



Sustainable Leadership Across the Digital Ecosystem

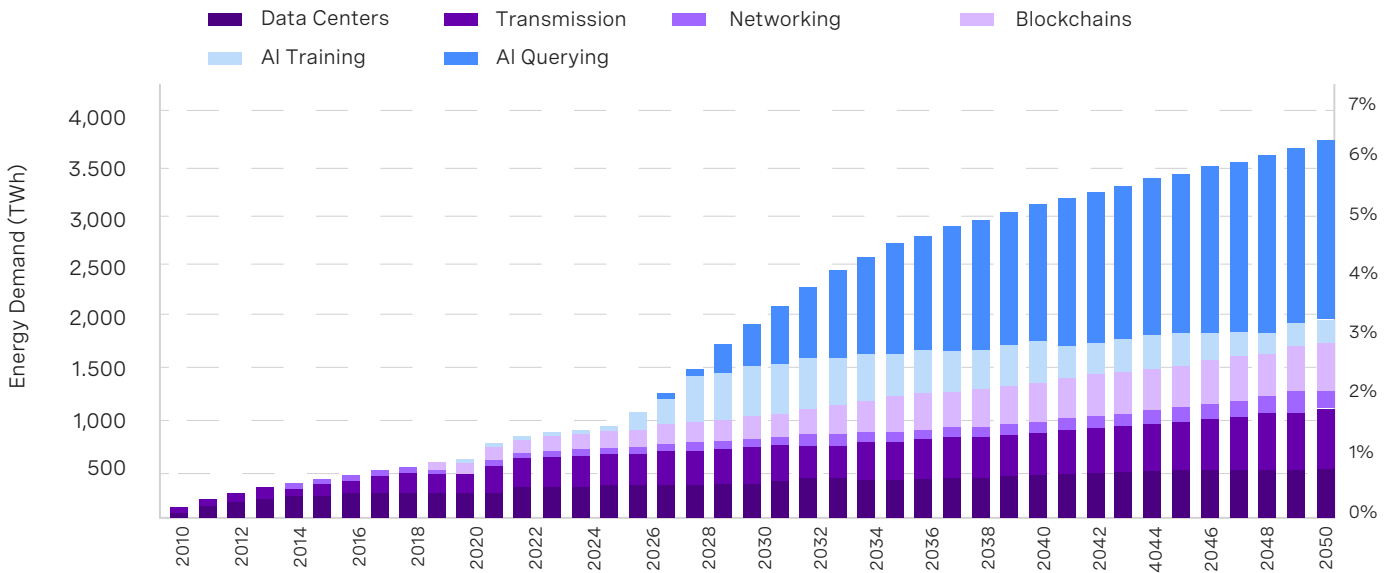


Almost halfway through the [Decade of Action](#), companies across the digital ecosystem—such as data center operators, telecom networks, equipment manufacturers, utility providers, mobile device manufacturers, and the investors fueling their growth—are facing a critical sustainability challenge: a market disequilibrium for green electricity.

Demand for green electricity is skyrocketing, driven by generative artificial intelligence (AI), cryptocurrencies and other innovations requiring massive computing power and extensive data handling capabilities.

According to the [International Energy Agency \(IEA\)](#), global electricity consumption by data centers could [double between 2022 and 2026](#), reaching more than 1,000 TWh. For context, that's equivalent to the entire electricity consumption of Japan. And based on 2022 estimates, generative AI alone is expected to drive [more than three-quarters](#) of global data centers' power demands in 2027. By 2050, the energy consumption of data processing within the digital ecosystem is projected to reach 3,750 TWh (see Figure 1A) and constitute 7 percent of global electricity consumption (see Figure 1B), driven by both operational needs and cooling this vast array of equipment. As such, there is increasing pressure from regulators, customers, and society at large to push for a shift from traditional grey electricity to more sustainable, green sources in an effort to curb greenhouse gas emissions. However, this sharply increasing demand collides with a stark reality in terms of supply.

