



Prioritizing Climate Resilience

MITIGATING RISK FOR THREE GLOBAL SECTORS



BLACK & VEATCH

INTRODUCTION

The Growing Business Costs and Risks of Climate Change

Climate resilience is fast becoming one of the most important strategies to mitigate business risk. Yet, many large organizations still are in the early stages of establishing their climate resilience priorities. Companies that move faster and more comprehensively to assess and address their risks related to climate change are not only more likely to survive in coming decades; they could also realize significant competitive advantages and be better prepared to capitalize on emerging opportunities in an evolving global business environment.

For commercial and industrial organizations, climate resilience primarily involves improving the ability of assets, facilities and processes to withstand direct damage and disruption from severe weather. It also requires increasing overall flexibility and planning to navigate the volatility that climate change can bring to supply chains, distribution, costs for goods and commodities, labor, public safety and consumer markets.

In recent years, climate change has substantially and visibly impacted the operations and business of many large enterprises. Severe storms, droughts, heat waves and deep freezes have disrupted processes and supply chains while damaging critical assets around the globe. Consider these developments in just 2021:

Electric power system damage. Hurricane Ida destroyed all eight transmission lines (belonging to the utility Entergy) that delivered power to New Orleans. Also, a large Entergy transmission tower collapsed into the Mississippi River near Avondale, Louisiana. Entergy estimated \$2.6 billion in repair costs from damage from this storm alone.

Agricultural losses. Increased drought, floods, wildfires and severe storms are savaging crops in Connecticut, Louisiana, Mississippi, Cameroon, Bangladesh and elsewhere. Also, extended drought can make dried produce harder to process into food products.

Transportation system damage. Throughout much of the Pacific Northwest, soaring temperatures from a three-week heat dome buckled roads, warped rail lines and damaged overhead power cables for streetcars.

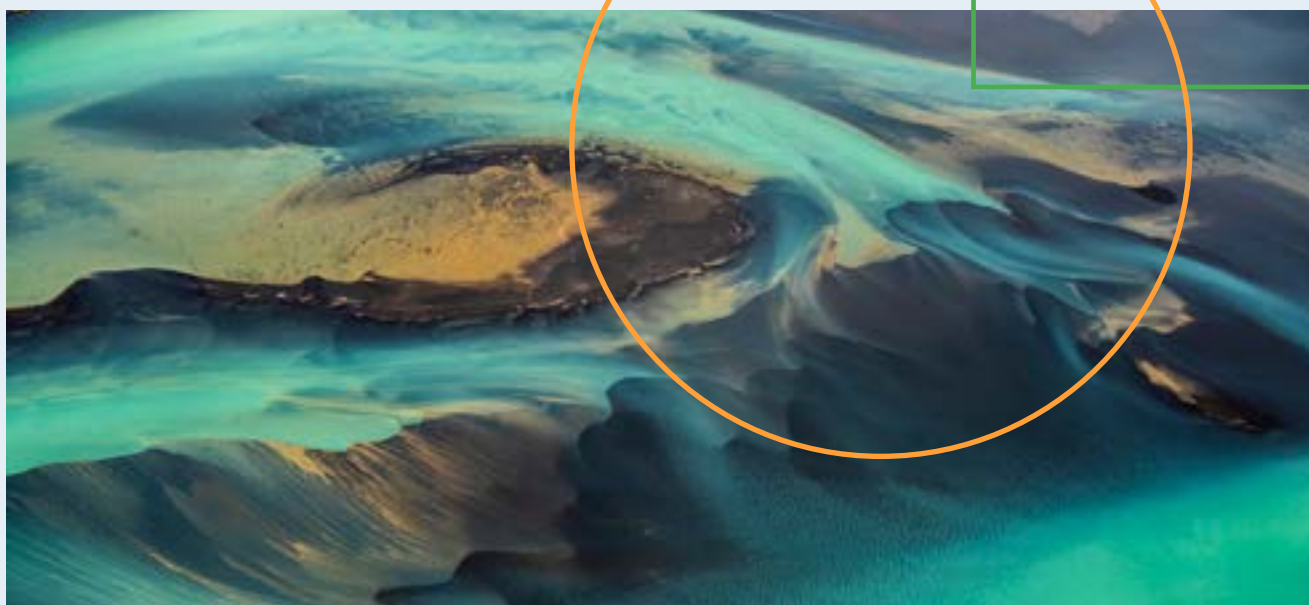
Climate change's business costs are expected to balloon quickly. [A recent report from CDP](#) — a non-governmental organization which runs a global disclosure system for environmental impact — anticipated a total of \$1.26 trillion in climate change-related revenue losses to suppliers within the next five years. CDP also estimated that corporate buyers may inherit \$120 billion in increased environmental costs by 2026. As the corporate costs of climate change mount, the [U.S. Securities and Exchange Commission](#) recently stepped up efforts to get large companies to disclose how those expenses might affect their financial earnings or business operations.

