CLIMATE RESEARCH

Akamai IPCC RCP Summary

2026 Revision

Summary of findings

Akamai Technologies operates one of the world's largest distributed computing platforms, providing critical services in cloud computing, security, and content delivery. As climate change accelerates — with global average temperatures already 1.1°C above preindustrial levels and atmospheric CO_2 concentrations exceeding 420 ppm — the company faces significant risks and opportunities that could fundamentally reshape its core businesses. This comprehensive research report, "Adapting to Climate Change: IPCC RCP Analysis for Akamai Technologies," provides a rigorous analysis of the potential impacts of climate change on Akamai's operations under seven climate scenarios, known as Representative Concentration Pathways (RCPs): 1.9, 2.6, 3.4, 4.5, 6.0, 7.0, and 8.5, based on the IPCC Sixth Assessment Report (AR6) and building upon foundational work from AR5. These scenarios represent varying trajectories of greenhouse gas emissions and their cascading effects on global temperatures, sea levels, and extreme weather patterns through the year 2100. By systematically analyzing these scenarios, Akamai can develop robust strategies to prepare for a wide range of possible futures while aligning its sustainability goals with science-based pathways.

Our analysis focuses specifically on how climate change will affect Akamai's three key business units: cloud computing, security, and content delivery. With data centers consuming approximately 1%–1.5% of global electricity and digital infrastructure increasingly vulnerable to climate disruptions, the detailed research outlines the operational, financial, and reputational vulnerabilities these areas may face under different RCP scenarios. Critically, the analysis also highlights strategic opportunities for innovation and market leadership in the transition to a low-carbon economy — a transition that McKinsey estimates will require $9.2 trillion in annual investment through 2050. Additionally, it offers evidence-based adaptation strategies to ensure Akamai's resilience in the face of growing climate risks, from deploying next-generation energy-efficient technologies to proactively mitigating operational risks in regions prone to climate-related disruptions.

Key climate risks and opportunities

The research evaluates the risks Akamai faces across different regions and business operations, and provides an in-depth look at the global climate risks posed under each RCP scenario. The analysis includes:

RCP scenarios

Seven RCP scenarios are examined, ranging from low-emission pathways (RCP 1.9) to high-emission, business-as-usual pathways (RCP 8.5). Based on the latest IPCC AR6 projections, the effects of these scenarios span a wide range: temperature increases from 1.0°C to 4.4°C (best estimate) by 2100, global mean sea-level rise from 0.28 to 1.01 meters (with low-likelihood high-impact scenarios potentially exceeding 2 meters under RCP 8.5), and substantially increased frequency and intensity of extreme weather events including heat waves, floods, storms, and wildfires. Under RCP 8.5, the probability of unprecedented heat extremes increases by a factor of 9.4 compared to preindustrial conditions, while tropical cyclone intensity is projected to increase by 10% globally.

Global impacts

The analysis spans multiple global regions, focusing on key metropolitan areas critical to Akamai's operations:

- **North America:** Cities like Miami, New York, Los Angeles, and Dallas face increasing risks from heat waves, hurricanes, and sea-level rise under higher RCPs.
- **Europe:** Amsterdam, Frankfurt, London, and Paris are vulnerable to extreme heat, flooding, and sea-level rise.
- **Asia-Pacific (APAC):** Cities like Chennai, Singapore, and Jakarta face extreme heat, monsoon flooding, and sea-level rise.
- **Latin America (LATAM):** São Paulo, Buenos Aires, and Mexico City face risks from heat waves, floods, and water shortages, while Rio de Janeiro faces coastal flooding.

Risks to Akamai's core business units

Cloud computing

Severity: HIGH under RCP 6.0–8.5

Summary: Data center vulnerability increases under all RCP scenarios, with risk severity rising from LOW (RCP 1.9–2.6) to MODERATE (RCP 3.4–4.5) to HIGH (RCP 6.0–8.5). Primary risk drivers include rising cooling demands (increasing costs 15%–40% by 2050), energy supply disruptions from grid instability, and physical damage from storms and floods. Data centers in coastal metros (Miami, Singapore, Amsterdam) and heat-prone regions (Phoenix, Chennai, Dallas) face the highest near-term risks (by 2040), while stranded asset risk becomes material under higher RCP scenarios by 2050–2060.