Figure 1A: Global Digital Energy Demand (2010-2050)



The supply of green electricity is anticipated to be constrained due to the need for a massive scale-up of key low-carbon technologies like solar, wind and hydropower.

By 2030, we may already see global shortages in green electricity (see Figure 1C). An [additional \\$4 trillion could be needed annually](#) compared to 2020 to reach net-zero goals, representing around 9 percent of global GDP. Additionally technological hurdles, such as energy storage for handling [demand mismatches](#), must be overcome to ensure grid stability and prevent immense costs.

Figure 1B: Global Digital Electricity Consumption (2010-2050)

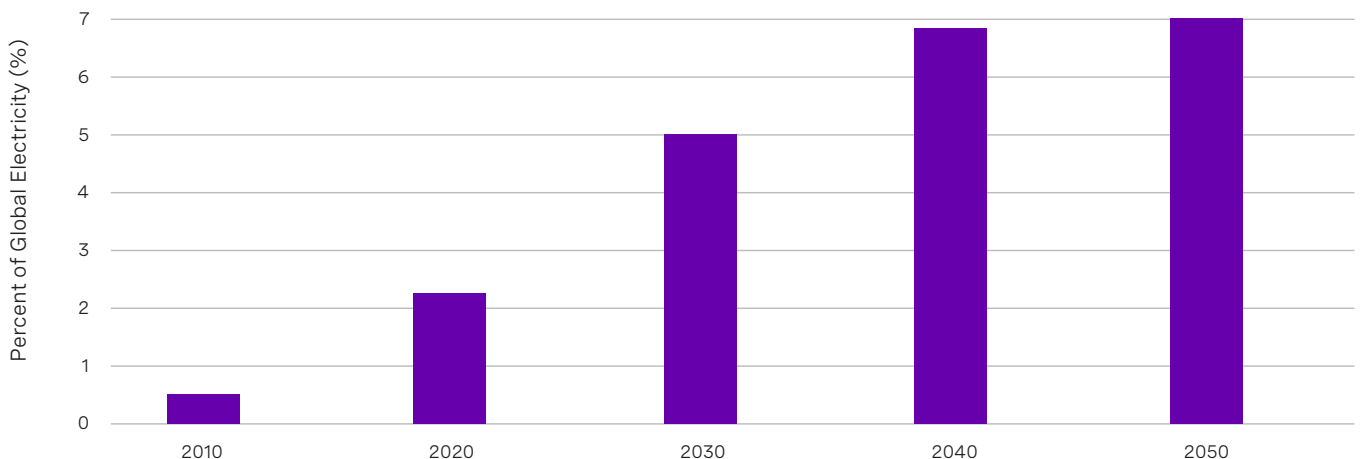
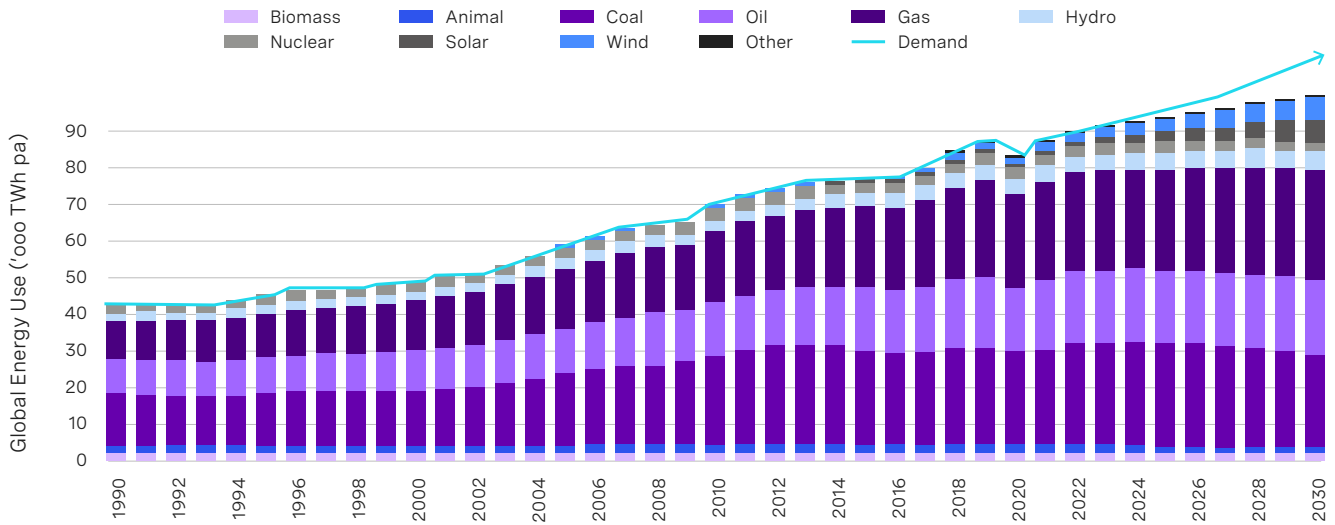