What are large organizations doing to proactively mitigate these steep risks and potential losses?

In August 2021, Utility Dive and global critical infrastructure solutions leader Black & Veatch surveyed top executives and professionals from large companies in three key industries. We asked participants about their company's current climate resilience strategy: What is supporting companies in taking action, and what is hindering progress? This report summarizes key findings from that research and presents insights that could accelerate corporate climate resilience.



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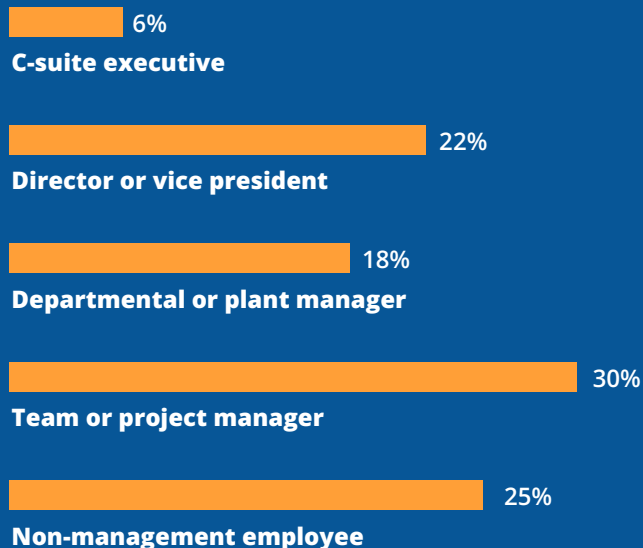


OUR INDUSTRY SURVEY

Who Participated

The Utility Dive/Black & Veatch survey on climate resilience encompassed a wide range of perspectives from companies in three key industries:

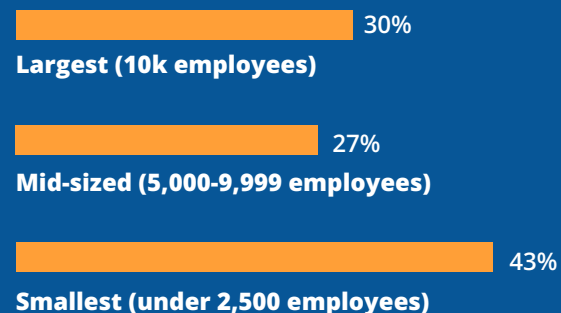
- Energy and utility: 58 percent of responses
- Manufacturing (largely food, beverage and consumer products): 20 percent
- Transportation and transit: 18 percent
- Other: 4 percent



All participants work for companies with at least 100 employees, including 30 percent who work for companies with more than 10,000 employees worldwide. These businesses all have substantial operations in the U.S. and Canada. More than one-fourth of participants are top executives. Three-quarters of participants hold positions at a manager level or above, including 26 percent at the vice president or C-suite level.

In the energy sector, 65 percent of participants work for utility or public power agencies, and 17 percent work for renewable energy developers. Independent power producers, energy storage developers and other segments of this sector also took the survey.

Two-thirds of transportation participants work for companies that provide cargo or freight services; 44 percent said their company manages or operates vehicle fleets; 31 percent do last-mile delivery and 15 percent offer passenger or transit services. Modes of transportation represented include long-haul trucking (mentioned by 75 percent of participants), commercial fleets (47 percent), rail (31 percent) and ocean or waterway shipping (25 percent).



Among manufacturing participants, 76 percent work for companies that make food products, 49 percent produce beverages and 16 percent make consumer products. Their products mostly are sold to consumer and restaurant/dining markets (each mentioned by more than 70 percent of participants in this sector).

Despite existential business risk, climate resilience is (mostly) not a top priority

Climate resilience is a popular enterprise goal across all industries surveyed. Overall, 43 percent of participants said that climate resilience is a high priority at their organization, while 28 percent said it is a very high priority. A mere 5 percent said it is a low priority. Participants who work in energy and utilities, as well as those who work at the largest companies (more than 10,000 employees), were most likely to list climate resilience as a very high priority (both around 35 percent). Participants who work in manufacturing or at smaller companies (under 2,500 employees) were least likely to say climate resilience is one of their company's top priorities (14 percent and 23 percent, respectively).

Our survey revealed broad recognition across these sectors that climate change threatens the continued existence of many businesses. Core business operations or processes was the top climate change-related risk overall, mentioned by 43 percent of all participants — including by about half of participants from the energy sector and from the largest organizations.

