



# The Decarbonization Journey

Five pillars to  
achieving net zero

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**The call to action on climate change has advanced over recent years with companies facing more pressure than ever to develop and execute a meaningful net-zero strategy. Investors are acutely aware of the relationship between stewardship and financial performance. The message to leaders is clear: Climate risk is being viewed as a financial risk, a driver of business insecurity. In a world of concerned stakeholders, organizations that fail to mitigate their emissions face the likelihood of reputation damage.**

Given the growing concern about the environment among key stakeholders, the definition of what constitutes sufficient action has expanded. The challenge: Acting with transparency to effectively reach environmental, social and governance (ESG) goals.

Globally, entities with net-zero targets – economies, companies, sectors – generate more than 51 percent of emissions and represent combined revenue of over \$11.4 trillion.<sup>1</sup> The number of net-zero pledges from cities, regions and companies has almost doubled since late 2019. However, these pledges will not mean much if organizations are unable to demonstrate real progress. A raft of stakeholders – customers, investors, regulators, and employees – are calling for decisive action to address the full scope of ESG issues, including climate change.

Quite simply, decisions made by leaders today will have an enormous influence on the future of life and commerce on the planet. Yet many of those leaders struggle to define and navigate a strategy that effectively meets objectives that often involve a complex array of underlying forces.

This paper is for organizations at any stage of their journey toward mitigating or eliminating greenhouse gas (GHG) emissions. Some are trying to decide what their first steps toward net zero will be; others have reached a more advanced level of maturity in their efforts.

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**Creating a low-carbon economy over the next 30 years is going to be one of the greatest challenges ever faced by the human race – we will not succeed unless there is a total and complete focus on decarbonization across all economic sectors.**

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Mike Hayes

KPMG IMPACT, Global Climate  
Change and Decarbonization Leader

<sup>1</sup> United Nations Climate Change, “Commitments to Net Zero Double in Less Than a Year,” September 21, 2020.

# The Five Pillars of Net Zero

**At the center of the net-zero imperative are five pillars of action**

1

**Decarbonize  
with strategic  
foresight**

2

**Operationalize  
sustainable  
behavior**

3

**Gain  
regulatory  
agility**

4

**Accelerate  
climate-focused  
partnerships**

5

**Digitize data and  
processes to build trust  
and prove results**

Organizations on the net-zero journey need to gather and analyze data that gives a clear picture of their emissions footprints. In order to build confidence in companies' pledges, data should be objective, easy to compare and up to date. To achieve this, companies should look beyond simple reporting tools and consider a broader technology framework to manage the entire process, infusing trust along every step.

# 1. Decarbonize with strategic foresight

**Leaders across sectors have to address several competing imperatives: recover from the COVID-19 crisis, prepare for a world of artificial intelligence (AI) and extreme automation, and grow in increasingly competitive markets, while achieving their net-zero pledges.**

Many Fortune 500 companies have outlined decarbonization strategies to achieve their targets. These strategies rely on a number of levers that include accelerating the shift to renewables, developing new product offerings, re-locating facilities, investing in carbon capture, and optimizing tax credits. The detailed strategies vary significantly across industries, but there are basic elements that apply to every organization.

## **Key steps toward low-carbon and net-zero operations include:**

- Ensure decarbonization aligns with your overall business strategy
- Evaluate and develop a common understanding of the nonlinearity of climate change, competition for renewables and offsets, and the impact of decentralized energy in the marketplace
- Define the reporting strategy for internal and external stakeholders, including public disclosures
- Shift your capital structure to account for the increasing role of climate in finance
- Align executive compensation with environmental performance
- Demonstrate provable progress through targeted emissions-reduction initiatives that support broader business goals

There is no right way to set a decarbonization goal. Meeting your stakeholders' growth, profitability, reporting, and disclosure expectations and emission targets may be enough. For example, Google is the largest corporate buyer of renewable energy in the world, has been carbon neutral (Scope 1 and 2) since 2007, has eliminated its entire footprint since its founding, and is able to raise capital for renewable generation on behalf of its suppliers. There are many other examples of organizations that are meeting stakeholder goals and using their brands and balance sheets to drive additionality.<sup>2</sup>