Figure 1C: Global Energy Use by Source (1990-2030)



Source: Thunder Said Energy's "Digital Technologies in the Energy Transition", April 2023

In addition to this dilemma of sourcing green electricity, players within the digital ecosystem face other crucial sustainability challenges, as outlined by the United Nations' [Sustainable Development Goals](#). Mobile device manufacturers, for instance, may focus on the longevity and reparability of their hardware and software, as well as living wages and better labor conditions for miners of rare earth metals. Furthermore, across the sector, there is a heightened emphasis on promoting gender equality and diversity. To further advance solutions to achieving sustainability objectives, these companies should embrace a two-pronged strategy:

- **Partner across the digital ecosystem:** Collaboration across different segments of the digital ecosystem is crucial. A good example are "hyperscalers," who guarantee a minimum price level per kWh green electricity for a predefined period of time, which enables utility companies to invest in capital intensive renewable energy facilities such as off-shore wind parks. By pooling resources and expertise, stakeholders can collectively enhance their sustainability efforts.

- **Drive sustainability from within:** It is in the best long-term interest of individual entities within the digital ecosystem to intensify their focus on minimizing their carbon footprints. This entails adopting innovative technologies, optimizing energy usage, and shifting towards greener alternatives wherever possible. For example:

- The transition from traditional cooling methods, such as room-based cooling to more energy-efficient systems like rack-based or immersion cooling.
- Transferring data processing tasks from a data center experiencing a temporary shortage of renewable electricity to one with abundant renewable electricity. Shifting data (megabytes) is more efficient than transferring electricity (megawatts) hour by hour.

From navigating the green electricity dilemma and broader sustainability issues, to the usual business challenges around innovation, supply chain complexities, and managing a high-performing organization, leaders across the digital ecosystem face a formidable challenge. To succeed, they need a team of sustainable leaders, reinforced by a purposeful governance structure.

Talent actions for a sustainable digital future

Cultivate sustainable leadership

The journey towards a greener digital infrastructure demands leaders who not only understand the technical nuances of digital operations, but also prioritize sustainability within every decision-making process. This calls for a new breed of **sustainable leaders** (see Figure 2), who embody a commitment to environmental and social stewardship while navigating the complexities of the digital realm. Across industries, these leaders bring a sustainable mindset to their organizations to channel four key competencies into sustainable outcomes:

Figure 2: RRA's Sustainable Leadership Model



▪ **Multi-level systems thinking** is required to understand the intricate interdependencies between technology, environment, and society. This approach enables leaders to strategize and implement solutions that optimize digital infrastructure operations while minimizing environmental impact. For instance, sophisticated data center operators now demand hourly matching of demand and supply for sustainable electricity, not just on an annual basis, reflecting a deep commitment to real-time sustainability. Furthermore, several digital infrastructure companies are

utilizing AI to enhance site efficiency and are driving clean energy policies within their data center operations. These examples underpin how companies are making strategic decisions with a systemic understanding of their impact on both the environment and society.

