WHITE PAPER

Accelerating Net-Zero Progress with Innovative Technology

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Accelerating Net-Zero Progress with Innovative Technology

Governments and enterprises have been doubling down on the development of their net-zero targets in recent years, seeking to demonstrate ambition and accountability. Timely examples include the European Union's commitment to achieve net zero by 2050, supported by recent actions such as the launch of a new Biomethane Industrial Partnership. The EU also recently announced it intends to ban the sale of fossil fuels for cars beginning in 2035, reinforcing its pledge to deliver on its net-zero roadmap.

At the enterprise level, BAM Group, a leader in the construction space, just announced an ambitious 2026 operational emissions net-zero target for its UK and Ireland division. Despite the enterprise progress demonstrated by this example and others, it appears that less than a third of private companies have set net-zero targets.

Devising and announcing net-zero targets is one small part of the process; achieving them is a challenge for the entire value chain of an enterprise. In many cases, emissions are produced by organizations. Yet they also are produced by consumers and suppliers, creating a complex challenge to overcome. Carbon emissions can be categorized in three scopes:

- **Scope 1**: Emissions a company produces directly

- **Scope 2:** Emissions a company creates indirectly, such as when energy it purchases for heating buildings is produced on its behalf

- **Scope 3:** All of the emissions a company is indirectly responsible for throughout the value chain

The complicated nature of this mission calls for precise measurement, tracking, and reporting, conducted in an ongoing, end-to-end manner. Technology is vital to any company's value chain and plays a critical role in effectively tackling emissions. This includes large-scale deployments of products like SAP Carbon Footprint Analytics to more targeted solutions like BCG's own CO2 AI.

Business leaders must review their net-zero strategies through a technology lens, with an understanding that technology itself also contributes to emissions. This whitepaper will review how enterprises are preparing to deliver on their net-zero pledges and how technology providers intend to support them. A four-phase approach will be offered, designed to guide leaders to harness technology to their advantage.

> "There are two lenses through which organizations must look at sustainability. Acting on your own company commitments and driving others to act as well."

Head of Sustainability, Global mining company

Assessing enterprise progress

In 2022, a BCG study gained insights from more than 30 executives at major multinational enterprises and those from technology service providers with two key goals in mind: to assess the net-zero strategies of large multinationals and to closely examine the role of technology in this lengthy and crucial process.

Respondents emphasized the widespread importance of the climate and sustainability issue, with a majority having established targets in a top-down manner. We identified fragility in the approaches of most sample companies, many of which placed a disproportionate focus on Scope 1 and Scope 2, while struggling with Scope 3.

When examining the difficulties organizations face in addressing Scope 3, it became clear that many still need to collect and build the necessary data foundations pertaining to the wider value chain. This indicates a capability gap where sophisticated technology is required, specifically in the form of solutions that can capture, collate, and analyze large amounts of data in real time.

Challenges associated with Scope 3 also vary by sector, with some organizations unclear on how to reduce their indirect emissions. Some banks expressed difficulty in determining appropriate loan recipients, telecom companies could sometimes be unsure of which equipment to procure, and retailers struggled to select the most environmentally friendly waste reduction techniques. The industry body associated with the chemicals space, Together for Sustainability (TfS), is a specific example of an organization created to help define standards for Scope 3 calculations.

We also discovered that most of the respondent enterprises have introduced a dedicated sustainability role, but this was commonly found to be a recent step taken in the last two to three years. It also became clear in the majority of cases that businesses have not yet allocated additional dedicated funds to help meet the net-zero targets they set, despite frequently being incorporated in business KPIs. These metrics tend to be in the top-level business category, as we found that they are rarely embedded at the business unit and operational levels.

There are some encouraging signs that organizations are beginning to make meaningful progress, with instances of net-zero plans being communicated and implemented at the BU level. However, support functions like IT are still commonly excluded. Some are also beginning to explore the use of data analytics to enhance measurement capabilities, and others are looking to data centers to help reduce emissions associated with technology itself.