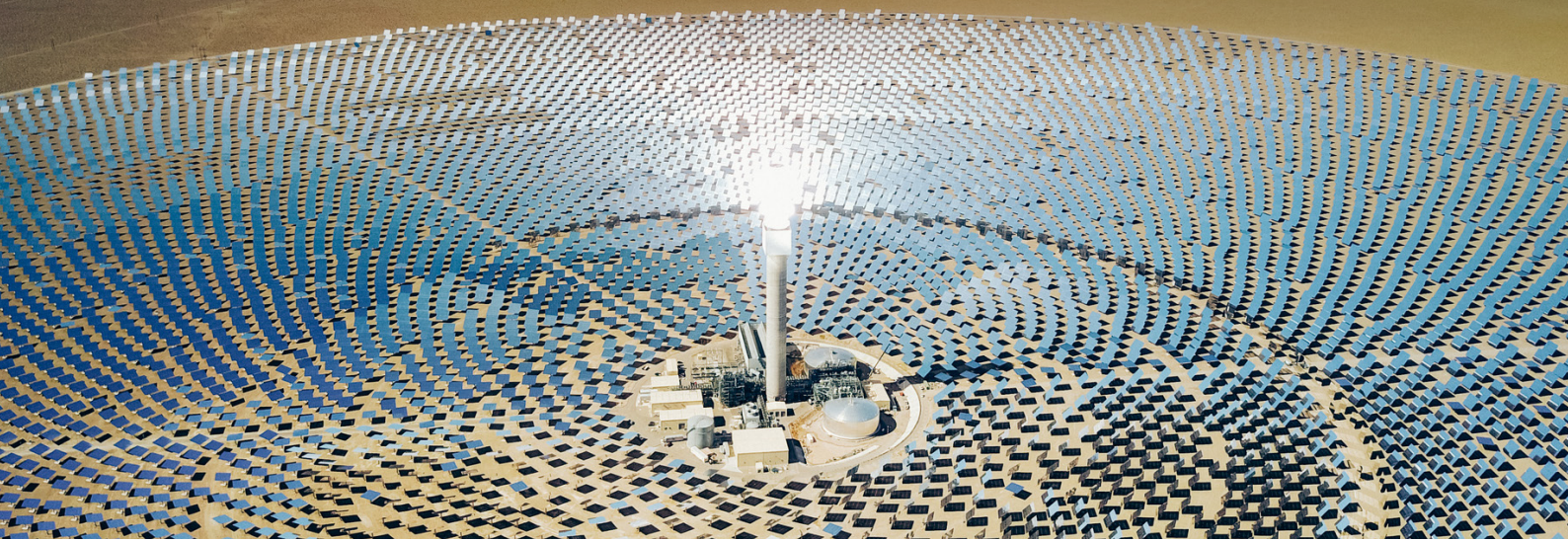
Further, there is mounting evidence that an effective net-zero transformation can unlock new business potential – new markets, products and value propositions. In the automotive industry, Scope 3 emissions from vehicle sales currently account for the majority of manufacturers' footprints.<sup>3</sup> Going forward, numerous players are undertaking a fundamental shift from high-emission products to low- or no-emission electric vehicles. For example, Jaguar Land Rover will make its Jaguar line electric-only by 2025; Volvo says it will do so by 2030, and GM by 2035. These moves will serve the dual purpose of increasing revenues, while reducing emissions.

Companies in other sectors are also taking decisive action. One example is the oil and gas sector, with its efforts to add renewables and cleaner production into its mix. Low-carbon fuels are one differentiated offering that could drive revenue for producers. When producers are able to prove reductions in emissions, they can create a high-quality, differentiated "green" gas that sells at a premium. Another example is consumer packaged goods, where companies are going above and beyond net zero by including emission data related to their production on their customer-facing labeling.<sup>4</sup>

<sup>2</sup> Google, Environmental Report 2020, 2020.

<sup>3</sup> General Motors, "Driving Sustainable Value, Sustainability Report," 2019. Reducing Carbon Impact | General Motors 2019 Sustainability Report.

<sup>4</sup> Unilever, "Unilever sets out new actions to fight climate change, and protect and regenerate nature, to preserve resources for future generations," June 15, 2020.