Security

Severity: MODERATE-HIGH under RCP 4.5+

Summary: Cybersecurity threats and physical security risks grow from MODERATE (RCP 1.9–3.4) to HIGH (RCP 4.5–8.5) as climate-induced disruptions create vulnerability windows. Security incident rates during climate events could increase 25%–75% compared to baseline operations. Primary risk drivers include expanded attack surfaces during disaster recovery, physical security system failures

(affecting 15%–25% of facilities under RCP 6.0–8.5), and workforce availability gaps during regional emergencies. These risks are already materializing and will intensify continuously through 2100.

Content delivery

Severity: MODERATE-HIGH under RCP 6.0–8.5

Summary: Network infrastructure vulnerability increases from LOW (RCP 1.9–2.6) to MODERATE (RCP 3.4–4.5) to HIGH (RCP 6.0–8.5), with network damage events projected to occur 2–3x more frequently under higher scenarios. Primary risk drivers include physical damage to edge locations and network infrastructure, latency degradation of 20 ms – 50 ms during extreme events affecting SLA compliance, and bandwidth congestion when traffic spikes coincide with reduced capacity. Edge location concentration risk in climate-vulnerable metros (25%–35% of capacity) creates systemic exposure requiring geographic diversification by 2035–2040 to mitigate.

Cross-business unit risk

Severity: MODERATE-HIGH across all scenarios

Summary: In addition to business unit–specific risks, Akamai faces cross-cutting climate risks that affect all operations: (1) supply chain disruptions extending hardware procurement lead times 30%–60% under RCP 6.0–8.5, (2) insurance market contraction increasing costs 50%–200% for high-risk locations, (3) regulatory compliance complexity as mandatory climate disclosure requirements expand globally, and (4) stranded asset risk for facilities becoming economically unviable before end of service. These cross-cutting risks require enterprise-wide response strategies coordinated across business units.

Adaptation strategies for key metros

To address the region-specific impacts of climate change, the report offers tailored adaptation strategies for Akamai's critical business metros. These strategies are prioritized based on three criteria: (1) climate exposure severity under RCP 4.5–8.5 scenarios, (2) operational and financial materiality to Akamai's global platform, and (3) implementation feasibility within a 5- to 10-year strategic planning horizon. Collectively, the recommended strategies could reduce Akamai's climate-related cost exposure by 30%–45% under higher RCP scenarios, while strengthening service reliability and competitive positioning. Each region presents distinct risk profiles requiring differentiated investment, partnership, and operational approaches:

North America

- **Coastal infrastructure hardening:** Partner with colocation and data center providers in coastal metros — particularly Miami, New York, and Washington, D.C./Ashburn — to advance hardening against sea-level rise and intensifying hurricanes. Priority engagement areas include provider elevation of critical equipment above projected 100-year flood levels, installation of submersible flood barriers, and renegotiation of colocation agreements to require provider

investment in flood defenses. Estimated provider-led investment: $15M–$30M per high-risk facility; payback period 7–10 years through avoided disruption costs.

- **Heat resilience and renewable energy:** Work across our supply chain to seek provider adoption of advanced cooling solutions (liquid cooling, AI-driven thermal management) and renewable energy procurement across heat-exposed metros (Phoenix, Dallas, Atlanta) to mitigate, where possible with suppliers, 25%–50% projected increases in cooling loads. Support long-term power purchase agreements (PPAs) in Texas and the Southeast to hedge against energy price volatility. Strategic priority: collaborate with providers to complete cooling system upgrades at top 10 heat-exposed facilities by 2030.
- **Wildfire and grid resilience for the West Coast:** Engage providers at Los Angeles, San Jose, and Seattle facilities to enhance backup power and air filtration to address wildfire smoke impacts and Public Safety Power Shutoffs (PSPS). Pursue diversification of edge capacity away from single-grid dependency in California to reduce concentration risk.

Europe

- **Sea-level rise and flood defense:** Address existential sea-level rise risk in Amsterdam by partnering with data center providers committed to Delta Works–aligned flood defenses and engage with providers on Thames Barrier modernization planning for London facilities. Under RCP 6.0+, current Amsterdam flood defense systems may prove insufficient by 2060 — requiring contingency planning with providers for capacity migration to higher-elevation alternatives such as Frankfurt or Dublin.
- **Renewable energy and AI cooling:** Work with providers to leverage Europe's mature renewable energy markets and EU Green Deal incentives to accelerate 100% renewable energy procurement at Frankfurt and Paris facilities. Encourage provider deployment of AI-based cooling systems aligned with the EU Energy Efficiency Directive's data center efficiency requirements (PUE targets of 1.3 by 2030). Capitalize on CSRD compliance positioning to differentiate Akamai with European enterprise customers.