The organizations that have started their journey to net zero stated that it is easier to map a pathway to reducing carbon footprints if sustainability speaks the language of the business. On this basis, there may be value in using quantified cost and benefit assessments to evaluate alternatives, in the same way a company would typically assess other investments.

"**Visibility creates the ability to improve, and technology makes this possible across the supply chain in an end-to-end way.**"

Head of Procurement, European banking services provider

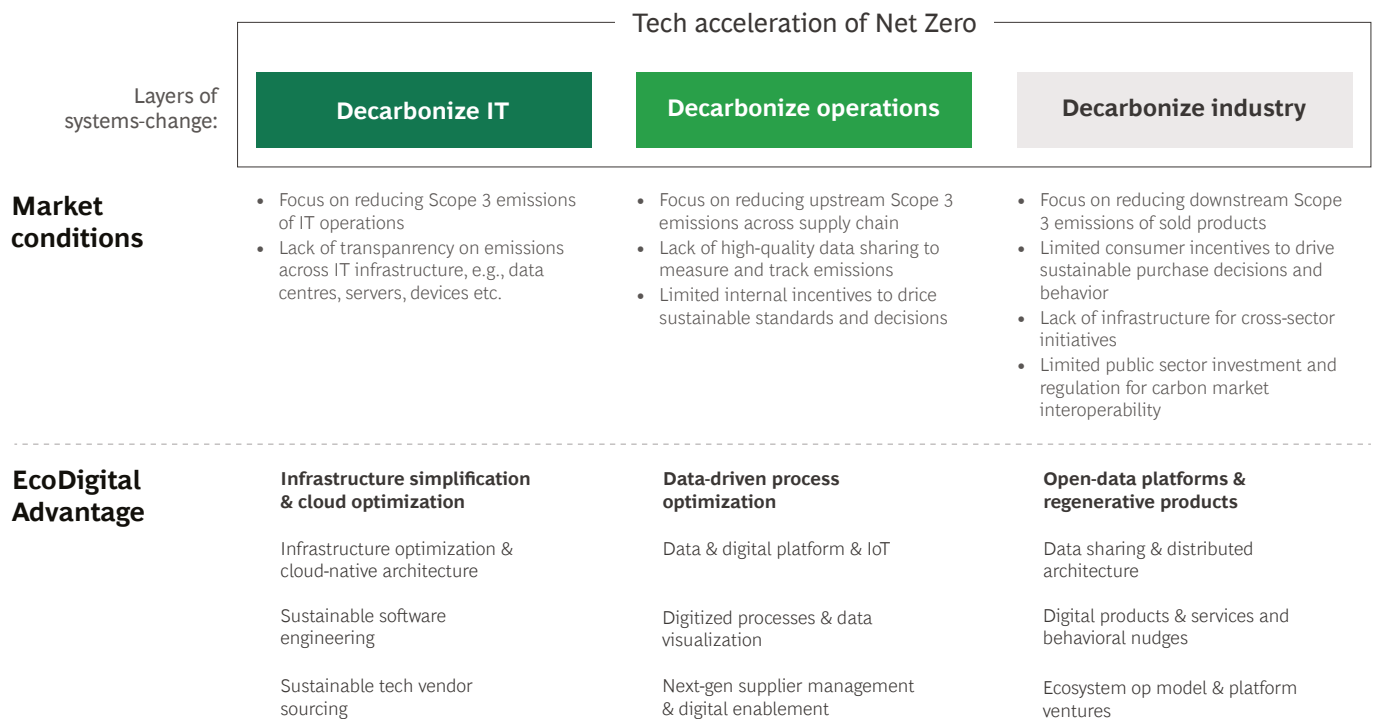## The role of technology on the net-zero journey

When it comes to digital for net zero, value creation is twofold. Not only is it a source of ecological value—with tech and data reducing carbon emissions by more than 30%—digital is also a driver of economic value, helping companies realize sustainability as a new form of competitive advantage.