▪ **Stakeholder inclusion** is paramount to actively engage with a diverse range of voices, from investors and employees to communities and customers. By valuing and integrating these perspectives into their decision-making processes, sustainable leaders ensure that their

strategies are equitable, sustainable, and have broad support. In addition to partnering across the digital ecosystem as discussed in the previous section, industry leaders have formed coalitions to work towards common sustainability goals.

- **Disruptive innovation** results from understanding that maintaining the status quo is insufficient for the challenges we face. Sustainable leaders are unafraid to explore and invest in groundbreaking technologies and practices. In addition to the distribution power arrangements and cooling innovations discussed in the previous section, this might include advancing energy-efficient data processing or adopting renewable energy sources, thereby driving the industry towards a more sustainable future.
- **Long-term activation** is another hallmark of sustainable leadership. Rather than being swayed by the pressures of short-term gains, executives need to focus on long-term sustainability goals and investments, committing to strategies that may take years to bear fruit, but ultimately lead to more sustainable and resilient digital infrastructure ecosystem. They embed sustainability into the culture of their companies.

Companies seeking sustainable leaders need to identify, nurture and reward talent with a keen interest in this space, offering training and development programs that promote sustainable practices and innovative thinking.

Integrate sustainability into core competencies

The complexity of achieving sustainability goals in the digital infrastructure sector necessitates collaboration across various functions to embed sustainability into corporate strategy. Talent management strategies should, therefore, encourage cross-functional teams that work together to identify and implement sustainable practices.

Implementing comprehensive sustainability programs and focusing on education and leadership training are pivotal for advancing green initiatives. Organizations are establishing

extensive Environmental, Social, and Governance (ESG) frameworks, setting ambitious sustainability targets, and engaging in rigorous reporting to monitor progress. This systemic approach ensures accountability and fosters a culture of continuous improvement.

Concurrently, by investing in sustainability education and embedding these values deeply into the organizational ethos, companies are preparing a new generation of leaders. These leaders are not only adept in their technical and commercial roles but are also committed to driving sustainability within their operations, demonstrating a holistic approach to integrating sustainable practices across the industry.

Executives who possess a deep understanding of the sustainability challenges and opportunities within the digital infrastructure sector can embed sustainability into the core of organizational culture and operations. This will empower organizations to lead with innovation, resilience, and a commitment to environmental stewardship, positioning them as frontrunners in the industry.

Reward sustainable innovation

To motivate and retain talent passionate about sustainability, organizations must establish clear incentives and rewards for sustainable innovations and practices.

In some cases, a few industry players have introduced sustainability as a significant factor in determining bonuses for their senior leaders, allocating a notable percentage of these bonuses based on meeting specific sustainability targets. This approach not only incentivizes leadership to prioritize green initiatives but also signals to the entire organization the critical value placed on sustainability. Additionally, other entities have positioned sustainability as one of their strategic pillars, highlighting its importance at the executive level and across the organization's operations. Such strategies demonstrate a commitment to not just achieving business objectives but doing so in a way that is environmentally responsible and aligned with broader sustainability goals, thereby attracting and retaining talent passionate about making a meaningful impact.

Prepare for the future workforce

Finally, as the digital infrastructure sector evolves, so must its approach to talent management. This involves not only adapting to the changing skills landscape, driven by advances in technology and sustainability, but also preparing for the expectations of the future workforce. Younger generations place a high value on sustainability and purpose-driven work. Companies that prioritize sustainability are more likely to attract and retain this talent, ensuring a resilient and forward-thinking workforce.

