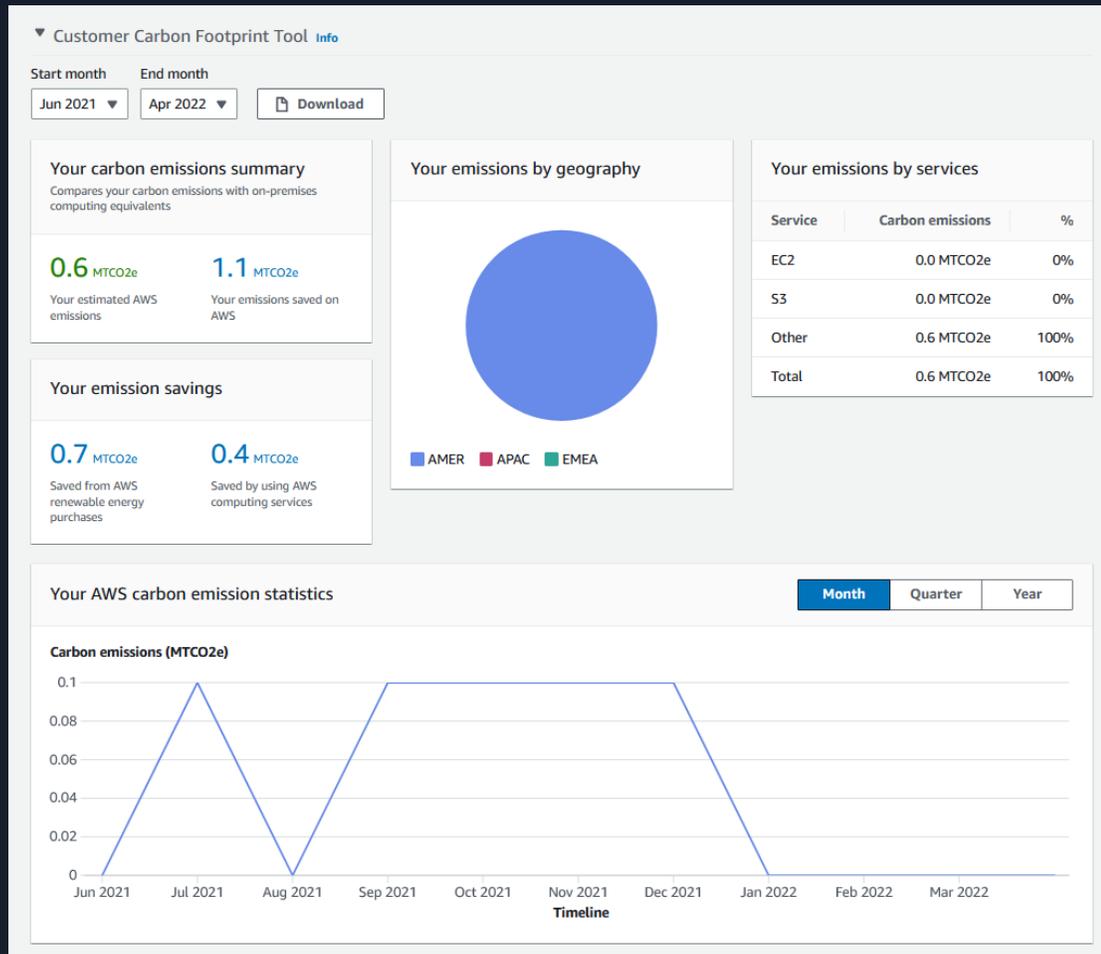


- Understand** environmental impacts of services used
- Quantify** impacts through entire workload lifecycle
- Apply** best practices to reduce these impacts

The six **well-architected** pillars



AWS customer carbon footprint tool



Calculate carbon emissions generated from your AWS workloads

Understand historical carbon footprint and review changes in emissions over time

Forecast reflects Amazon's achievement of **100% renewable energy** in 2023

Sustainability solutions are powered by data

Data is diverse, growing exponentially, and used by many applications.

AWS storage and analytics services and data programs can help.

**Open Data
Sponsorship Program**

**Amazon Sustainability
Data Initiative (ASDI)**

**AWS
Data Exchange**

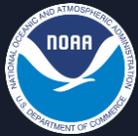
Image from Landsat 8 satellite, courtesy of the U.S. Geological Survey



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ASDI: Making access to data faster, cheaper, and easier

ASDI helps researchers, scientists, and innovators around the world advance their work on sustainability-related research by providing publicly available, free access to important scientific data.



MAXAR



NREL
NATIONAL RENEWABLE ENERGY LABORATORY



Climate data projections



Air quality



Sea surface temperature



Weather forecasts and records



Water



Environmental indicators



Satellite imagery



Energy



Ocean forecasts

Energy systems of the future powered by the cloud



Energy systems of the future bring together complex and distributed workflows.

The energy sector leverages transformative cloud-based services like data lakes, edge computing and IoT, AI and machine learning, to deliver the step-change in efficiency and performance.

Organizations are leveraging the cloud to modernize the grid to improve reliability and resiliency and to help bring renewable energy projects online sooner.

Greenko Uses AWS for Wind Monitoring

Challenge

No consolidated view of data from asset fleet. Aging IT infrastructure on premises; difficult to scale for entire asset fleet. Frequency of telemetry data did not support the use cases.

Solution

Using AWS IoT services, the AWS team worked with Greenko to ingest live data from wind turbines, hydrate IoT data lake, and perform visualizations to get a live operational dashboard, refreshed every minute. The customer is expanding to 1000+ wind turbines & developing various AI/ML use cases to support predictive maintenance and energy forecasting.

Benefits

The cost of running the solution in AWS is \$8 per wind turbine per month.

Ingests 700,00 tags per minute, with capability to expand to over 1 Million tags a minute.

Reduced OPEX for Wind Turbine OEM monitoring services by \$200k

Real time dashboarding and analytics, with field to cloud latency of ≤ 1 minute.

Work in progress to extend architecture to solar and hydro sites.

[Learn more](#)

“ Our challenges towards bringing power plants operational data from different OEM SCADA systems to central location are drastically reduced by migrating to AWS IoT. Our team also thrives on producing additional data lakes, commercial grade real time dashboarding for over 2,200 wind turbines, data analytics & predictive maintenance for business needs, effortlessly with condensed timelines & cost using best in class opensource and AWS IoT technologies.

Thirumala Raju M, Vice President & Head ICT, Greenko Group



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Company: GreenCo

Country: India

Number of Employees: 2,600

Installed Capacity: 6.2 GW

Website: [greenkogroup.com](https://www.greenkogroup.com)

About Greenko

Greenko is one of India's leading Renewable Energy companies, replacing fossil fuels with integrated decarbonized energy and grid assets enabling sustainable and affordable energy, with a net installed capacity of 7.5 GW across 15 States in India.



Amazon's collaboration mechanisms

Climate Pledge
Commitment to reach net-zero carbon by 2040.
Co-founded by Amazon with more than 400 signatories to date.

Strategic Partnerships
Tailored bilateral approach to deepen the relationship and identify collaboration areas.

Climate Pledge Fund
A \$2bn venture investing in start-ups developing sustainable technologies and services, to help decarbonize Amazon.

Amazon's partnership mechanisms

Clean Energy Accelerator
Enterprise level acceleration through, Open Innovation in collaboration with mature climate tech startups.

Industry Alliances
Amazon is joining forces with other companies through alliances. Such as Zero Emissions Maritime Buyer Alliance (ZEMBA).



Thank you!