Building this "EcoDigital Advantage" requires driving three levels of system impact. (See Exhibit 1.) The first level, "Decarbonize IT," addresses the vital need to reduce emissions created by technology itself. "Decarbonize operations" supports emissions reduction across the value chain. The third level, "Decarbonize industry," is instrumental in developing open-data collaborations and digital products to aggregate and monitor relevant information and provide new opportunities for innovation.

Decarbonizing IT calls for infrastructure optimization and the implementation of cloud-native architecture, enhanced by sustainable software engineering. Sustainable tech vendor sourcing is a critical aspect of this process and ensures that emissions are being reduced both directly and indirectly. Cutting down on IT-related emissions will require a strong focus on Scope 3 and greater visibility of emissions generated by data centers and devices.

When it comes to decarbonizing business operations, there should be considerable focus on simplifying IT processes across the value chain. The integration of digital platforms and IoT is also of paramount importance. These capabilities form the basis of digitalized processes and data visualization, which will equip organizations to measure emissions and their sources with greater precision and to remove unnecessary steps in the process. Next-gen supplier management is also critical, alongside the application of digital enablement techniques. Above all, having simplified processes, higher quality data sharing and measurement capabilities, and the right internal incentives and standards will promote the meaningful decarbonization of operations.

Exhibit 1- Accelerating the Path to Net Zero with a Systems Approach

Layers of systems-change:	Tech acceleration of Net Zero		
	Decarbonize IT	**Decarbonize operations**	**Decarbonize industry**
Market conditions	• Focus on reducing Scope 3 emissions of IT operations • Lack of transpanrency on emissions across IT infrastructure, e.g., data centres, servers, devices etc.	• Focus on reducing upstream Scope 3 emissions across supply chain • Lack of high-quality data sharing to measure and track emissions • Limited internal incentives to drice sustainable standards and decisions	• Focus on reducing downstream Scope 3 emissions of sold products • Limited consumer incentives to drive sustainable purchase decisions and behavior • Lack of infrastructure for cross-sector initiatives • Limited public sector investment and regulation for carbon market interoperability
EcoDigital Advantage	**Infrastructure simplification & cloud optimization** Infrastructure optimization & cloud-native architecture Sustainable software engineering Sustainable tech vendor sourcing	**Data-driven process optimization** Data & digital platform & IoT Digitized processes & data visualization Next-gen supplier management & digital enablement	**Open-data platforms & regenerative products** Data sharing & distributed architecture Digital products & services and behavioral nudges Ecosystem op model & platform ventures

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"IT is the number one enabler of sustainability, because you can't improve what you can't measure."

Senior Executive Risk and Performance Management, Consumer goods

Reducing industry emissions calls for better data sharing and a distributed architecture. Having the appropriate digital products and services is important, but so is encouraging behaviors that will bring about a cultural shift toward achieving net-zero goals. Finally, the use of an ecosystem operating model and platform ventures will also be an effective tool in driving widespread progress. Our research in 2021 found that maximizing the return on supplier innovation requires an ecosystem of both multi-service and specialist suppliers. Addressing Scope 3 net-zero targets requires the same discipline.

The vision for technology providers

When speaking with technology providers, we found a widely shared view among executives that they have an important role to play in assisting enterprises in delivering on net-zero goals. All of the tech provider executives included in our study had taken steps to tailor their propositions to enterprises pursuing ambitious sustainability targets—from reducing their own emissions to carbon footprint transparency in support of Scope 3. Many are also developing industry-specific solutions designed to solve the key challenges linked to different verticals.

At present, the insights from our study demonstrate that there is not yet a strong willingness among enterprises to adopt specialized solutions offered by technology providers. However, there is an exception in the case of cloud-based solutions, with enterprises proving significantly more receptive to this approach. For technology suppliers to be successful in supporting clients, they will need to continue refining their offerings. As a starting point, this should include sharing their own emissions data with clients as a basis for data-driven sustainability.