Conclusion

In summary, the exponential growth in demand for digital infrastructure highlights the urgency for ecological and social sustainability. Sustainable leadership offers an opportunity for providers of digital infrastructure to gain a competitive edge. Forward-thinking leaders who prioritize sustainability initiatives will be instrumental for the long-term financial success of their companies as well as for achieving the Sustainable Development Goals.

Methodology

Between December 2023 and April 2024, RRA interviewed 14 global executives in all major global regions to understand the challenges that sustainable leaders face in digital ecosystems.

These executives include board directors, CEOs, CXOs, and next-generation leaders who oversee global markets in the US, Latin America, Europe, and Asia Pacific regions.

These executives represent the broad ecosystem of digital infrastructure: from investors to hyperscalers and data centers; hardware suppliers to telecommunication operators to utility companies and customers.

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Mauricio Giusti, Partner, Digital Infrastructure of Actis

Monique Lempers, Chief Impact Officer of Fairphone

Peter van Burgel, CEO of AMS-IX

Shami Nissan, Head of Sustainability of Actis



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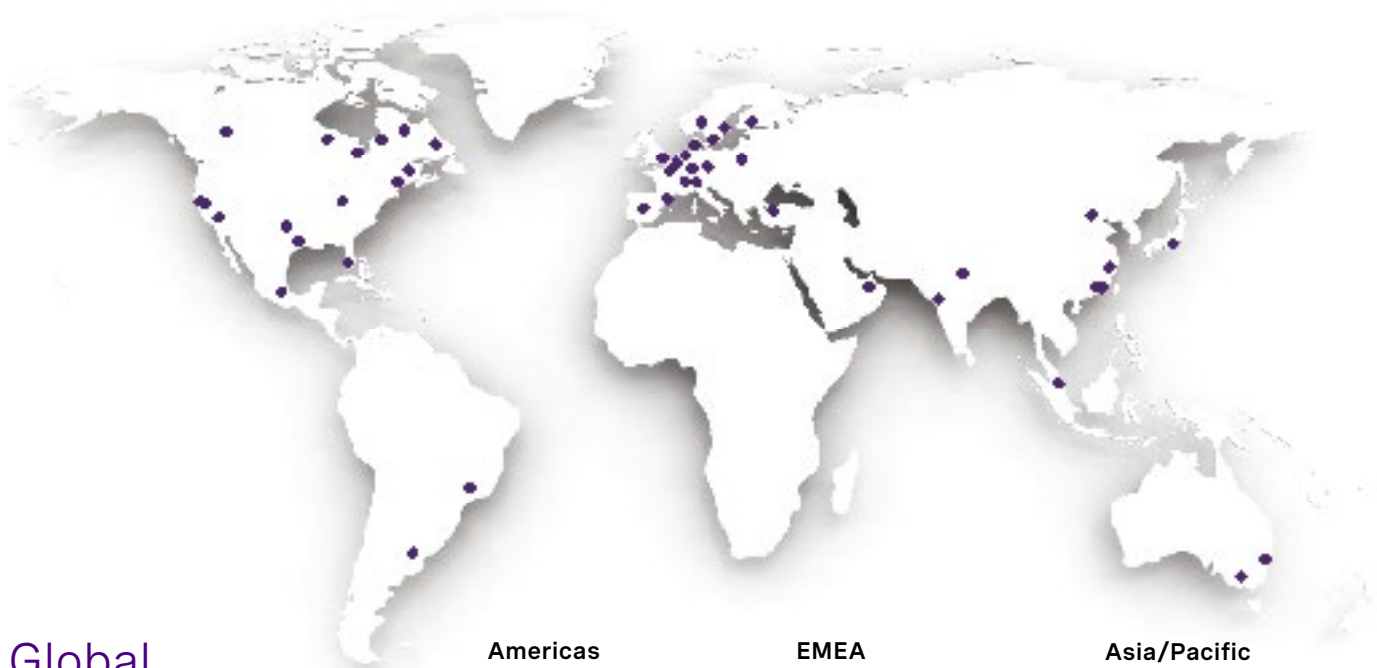
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