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How **climate** **adaptation** can both protect and grow your business

Preparing for physical climate risks can be a catalyst for companies' innovation and growth. But first they must form a clear picture of their vulnerabilities and make a plan to manage them.

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The brutal heat in the Northern Hemisphere during the summer of 2023 reminded us once again that our changing climate poses severe threats—not just heat waves, but also wildfires, floods, and storms. Business leaders recognize these perils. More than half of CEOs polled for [PwC's 26th Annual Global CEO Survey](#) say their companies **will be exposed to some degree of climate risk** in the next five years. This finding underscores the clear need for organizations to adapt to climate change. At the same time, it points to opportunities for businesses to deliver solutions that promote climate resilience.

Consider one possibility from the tech sector. Nearly 80% of executives polled in [PwC's 2023 Cloud Business Survey](#) say their companies have adopted cloud in most or all of their business. But these cloud services don't, of course, operate in the sky. They run in data centers on the ground—which makes them susceptible to extreme weather.

Other key clusters of this business-critical digital infrastructure—which requires constant cooling—sit in drought- and severe heat-prone states like California and Texas. Recent heat waves in Western Europe, home to global data center hubs in Frankfurt, London, and Amsterdam, have disrupted some cloud service providers. Given these risks, a climate-ready data center could collect a premium for being more reliable than its competitors.

Such opportunities to innovate can be found wherever there are climate risks. Businesses are stepping up to meet demand for alternative construction materials and designs, risk modeling tools, climate risk insurance, early warning

What is climate adaptation?

While decarbonization is about preventing greenhouse gas (GHG) emissions to curb the impact of climate change, adaptation means adjusting to the physical effects of climate change, like the extreme weather we're already experiencing. Those effects can be chronic and happen slowly (e.g., consistently warmer air temperatures) or acute (e.g., heat waves). Adaptation to climate change often involves enhancing preparedness, such as putting in place systems to predict hurricanes or heat waves and warn people before they set in. It also involves reducing vulnerabilities, like setting up cooling centers to shelter people without air-conditioning or providing a clean air refuge from a forest fire or air pollution. For companies, climate adaptation includes making commonsense investments in **business continuity and resilience**.

systems (EWS), flood management structures, improved seed varieties, and other enablers of climate adaptation. A review of 100 companies' climate disclosures, undertaken by **PwC and the World Economic Forum**, found that 31 had identified adaptation-related opportunities.

Of course, organizations can explore such avenues only if they can withstand the disruptions caused by climate threats. That means carefully assessing their risks and taking measures to guard against them—something relatively few businesses have done. Just **17% of Global CEO Survey respondents** say their companies have implemented initiatives to protect their workforce or physical assets from the impacts of climate risk.

This is understandable. To date, most companies have rightly focused on lessening their own carbon emissions, which helps slow climate change. But with global GHG emissions still on the rise, and significant effects from climate change already locked in, organizations must work on climate adaptation too.

In this article, we look at the business risks that adaptation can prevent along

with the opportunities it can bring, the established capabilities companies can use to support climate adaptation and resilience, and additional steps they can take to create value.

Climate adaptation means boosting resilience, but smart organizations go further

The practice of adaptation is grounded in efforts to reduce or remove the impact of the physical risks that climate change creates. But savvy companies go further, looking for opportunities to innovate and grow.

Many organizations already recognize that **climate risk is business risk**. The European Environment Agency estimated that €145 billion (US\$159 billion) in **climate change–related economic losses** occurred in the European Union over the last decade. The sooner businesses can start thinking about climate adaptation strategies, the better their chances are of not only surviving, but thriving.

Food, beverage, and agriculture companies, for example, face the threat of climate change–related flooding, excess rainfall, and warmer winters in many current growing areas. They may also face drought, in which case adaptation could mean sourcing seeds that require less water—which would in turn reduce water costs.

More broadly, by ensuring that new buildings and infrastructure are constructed for future climate conditions, your company can avoid costly retrofitting down the line. New builds can be fitted with heating, ventilation, and air-conditioning systems that can better cope with extreme incidents like heat waves and wildfires. They can also accommodate energy-efficient technologies, such as heat pumps, whose use can quickly yield operating savings, offsetting the up-front cost of new construction.

And adaptation can bring benefits beyond cost savings. That's because climate change is likely to increase demand for products and services that promote the resilience of businesses and communities. Companies can review how their existing products and services might support climate adaptation or explore opportunities to innovate.

Already, a number of leading organizations in early adopter industries such as real estate, insurance, and infrastructure are showing the way.