On reflection, the key considerations for technology providers include:

- Providing industry-specific solutions that meet client needs, e.g., focusing on energy consumption with more effective cooling technologies or new chip designs with significantly less energy consumption for comparable compute power

- Gathering and sharing internal data across the value chain with clients

- Having clear and transparent policies that clients will understand

- Providing demonstrable evidence of delivery on commitments

- Pushing for partnerships rather than transactional vendor relationships

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"You can't reduce emissions effectively without a baseline measurement you can trust."

Executive of Energy and Climate Change, Industrial goods

Plotting a path to net-zero success

Leveraging our analysis, we established a four-phase strategy to enable enterprises to create a plan for their net-zero journey. A comprehensive plan that harnesses the power of technology offers the most robust, data-driven approach to achieving real net-zero success.

Phase 1 involves the development of a baseline. Establishing a firm foundation upon which to build is vital. To do this, enterprises must appoint both a sustainability leader and an oversight committee. In support of this step, data sources need to be harnessed and measured systematically to create a baseline for the three key net-zero scopes, before being aligned with existing carbon emissions. In compliance with the scopes, accurately assessing the direct, indirect, and value chain emissions are all essential to the success of this phase. For example, an interviewee described a three-step process of recording, reporting, and reducing.

For precise and ongoing measurement to be possible, the sustainability lead and oversight committee must work with the wider enterprise to select and adopt carbon emissions calculators. This will require consultations with technology suppliers and standard-setting organizations to determine which data tools will be the most effective. The next step in Phase 1 is to identify 10 to 15 suppliers that can drive the biggest impact on emissions reduction. This should be conducted as early in the process as possible. The success of this approach relies on alignment among the biggest contributors in Scope 3, as their data will be essential for baselining and selecting the right tools.

Phase 2 is centered around the development of targets. After building solid foundations in terms of data tools and an initial supplier-base in Phase 1, the organization must agree on short, medium, and long-term targets. This includes setting the overarching target for achieving net zero, but the target must be based on intermediate objectives that compartmentalize the extensive task and ensure it is achievable. It is also critical to factor in reporting targets.

Next, targets should be implemented across all business units, with KPIs embedded and with the emissions reduction treated as any other primary business objective. Lastly, supplier working groups from within the supply chain should be established to form ecosystems that will aid the deployment of technology, education, and progress monitoring.

Phase 3 is dedicated to delivering on long-term net-zero ambitions. At the heart of this phase is establishing working groups and a governance framework to ensure that progress is sustainable. Working groups should be set up within business units and tasked with devising individual plans to handle ownership and delivery. A funding pool should also be put in place to support delivery, and it should be viewed as part of the cost of doing business.

As part of this phase, suppliers from the supply chain should be brought into the loop and assigned targets for which they should be supported. Two leading companies told BCG that they have implemented an internal carbon pricing scheme to deliver on this phase, with one even setting different tax rates depending on the source of CO_2 in question.

Phase 4 is an opportunity to implement monitoring and optimize the entire system. Setting up a systematic approach to monitoring is critical, as this will form the basis of progress tracking. Consulting industry bodies, standards bodies, and government agencies is the first port of call, ensuring that the enterprise is prepared for ongoing compliance. This also provides important access to new sources of innovation, which will help organizations deliver on their targets. The transformation of internal and external processes must also be considered in this phase, such as the introduction of carbon tax to drive more responsible behavior. Developing a dashboard to capture lead indicators is also important, as it will provide timely information about the state of net-zero targets across all three scopes.

Looking to the future

Following the significant uptick in enterprises announcing their net-zero commitments and targets, we can expect to see significant progress taking place in the next 12 months. As organizations seek to demonstrate sustainability progress, innovative solutions will be increasingly in demand—and technology providers must understand how to best provide effective solutions.

We expect to see a clearer pattern emerging in terms of partnerships between enterprises and suppliers, and the types of solutions in which they are engaging. Contact our author team to learn more

"Forget about the cost of net zero, your business will disappear if you don't do it right."

Head of Diversity, Equity, and Inclusion, Pharmaceutical company

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