Logically, it makes sense for companies to prioritize addressing risks that eventually might wipe out their organization — especially since the impacts and costs of those risks are regularly making headlines today. However, that's often not how enterprise priorities work in the real world.

On a daily basis, there's often a tendency for companies to put effort mainly toward addressing immediate operational, financial or competitive concerns: filling orders, fixing equipment, increasing shareholder value, developing new or improved products, etc. When a priority is perceived as driven primarily by forces outside the organization, or as the responsibility of governments or other external entities, it can be easier to let it slip down on the daily to-do list.

For instance, in our survey, a manager from one of the largest surveyed utilities observed that their company's action on climate resilience appears to be mainly “lip service until it gets mandated or supported by the regulatory body — and perhaps not even then will it translate into significant action.”

These assets are deemed most at risk within each sector:

Energy and utilities

- **65%** Generation, production or storage equipment
- **38%** Transmission equipment
- **35%** Distribution equipment

Transportation

- **69%** Vehicles and transportation infrastructure
- **48%** Buildings and facilities

Manufacturing

- **44%** Buildings and facilities
- **38%** Manufacturing equipment
- **36%** Vehicles and transportation infrastructure



MANUFACTURERS

Slower Progress on Climate Measures

According to survey responses from food, beverage and consumer products manufacturers, this sector seems to lag behind the others on climate resilience measures. Only half of participants in this sector reported that their company is working to improve the efficiency of existing assets and processes (compared to 65 percent of all participants). Also, just under 60 percent reported progress on energy efficiency (compared to 71 percent of all participants). The only type of efficiency where these manufacturers seem to be keeping pace with the energy and transportation sectors is conserving water.

This relatively slow progress on internal actions might be partly explained by how this sector perceives its greatest risks related to climate change. The top five risks cited by these participants all relate to forces outside their company:

70%

Cost or availability
of ingredients/materials

30%

Water supply

54%

Type or quality of
ingredients/materials

30%

Shipping or
logistics

40%

Packaging materials
or requirements

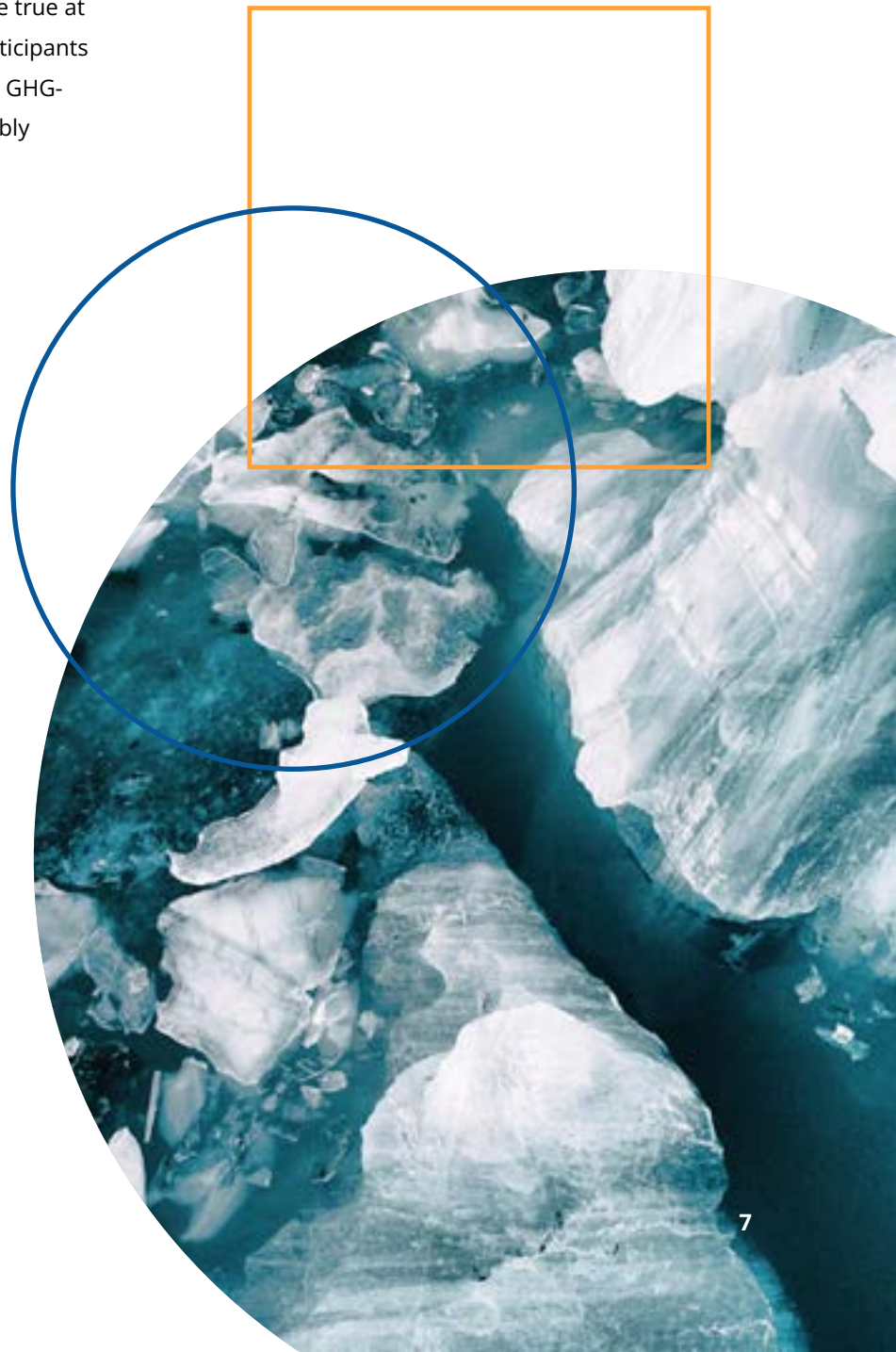
Still, considerable corporate progress on climate resilience is happening. Overall, 60 percent of survey participants said that their company is on track for meeting their current climate resilience goals. This includes 71 percent of participants from the largest companies.