Asia-Pacific (APAC)

- **Climate-resilient infrastructure and water-efficient cooling:** Partner with providers in Chennai, Singapore, and Jakarta to seek flood-hardened infrastructure addressing monsoon flooding and sea-level rise, and to advance closed-loop and air-cooled systems that reduce water dependency in water-stressed metros. Work with regional renewable energy providers to support 100% renewable energy commitments amid rapid APAC data center expansion (15%–20% annual capacity growth). Strategic consideration: Jakarta's combined subsidence and sea-level rise trajectory warrants long-term capacity migration planning with providers toward higher-elevation alternatives such as Bandung or Singapore-equivalent facilities.
- **Typhoon and bushfire resilience:** Reinforce Osaka facilities against intensifying typhoon activity (post-Jebi-class events) through enhanced storm surge protection and backup power systems. For Sydney, address bushfire-related grid instability and air quality impacts through battery storage investments and HEPA-grade air filtration upgrades.

Latin America (LATAM)

- **Water-efficient cooling and renewable energy:** São Paulo and Buenos Aires face escalating heat and water stress; recommended actions include deploying water-efficient closed-loop

cooling systems, securing renewable energy through Brazil's hydroelectric and Argentina's emerging wind markets, and establishing water-rights contingency plans. For Mexico City and Santiago, where chronic water scarcity threatens long-term data center viability, evaluate transition to fully air-cooled architectures or strategic capacity migration to less water-stressed Latin American markets (for example, Bogotá, Querétaro).

- **Coastal resilience and economic risk hedging:** For Rio de Janeiro and Buenos Aires coastal facilities, implement storm surge protection and landslide-resistant infrastructure. Across LATAM, structure data center contracts with USD-denominated terms or currency hedging provisions to mitigate climate-correlated economic volatility that could affect 20%–40% of total exposure under higher RCP scenarios.
- **Cross-regional implementation priorities:** While region-specific adaptations are tailored to local risks, three cross-cutting priorities apply globally: (1) embed climate risk criteria into all data center site selection and lease renewal decisions starting in 2026, (2) establish a Climate Adaptation Capital Reserve of 3%–5% of annual infrastructure spend to fund priority resilience investments, and (3) develop regional climate response playbooks integrated with existing business continuity plans by end of 2026. These foundational capabilities enable disciplined execution of the regional strategies outlined above.

Financial exposure

The financial analysis contained in this research offers a comprehensive, scenario-based view of the potential cost implications for Akamai under different RCPs, providing critical insights into how evolving climate risks may influence financial and operational strategies. Our quantitative modeling indicates that as climate-related challenges intensify under higher RCPs (RCP 6.0 to 8.5), operational and capital expenditures could increase by 15%–40% across global operations by 2050, driven by infrastructure hardening requirements, elevated cooling demands (estimated at 5%–15% additional energy consumption per degree Celsius of ambient temperature increase), and supply chain disruptions. These cost escalations are directly linked to the projected rise in extreme weather event frequency — with the IPCC projecting a 2x–3x increase in category 4–5 hurricanes and a 5.7x increase in extreme heat events under RCP 8.5.

Moreover, data center providers — integral to Akamai's service delivery infrastructure — are increasingly factoring climate adaptation costs into their pricing structures. Industry analysis indicates that colocation providers are implementing climate resilience investments ranging from flood defense upgrades to advanced cooling systems and renewable energy integration. These investments could translate to pass-through cost increases ranging from 0% (under aggressive low-carbon pathways where operational efficiencies offset adaptation costs) to as much as 30% under RCP 6.0–8.5 scenarios, where providers must simultaneously address physical climate risks and volatile energy markets. Specific cost drivers include: (1) enhanced flood defenses and elevated infrastructure in coastal facilities, (2) liquid cooling and AI-driven thermal management systems to address 15%–30% increased cooling loads, and (3) renewable energy procurement to hedge against energy price volatility projected at 20%–50% above baseline under higher RCP scenarios.

To mitigate these potential cost impacts, Akamai is committed to closely monitoring the evolving cost structures and negotiating with providers to manage expenses proactively. We will also explore opportunities for strategic partnerships that can enhance our resilience while keeping costs

manageable. By continuously analyzing financial data and scenario projections, we aim to identify early indicators of significant cost shifts and implement measures to mitigate financial risks effectively, ensuring our operations remain both sustainable and cost-efficient.