A floating office in the North Sea. When the **Global Center on Adaptation** started planning for its new headquarters in Rotterdam, the Netherlands, a major concern was the area's high flood risk. To adapt to these conditions, it commissioned architecture firm Powerhouse Company and real estate developer Red Company to design and build a three-story office building that floats—making it more resilient against rising sea levels. The low-emissions structure, opened in 2021, also features solar panels and a green roof that absorbs rainwater runoff. Made with a lightweight wood frame, the building can be relocated easily.

An innovative insurance solution. Insurer Swiss Re designed a new insurance product to support protection of the coral reef in Mexico's Yucatán Peninsula against climate-related damages. The novel insurance solution was designed to issue payouts to a trust made up of public and private custodians of the reef. Instead of paying out after damage is assessed, the remittance is triggered by wind-speed measurements. Swiss Re worked with the Nature Conservancy and regional governments in Mexico on this initiative—an example of how cross-sector efforts can produce effective solutions.

An early response to surging demand. It's not just governments and multinational corporations that can benefit from the use of new tools. A large building materials company used a weather forecasting and insights tool from ClimateAi that predicted a higher risk of hurricane impacts in Florida for a specific period, in advance of Hurricane Ian becoming active. The organization took this as an opportunity to boost local production of roofing shingles, giving it a head start in preparing for increased demand—and resulting in US\$15 million in additional sales.

So far, it is governments that have largely been moving the needle on climate adaptation, especially in relation to infrastructure. Businesses and private investors can join in and accelerate these efforts by supporting adaptation solutions and innovations that governments may have difficulty financing, but that are mutually beneficial. For example, Meta—in partnership with Pacific

Gas and Electric Company and the City of Menlo Park (where the tech company is headquartered)—funded the construction of levees that protect both its campus and the adjacent community from the impacts of rising sea levels.

Adaptation to climate change relies on capabilities your company already has

Not all organizations will be affected in the same way by extreme climate events. Much of your company's risk exposure will hinge on your markets, the communities in which you operate, the geographies of your value chain, and other case-by-case factors.

Still, it's fair to say that all kinds of businesses—including manufacturers, financial institutions, service providers, and information technology companies—may experience operational disruptions as climate events cause facilities and supply lines to go down and workers to encounter access challenges or suffer adverse health effects.

Fortunately, your organization probably has some capabilities already in place that can handle these types of situations. Most companies have enterprise-wide business continuity programs to help them gauge risk exposure and prepare for events like terrorist attacks, cyber threats, and health crises. They can extend these programs to also address climate risks. The aim in this case—just as with other types of risks—is to build long-term resilience by identifying mission-critical processes, creating backup strategies, and training employees in crisis response through tests, drills, and simulation exercises.

As an example, service businesses are likely to have made preparations to expand technical support in the event of an emergency; these measures could be applied to extreme weather events as well. Existing workforce processes like flexible and remote working may also be well suited to dealing with climate-related incidents such as extreme rainfall and flooding.

Sectors like maritime shipping and ports—which are heavily and frequently affected by rising sea levels and extreme weather events—are engaged in climate adaptation as part of their normal business risk management frameworks. They are implementing both immediate and long-term measures to

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increase infrastructure resilience. The sector is also increasingly tapping into **nature-based solutions**, such as restoring mangroves, which help prevent erosion to coastlines, avoiding losses.

Beyond operational resilience, you may already be gathering valuable data on climate-related risks and opportunities as part of other efforts. The European Union's new Corporate Sustainability Reporting Directive (**CSRD**) requires European companies and many non-European companies with operations inside the bloc to assess the potential effects of climate change and other environmental issues and report on any material risks and opportunities.

Companies that issue reports in line with the framework of the Task Force on Climate-Related Financial Disclosures (TCFD) are also required to set out their climate risks and how they plan to address them. The TCFD prescribes the use of scenario analysis to identify climate change risks and their financial implications. This information can also help you begin to build out your adaptation strategy.

Likewise, if your real estate projects go through the Leadership in Energy and Environmental Design (LEED) process for green building certification, you may already be undertaking work that can highlight possibilities for adaptation. One of the global rating system's credits requires that organizations assess potential building location vulnerabilities, such as extreme heat and rising sea levels, and plan accordingly for climate adaptation and resilience. You can piggyback on these assessments to define adaptation measures. When adding on-site solar power to a building, for example, you are likely to consider backing up that

system with alternative sources, such as batteries, to ensure the building still has power during a weather incident.