Climate change mitigation strategies often are entwined with climate resilience plans. Overall, 56 percent of all participants said their organization has clear goals for shrinking their greenhouse gas (GHG) emissions or carbon footprint, and they are using specific benchmarks to track progress. Again, this is most likely to be true at the largest companies: 73 percent of these participants said their business is on track to reach internal GHG-reduction targets and that they are demonstrably tracking this progress.

Internal leadership plays a key role in cutting GHG emissions at many companies. In nearly all sectors and organization sizes surveyed, the most common driver pushing them to reduce GHG emissions is their company's internal commitment to environmental/social stewardship. The lone exception was the transportation sector: Among these participants, an external force such as legal or regulatory mandates was the top driver of emissions reductions.



60 percent of survey participants said that their company is **on track for meeting their current climate resilience goals.**



The insurance industry could become a significant driver of corporate climate resilience. One manager from a mid-sized energy company observed in our survey:

“To adjust to constantly changing physical risks, insurers will have to reconsider current data and models, current levels of insurance premiums and their own levels of capitalization. Indeed, the entire risk-transfer process (from insured to insurer to reinsurer to governments as insurers of last resort) may need examination — looking at whether each constituent is still able to fulfill its role. Without changes in risk reduction, risk transfer and premium financing or subsidies, some risk classes in certain areas may become harder to insure. This could widen the insurance gap that already exists in some parts of the world. New questions will have to be asked, and innovative approaches will be needed.”

Deliberations at the COP26 United Nations Climate Summit may yield even higher global targets for reduction of GHG emissions. Similarly, if future reports from the U.N. Intergovernmental Panel on Climate Change (IPCC) are even more dire than their “Code Red for Humanity” report issued in August 2021, legislators and policymakers around the world could become more motivated to enact tougher requirements, laws and policies — which could translate into more stringent rules for companies.