Alignment with our sustainability goals

The report emphasizes that Akamai's sustainability goals are essential in mitigating climate risks and seizing opportunities:

- **100% renewable energy transition:** Achieving 100% renewable energy by 2030 (RCP 1.9) or by 2040 (RCP 3.4). Akamai should prioritize investments in large-scale solar and wind energy projects and leverage renewable energy contracts.
- **Net-zero emissions:** Net-zero emissions are critical to all RCPs, with aggressive investments required in carbon capture technologies and carbon offsets.
- **Efficiency and circularity:** Working with our partners to encourage retrofitting existing data centers with energy-efficient technologies such as liquid cooling systems and AI-powered energy management will help meet sustainability targets. Additionally, embracing circular economy principles, like server recycling and hardware lifecycle management, can significantly reduce waste.
- **Supplier engagement:** Reducing Scope 3 emissions by requiring suppliers to adopt sustainability certifications like The Climate Pledge, ISO 14001, or Science Based Targets initiative (SBTi) is essential to address climate risks across the supply chain.

CSRD and double materiality framework alignment

EFRAG overview and Akamai's alignment

The European Financial Reporting Advisory Group's (EFRAG) Corporate Sustainability Reporting Directive (CSRD) introduces comprehensive sustainability standards under the European Sustainability Reporting Standards (ESRS). Akamai's alignment with these standards through our data center partnerships enhances our resilience strategy and solidifies our commitment to climate accountability.

Key ESRS disclosure requirements

Akamai addresses several key ESRS areas through its global operations and collaborative efforts with data center partners. The following reflects the confirmed results of Akamai's 2025 Double Materiality Assessment, which identified the following subtopics as material: E1-2 (Climate Change Mitigation), E1-3 (Energy), E2-1 (Pollution of Air), E2-5 (Substances of Concern), E4-3 (Impacts on the Extent and Condition of Ecosystems), E4-4 (Impacts and Dependencies on Ecosystem Services), E5-2 (Resources: Outflows Related to Products and Services), and E5-3 (Waste). Below, the latest analysis:

ESRS E1 (Climate Change)

E1-2 Climate Change Mitigation and E1-3 Energy: Confirmed **material** in Akamai's 2025 Double Materiality Assessment. As an operator of energy-intensive digital infrastructure, Akamai's most significant climate impact is the GHG footprint of its global network (E1-6), driven primarily by electricity consumption (E1-3 Energy). Mitigation actions (E1-2) include 100% renewable energy procurement, energy-efficient hardware refresh, AI-driven cooling optimization in partner facilities, and supplier engagement on Scope 3 emissions. Anticipated financial effects from transition risks (E1-9) include rising energy prices, expanding carbon-pricing mechanisms, and pass-through costs from data center providers' resilience and decarbonization investments.

ESRS E2 (Pollution)

E2-1 Pollution of Air and E2-5 Substances of Concern: Confirmed **material** in Akamai's 2025 Double Materiality Assessment. While Akamai does not operate heavy industrial processes, two pollution subtopics are material: (i) E2-1 Pollution of Air, arising indirectly from electricity generation supplying Akamai's network (NOx, SOx, and particulate co-pollutants from nonrenewable grid mix) and directly from emergency backup generators at partner data centers; and (ii) E2-5 Substances of Concern, associated with the hardware lifecycle (for example, heavy metals, brominated flame retardants, and other regulated substances in servers and networking equipment). Akamai manages these impacts through accelerated renewable energy procurement, supplier specifications aligned with RoHS and REACH, and e-Stewards–certified end-of-service processing to prevent release of substances of concern.

ESRS E3 (Water and Marine Resources)

Assessed as **not material** in Akamai's 2025 Double Materiality Assessment. Akamai's distributed network architecture is not water-intensive at the corporate level, and water consumption at colocation facilities is managed by data center providers. While certain water-stressed metros (for example, Mexico City, Santiago, Chennai, Phoenix) warrant operational diligence in provider selection and cooling-technology preferences, water did not meet the materiality thresholds for either impact or financial materiality at the enterprise level. This topic is monitored on an ongoing basis and may be reassessed in future cycles as climate impacts intensify.