## 2. Operationalize sustainable behavior

**Understanding your carbon footprint is just the beginning. The key to ingrain sustainability in your operations is to focus on the business case for these initiatives. Further, incorporating decarbonization into your existing in-flight and proposed organizational transformations may unlock additional benefits for the business and stakeholders.**

The fundamental shift that needs to happen when an organization seeks to decarbonize can only be achieved if the people and cultural psychology of that organization have fundamentally shifted as well. This is not something that can be easily compartmentalized. It has to infiltrate every part of an organization so that climate risk and opportunity become instinctive parts of business thinking at every level.

There are a number of ways to operationalize decarbonization, whether it's by pursuing energy efficiency and renewable energy or leveraging the expansion of green-finance and carbon-pricing mechanisms.

### **Become energy efficient and transition to renewables.**

Several pressures and trends are converging to make transitioning to renewables not only more urgent but also more viable to adopt. Beyond pressures from customers and investors – and peer pressure as competitors advance their ESG initiatives – are the declining overall costs of wind and solar energy generation.

However, the greenest energy is the energy that isn't consumed in the first place. The utility sector has championed the use of energy-efficiency programs, time-of-use pricing, and energy-management programs, as these initiatives have proven to be more cost effective than investing large capital dollars into expanding energy-generation capacity.

Further, many organizations early in their ESG journeys have found that the investment in Sustainability Manager and Energy Manager positions paid for themselves many times over. The direct cost savings in LED lighting retrofits, water conservation, HVAC upgrades, demand-response programs, and energy-conservation campaigns have covered the initial salaries, provided strong ESG evidence for stakeholders, and created buy-in for larger investments.

Transitioning to clean-energy sources is a far more visible pathway toward net zero for many organizations, once the lightbulbs have been retrofitted and upgraded. In fact, at many of the largest American companies, green power represents a sizeable percentage of total electricity consumption – and a good number of those enterprises are at 100 percent or more green energy.<sup>5</sup>

<sup>5</sup> EPA, Green Power Partnership, "Green Power Partner List," 2021.

### There are three primary vehicles for making the switch:

- **On-site deployment**, such as installing solar panels on a building or in a parking lot.
- **Off-site consumption** through a power-purchase agreement (PPA) that can take either physical possession and management of the energy (Physical PPA) or a financial position (Virtual PPA) of a solar array or wind turbine.
- **Renewable Energy Credits (RECs)** procured through your utility or another 3rd party where 1 REC is equivalent to 1MWh of clean energy. RECs can be certified to ensure that the carbon emissions avoided are not being double counted by multiple groups.

In 2020 Target was recognized by the EPA Green Power Partnership for their approach to developing both on-site and off-site renewable energy projects. Together the 260MW of on-site solar and 140MW of off-site financial power purchase agreements the company has developed are generating over 400 million kwh annually. This work helped them achieve their goal of installing solar panels on 500 of their buildings by 2020.<sup>6</sup> Target has also been praised for their pursuit of energy efficiency; over 1,500 of their buildings have earned ENERGY STAR status, an energy-efficiency certification through the EPA.<sup>7</sup>

### Access green-finance.

Governments and the financial sector see the need for capital to flow toward solutions – and hence toward organizations – that will enable decarbonization, creating an exceptionally strong market for green and social bonds. Green bonds operate like traditional bonds except they require the proceeds to generate environmental and/or climate benefits.<sup>8</sup>

Demand for sustainable debt – including social bonds and the trillion-dollar green bond market – is so strong that it exceeds supply by several orders of magnitude. In a telling event, the EU's first social bond was oversubscribed 14 times over and exceeded €233 billion, or \$286 billion, believed to be the largest debt offering ever.<sup>9</sup> The continuously growing market underscores the importance of traceability and verification for investors – and the results need to be attractive.

### Access carbon markets and pricing.

International carbon markets and pricing are subjects of great interest. Article 6 of the Paris Agreement, which aims to establish an international carbon-offset market, will be a core topic at COP26 in November 2021 because it is a major part of the effort to address climate change – and an area that is lagging (since it is the most complex of the articles in the accord). Of note is article 6.2, which calls for a carbon-accounting framework for international cooperation. To be compliant, governments will have to enact legislation calling for climate-change accounting systems, which would entail imposing a tax or tariff on each ton of carbon emissions emitted at a sector or national level.