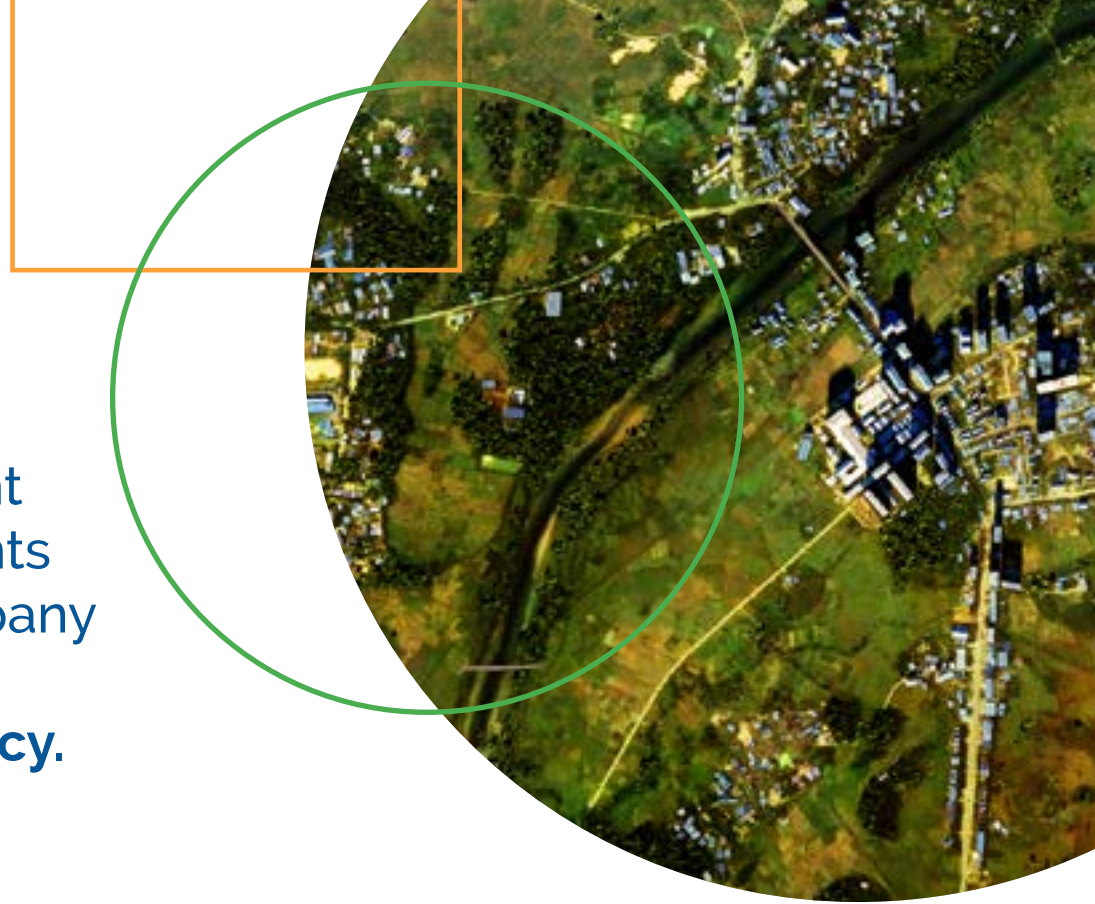
The goalposts for climate resilience are moving. At most companies, today's climate resilience and GHG-reduction plans reflect objectives set five years ago, driven by COP21 and the 2016 Paris Agreement.

Consequently, most corporate plans that are in place today probably will not suffice to meet new targets that will be set in coming months. Companies that thought they were on track, or all done, suddenly will need to get more creative, aggressive and collaborative in pursuing climate resilience.





Over 70 percent of all participants said their company is **increasing energy efficiency.**



CLIMATE RESILIENCE PLANNING GAP

What Will Companies Do Next Year?

Cutting GHG emissions can support more climate-resilient operations. For example, businesses that rely more on clean energy (especially produced and stored on-site) can become less vulnerable to storms and extreme temperatures.

Overall, survey participants were quite familiar with what their companies are doing today (or already have done) to reduce GHG emissions. However, looking ahead at the future of corporate GHG reductions and climate resilience, a planning gap appeared.

Today, increasing efficiency (for energy, water, fuel, processes and materials) enjoys strong popularity. More than 70 percent of all participants said their company

is increasing energy efficiency, 65 percent said they are making existing assets and processes more efficient, and 57 percent said their company is pursuing water conservation. This might reflect a desire to conserve capital: Upgrading existing assets is usually less capital-intensive than purchasing new ones.

Our survey also asked participants what their companies expect to be doing in five years to keep cutting GHG emissions. Here, there was also a fair amount of certainty. For example, 56 percent of all participants expect their company to be leveraging hydrogen for fuel or energy storage. Transportation participants were most bullish on using hydrogen in five years, followed by food manufacturers.

INDUSTRIES EMBRACING EMERGING TECHNOLOGY

Hydrogen

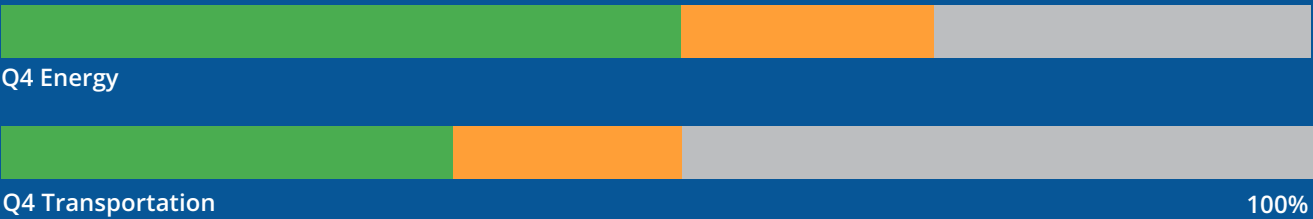
Storing cleanly generated energy, especially on-site, is an important strategy for climate resilience and mitigation. Traditionally, energy-sector companies have adopted new energy technologies faster than transportation or manufacturing. Our survey revealed strong interest in energy storage across all sectors.