ESRS E4 (Biodiversity and Ecosystems)

E4-3 Impacts on the Extent and Condition of Ecosystems and E4-4 Impacts and Dependencies on Ecosystem Services: Confirmed **material** in Akamai's 2025 Double Materiality Assessment. Although Akamai primarily leases space in existing facilities, the 2025 assessment identified material indirect impacts and dependencies tied to the upstream value chain. E4-3 (Extent and Condition of Ecosystems) is driven by land-use change, mining, and habitat disturbance associated with raw-material extraction (for example, rare earths, copper, semiconductors) and large-scale renewable energy and data-center development. E4-4 (Impacts and Dependencies on Ecosystem Services) reflects Akamai's reliance on ecosystem services such as freshwater provisioning for cooling and climate regulation supporting grid stability. These impacts are managed through supplier engagement on responsible sourcing, e-Stewards–certified material recovery, and renewable energy procurement that prioritizes lower-impact sites.

ESRS E5 (Resource Use and Circular Economy)

E5-2 Resource Outflows and E5-3 Waste: Confirmed **material** in Akamai's 2025 Double Materiality Assessment. Akamai's business model relies on a vast network of physical hardware, making outflows (E5-2) and waste (E5-3) material. Resource inflows (E5-4) cover the procurement of new servers, networking equipment, and storage. Resource outflows related to products and services (E5-5/E5-2) and waste management (E5-3) are addressed through Akamai's e-Stewards–certified hardware lifecycle program, including server refurbishment, component remarketing, and responsible end-of-service recycling to reduce e-waste volume and toxicity.

Cross-industry collaboration: Public policy and industry engagement

Akamai actively collaborates with industry organizations such as the Corporate Energy Buyers Association (CEBA), Ceres BICEP Network, and the Information Technology Industry Council (ITI) to advocate for sustainable energy policies and climate resilience. These partnerships enable Akamai to contribute to industrywide efforts in promoting renewable energy adoption, enhancing energy efficiency, and supporting climate-resilient policies that align with our operational goals and environmental commitments.

Through CEBA, Akamai collaborates with other companies to advance access to renewable energy sources, helping to drive down costs and increase renewable capacity in key markets. CEBA's initiatives align with Akamai's mission to reach 100% renewable energy, and our involvement supports policies that facilitate the transition to a cleaner energy grid.

As a member of the Ceres BICEP Network, Akamai engages with policymakers to support climate policies that encourage emissions reduction and resource efficiency. Through this network, we join a broad coalition of businesses advocating for ambitious climate action that benefits both industry and society, fostering resilience in our global data center operations.

Our partnership with the ITI enables us to collaborate with technology leaders and government bodies, focusing on shaping policies that support climate resilience within the tech sector. By working closely with the ITI, we ensure that our industry's specific needs for energy efficiency and resilience are represented in policy discussions, allowing Akamai to influence regulatory developments that impact data center sustainability worldwide.

Actionable recommendations

To build resilience and ensure cost-effective operations, Akamai is prioritizing the following strategies:

1) **Disaster recovery and resilience:** Build redundancy into Akamai's IT and network architecture, enhance disaster recovery and failover plans, and prioritize provider and metro diversification to reduce climate concentration risk.
2) **Edge computing:** Maximize the use of edge computing to reduce dependence on centralized data centers and improve resilience to extreme weather disruptions.

3) **Cross-industry collaboration:** Partner with organizations such as CEBA, Ceres BICEP Network, and the ITI to advocate for renewable energy, energy efficiency, and climate-resilient policies.
4) **Energy efficiency innovations:** Work with data center partners to deploy AI-driven cooling systems, liquid cooling, and energy-efficient hardware across all data centers to reduce operational costs and energy usage.
5) **Employee and community engagement:** Foster a culture of sustainability within Akamai by embedding sustainability goals into employee assessments and promoting corporate social responsibility (CSR) programs aimed at environmental education and community resilience.

Conclusion

As climate change continues to reshape the global operating environment, Akamai is positioned to adapt its operations strategically to mitigate risks while capturing emerging opportunities in the low-carbon transition. Our analysis demonstrates that by aligning with ambitious climate pathways — particularly RCP 1.9 and RCP 2.6 — Akamai can establish itself as an industry leader in sustainability, securing long-term competitive advantage in a carbon-constrained economy where an estimated 40% of enterprise procurement decisions now incorporate sustainability criteria. The financial modeling indicates that early action on climate adaptation yields a 3:1 return on investment through avoided disruption costs, operational efficiencies, and enhanced market positioning. Implementing the recommendations from this report will enable Akamai to maintain operational excellence while making meaningful, measurable contributions to the global climate response.

Want to learn more?

Visit **akamai.com/sustainability** to learn about our approach to building a more sustainable future.