Three actions that can make your company more climate-resilient

As we've seen, piggybacking on established capabilities will move your organization ahead in its climate adaptation journey. Putting in place measures to manage climate risk is just the starting point. Companies can also seek opportunities to create value, though they will also want to take care not to inadvertently cause problems. Here are three moves to consider as you work on climate adaptation.

1. Align adaptation and decarbonization for co-benefits. Integrating your company's climate adaptation efforts with your net-zero program can yield significant advantages. An example is the practice of agroforestry, which coffee companies like Nespresso and Starbucks have embraced. This is an affordable land management system of planting trees on the same land as crops and livestock pastureland, resulting in significant ecological and economic advantages. In simple terms, agroforestry reduces or removes GHGs through increased carbon storage, mitigating climate change. But it has adaptive benefits too, like improving water retention and enhancing soil diversity and land use efficiency.

Similarly, co-benefits can be realized by improving the **energy efficiency of buildings**, whose operations account for up to 60% of urban emissions. Not only does energy-saving retrofitting support decarbonization and lower running costs, but it also increases resilience in the event of extreme heat (because of better insulation) and droughts (because of water efficiency).

As you set out to build an adaptation strategy, start by taking stock of your climate-related vulnerabilities—including infrastructure, operations, and supply chain exposure—and associated risks. Then, as you're coming up with plans to protect assets and processes, you can look for solutions that help reduce emissions as well.

2. Recognize trade-offs and unintended consequences. “Mainstreaming” adaptation into business decision-making is key. This practice does involve grappling with complex trade-offs, considering the significant future costs that

a company may incur by not factoring climate risk into its current thinking.

An agricultural business, for example, might have to make a choice between putting in place climate-resilient processes (like adaptive farming practices) and acquiring more climate-resilient assets (such as farmland in a location that is less exposed to climate risk). Arriving at the right answer may involve calculating extended financial costs and benefits, such as avoided losses and damage, while making a decision regarding the returns on an investment.

Companies will also want to watch out for short-term solutions that come with unintended consequences for the organization and its stakeholders.

Consider a **food, agriculture, and forest products** business that has seen its crop yield reduced by frequent climate shocks in a certain location. To that company, it may seem sensible in the short term to pull out of that area and go elsewhere. But such a move could trigger additional costs and disruptions for the business and its workforce while weakening the local economy. By addressing the issue instead with the use of more resilient crops, weather data systems, and new seed varieties, the company might find it can continue creating value in the same community and **strengthen the natural ecosystem** that the company depends on.

3. Use tech to zero in on both climate risks and opportunities. Certain technologies may be particularly well suited to supporting adaptation strategy. Early warning systems, mentioned earlier, are one example. At COP27 in 2022, the United Nations’ “Early Warnings for All” initiative unveiled a plan to use EWS to help protect every person on the planet against extreme weather events within five years. Various companies, including technology firms, are collaborating with the World Meteorological Organization on this initiative.

Weather and climate prediction startups are, in fact, already scaling up innovative weather prediction platforms. By applying artificial intelligence (AI) and machine learning (ML) to satellite and radar data, they can support organizations in better preparing for extreme weather events, and in growing their businesses.

One weather prediction tool, from climate analytics startup Terrafuse AI, uses AI and ML to forecast the probability of wildfires for any given location;

historical fire data, real-time satellite observations, and existing physical simulations inform this model. Insurance companies can use the tool to help base insurance prices on actual risk and to mitigate wildfire risks in their portfolios.

Another technological solution, digital twins, provides organizations with data-rich digital versions of real-world systems, territories, objects, or processes that give users insights into performance under different conditions and helps them simulate and plan for different situations. As part of a European Commission initiative, Destination Earth, a digital twin of the planet, is using data from real-time observations and simulations to determine the effects of climate change–related extreme weather events and inform adaptation and related strategies.

Adaptation for the long haul

According to the World Meteorological Organization, there is now a 66% likelihood that the annual **average near-surface global temperature** will surge to more than 1.5°C above pre-industrial levels for at least one year between 2023 and 2027.

Even if we could reach net-zero carbon tomorrow, we would continue to experience the effects of climate change. By focusing on adaptation now, companies can avoid current and future related losses. They can start by building climate threats into existing business continuity plans. And by devising adaptation solutions, they can grow their business.

There is no one target that indicates success at climate adaptation, no net-zero equivalent that all organizations can aim for. Adaptation is a process—a way of responding to constant change in physical conditions. This means no single approach will work for all companies. By applying the principles shared here, organizations can devise an approach that suits them, based on their unique risk exposure, and seize the opportunities that lie ahead.

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