Battery energy storage is a mature technology for both stationary and vehicle applications. More than three-fourths of participants said their company will have adopted battery energy storage in one to five years — and of these, 48 percent said their company already has done so (especially in the energy/utilities sector).

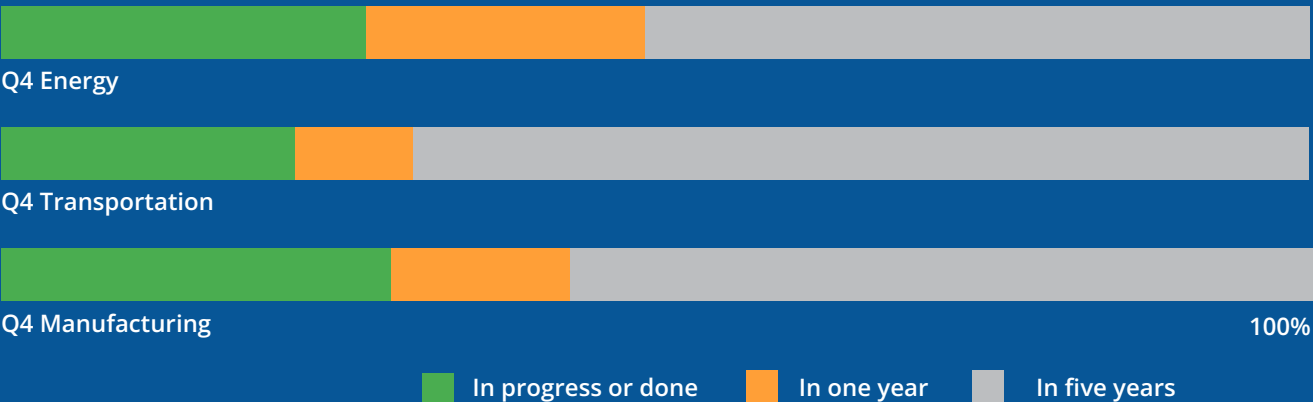
However, an emerging technology — hydrogen energy storage — appears to be gaining ground fast. Hydrogen technology and infrastructure, for fuel or energy storage, is still at an early stage of commercial availability. Yet, all three sectors we surveyed indicated confidence in the future of hydrogen.

Overall, more than half of all participants expect their company to be using hydrogen in one to five years. While this may not seem surprising for energy and utility companies, nearly two-thirds (60 percent) of manufacturing participants and nearly half (45 percent) of transportation participants said their companies expect to deploy hydrogen fuel/storage in the next one to five years.

Battery energy storage | Selected by 203 participants



Hydrogen fuel or storage | Selected by 148 participants





The climate resilience planning gap emerged in the one-year timeframe. When predicting the very next steps their company must take to reach emission-reduction targets, participants were considerably less certain. Nearly all listed measures received far fewer responses in the one-year planning timeframe. Only one measure was named by at least 30 percent of all participants: more efficient logistics and routing.

“At a lot of companies, people see the strategic arc, but that tends to be aspirational,” said David Ziskind, director of engineering in Black & Veatch’s NextGen Ag business. “The immediate next steps might not be clear or well-defined, leading to ambiguity and uncertainty on how to proceed. In addition, climate resiliency projects may have lower priority than other more immediate pressing capital expenditures.”

When planning next steps, it can be helpful for companies to look beyond the walls of their business and consider how their operations interact with local regions, especially in terms of energy, water and wastewater. “Where your water and energy come from, and how much you need, probably matter more than how much you pay for these resources today. What’s happening right now in your watershed and on your power system — and what will probably be happening there in a few years?” Ziskind said. “It pays to get ready now for how your business will need to operate tomorrow.”

In regions where energy and water costs are relatively low, it can be challenging for companies to justify an immediate investment in efficiency and flexibility. However, waiting for price signals to guide action can leave companies unprepared to manage fast-changing access and rising costs. Considering the value of what energy and water enable a company to do, not just the amounts listed on utility bills, is one way to accelerate plans for climate resilience.

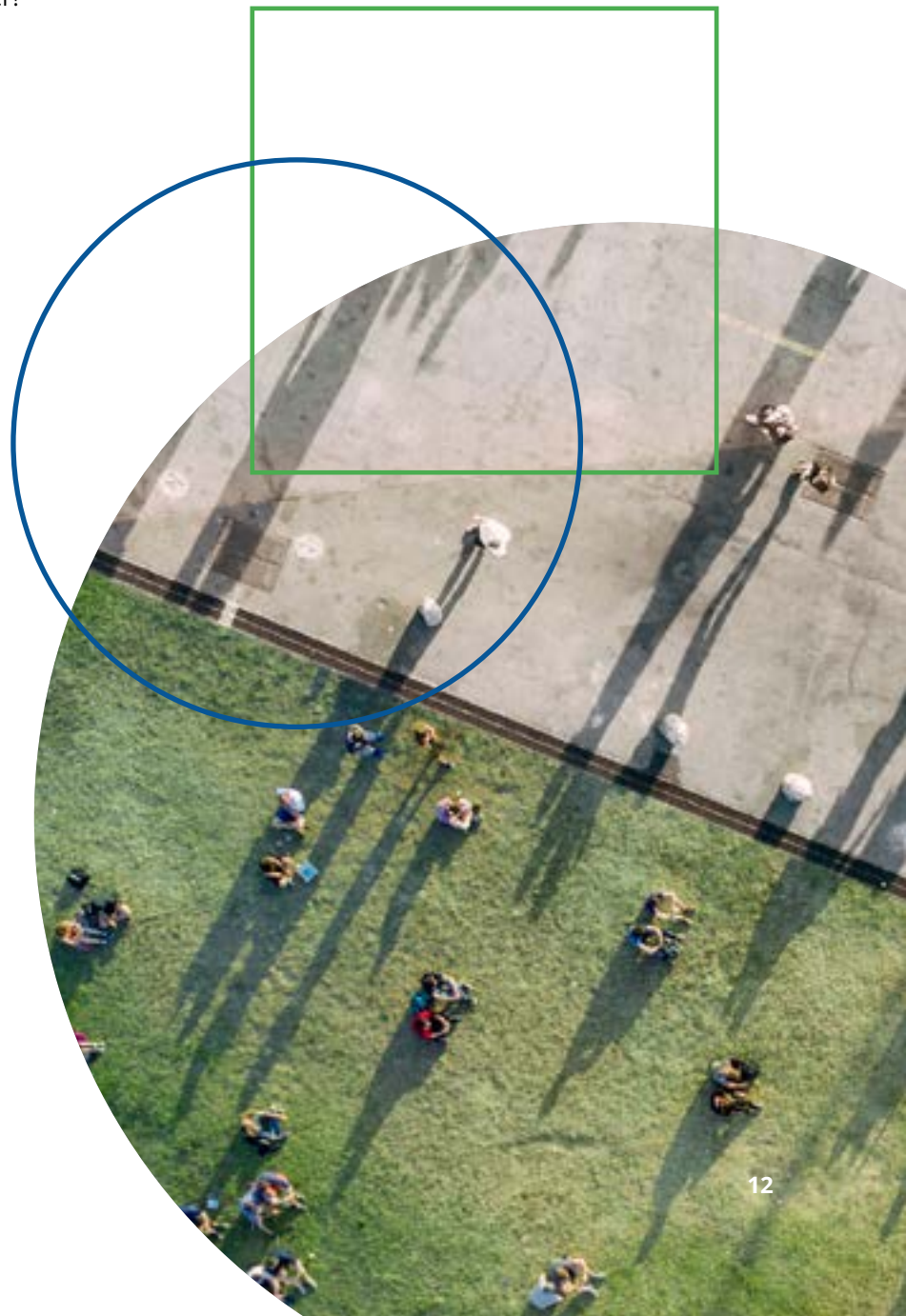
The possibility of paying higher bills in the future is only one type of business risk. When planning for climate resilience, companies should weigh all potential changes and losses related to climate change. How might it impact a business if a factory gets flooded, or if electric vehicles (EVs) become cheaper to own and operate, or if insurers no longer will cover certain facilities or losses, or if legal liability increases, or if severe weather makes some locations near your facilities too hazardous for people to live or work, or if groundwater pumping becomes prohibited in certain regions? What is possible to start doing today that will position a company to adapt and pivot faster? Also, what is the business risk associated with competitors moving even faster?

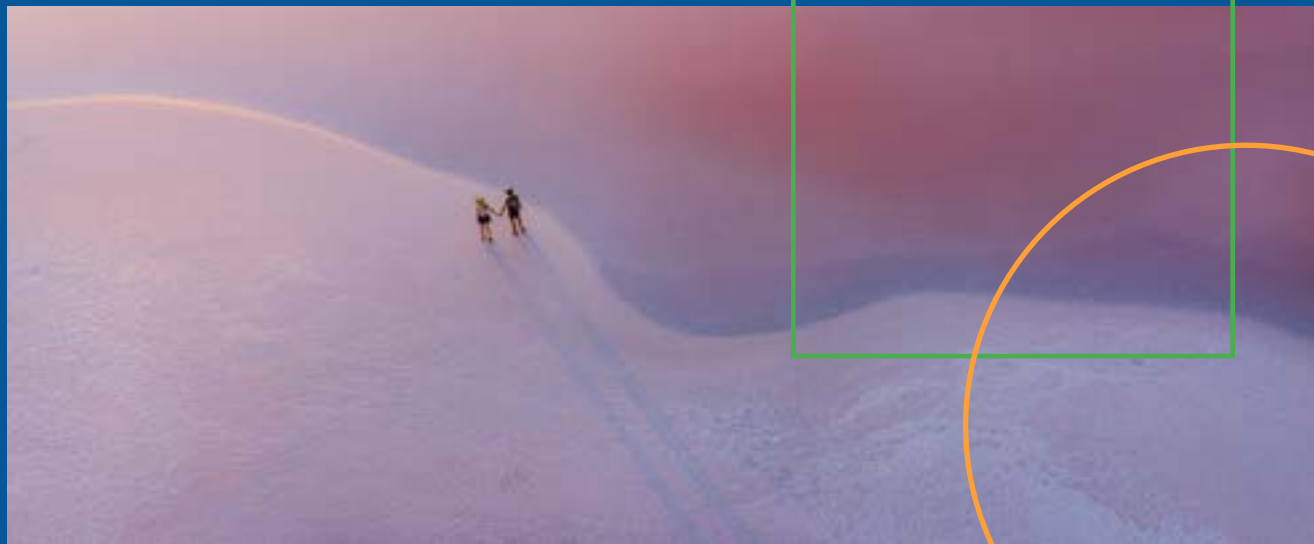
"Globally, the planet's climate is warming, and human activity is the driver of this increase," said Roy Johnson, business strategist, Black & Veatch NextGen Ag. "Diving deeper, about a third of global greenhouse gas emissions can be attributed to food production. Food manufacturers must face this reality and understand that just setting sustainability goals is no longer enough; they must execute on these goals. Breaking down their sustainability goals into specific projects that analyze risk, cost and the return on that investment or visibility is critical to starting to achieve long-term goals today."



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Tools for Comparing Risks and Benefits Fairly

A common value framework — which allows different types of risks and benefits to be fairly compared, across various timeframes — can support more effective climate resilience planning. Such frameworks can help decision-makers design a portfolio of strategic projects that cumulatively amplify benefits while managing long-term costs and risks. This can help companies bridge the near-term gap in climate resilience planning.

For example, many companies have enhanced their efficiency — a strategy that tends to have lower up-front costs and immediate direct savings. However, calculating the full return on efficiency investments means factoring in long-term benefits and reduced risks across the enterprise. Being able to effectively show the bigger picture of benefits from increased efficiency can free up (or enhance access to) more resources to fund climate resilience. This can expand the scope of resilience projects beyond efficiency.

For instance, the common value framework of the [World Bank's Climate Bonds initiative](#) helped the Latvian power utility Latvenergo add flood protection measures to their “green bond” issued for renewable energy and grid efficiency.

“Having a uniform method of assigning value to risks makes capital investment planning more flexible. As conditions change, you can shift the project order, and update your objectives,” said Boudewijn Neijens, chief marketing officer for planning software company Copperleaf. “Without a common value framework, it’s harder to see into the future and evaluate long-term risks and benefits. When there’s too much focus on the short term, overall risks and costs tend to increase.”



CONCLUSION

Finding opportunity in climate resilience

Adversity can foster creativity. In our survey, many participants listed ways that pursuing climate resilience is helping their company.

From the energy and utility sector:

- “We’re considering EV infrastructure, IT resiliency and supply chain contingencies so we can keep running no matter what.”
- “We’re helping municipalities build public EV charging infrastructure. Long-term, that’s a revenue stream for us.”
- “We’re implementing cold weather packages to ensure reliability and limit repair costs.”

From the transportation sector:

- “We’re partnering with our customers to provide alternative forms of transportation and fuel.”
- “We’re starting to use alternative fuel tractors.”

From the manufacturing sector:

- “We’re proactively making plans for alternate ingredients or packaging, in anticipation of future regulations. We also are reformulating, anticipating soybean oil (price) increases.”
- “Installing solar panels at all facilities, working with origin countries on raw material supply”

Even the adversity of the COVID-19 pandemic has revealed climate resilience opportunities. Several survey participants, in all three industries, noted that expanded work-from-home options have enabled their company to reduce its carbon footprint (especially from reduced commuting) and increase business flexibility.

While some of these steps may sound modest compared to the daunting challenge of climate change, they all reflect the importance of thinking differently about how business gets done in a changing environment.



BLACK & VEATCH

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