Beyond the purview of the Paris Agreement though, companies are exploring the use of high-quality, verifiable carbon offsets to achieve their net-zero targets. Carbon offsets enable entities that are physically restricted from fully transitioning to renewable energy to fund initiatives that remove carbon from the atmosphere. For certain sectors, such as airlines or pharmaceutical manufacturing, carbon offsets are critical to achieving net-zero goals.

### Incorporate carbon pricing into long-term planning and day-to-day decisions. There are two primary mechanisms for doing so:

- **Shadow Pricing**, where a theoretical price on carbon (at \$10-\$50/ton) is incorporated into the ROI and cashflow analyses of major investments
- **Internal Carbon Fees**, where individual business units are levied \$10/ton (or similar) on certain operational purchases, such as company travel, while leveraging existing travel management systems. These funds may then be redistributed for local carbon-offset programs, employee engagement on ESG topics, and/or other strategic initiatives that further organizational ESG objectives.

Several organizations across industries – including Disney, Microsoft, BP, and Shell – have adopted these shadow prices and/or carbon fees to incentivize and operationalize the right decision-making for carbon neutrality.<sup>10</sup>

<sup>6</sup> EPA Green Power Partnership, "Green Power Leadership Awards," 2020.

<sup>7</sup> Target, "2020 Target Corporate Responsibility Report," 2020.

<sup>8</sup> UNDP, "Financing Solutions for Sustainable Development," 2021.

<sup>9</sup> American Banker, "The sustainable debt market has become unsustainable," October 22, 2020.

<sup>10</sup> Center for Climate and Energy Solutions, "Carbon Pricing: A Case for Transformative Climate Action," November 7, 2017.

# 3. Gain regulatory agility

**Without the mechanism in place to reliably report emissions reductions, many organizations risk getting caught flat-footed as regulations and standards tighten.**

Executive orders on climate change began in the first days of the Biden administration. The country reentered the Paris Climate Agreement, the treaty signed by some 200 countries aimed at holding global average temperature increases to well below 2°C above pre-industrial levels, with a focus on limiting the increase to 1.5°C. As part of this commitment, the administration has pledged to achieve net-zero emissions by 2050 and to decarbonize the power sector by 2035.

Ultimately, complying with environmental standards and staying vigilant to potential regulatory changes will help companies maintain or achieve competitive advantage in an ESG-aware marketplace. Organizations that are proactive instead of reactive can reduce costs across complex operations and supply chains and set themselves up for innovation while deploying strategies that ensure long-term viability in an increasingly climate-conscious market.

## Think local.

On March 11, 2021, the American Rescue Plan Act was enacted as Public Law 117-2 and the first stimulus package of 2021, which included tax-credit extensions for certain renewable-energy and carbon-capture projects enacted in 2020.

Legislation is also increasingly being enacted to cap emissions from real estate. Several U.S. cities have benchmarking ordinances. A specific (and strong) instance is the Climate Mobilization Act enacted by New York City in 2019 to cap carbon emissions on most buildings larger than 25,000 square feet, or roughly 50,000 buildings in the city. Similar regulations may become standard in areas across the U.S. and may result in billions of dollars in fines if the real estate sector continues with business-as-usual and fails to decarbonize.

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**The social cost of carbon (SCC) quantifies the economic impact of carbon emissions. Used by local, state and federal governments, this measurement informs billions of dollars of policy and investment decisions. It wouldn't be a surprise if the current administration actively revisits and continues to increase the SCC, making the negative contribution to climate increasingly expensive.**

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Amy Matsuo  
KPMG Principal & Lead,  
ESG & Regulatory Insights

## Adapt to climate disclosure requirements in filings.

The U.S. Securities and Exchange Commission recently issued a statement that its Division of Corporation Finance will “enhance its focus on climate-related disclosure in public company filings.”

The agency emphasized that its staff will review the extent to which companies comply with federal disclosure obligations so they can better understand how the market is managing climate risk. The agency views these as steps it can take “on the path to developing a more comprehensive framework that produces consistent, comparable, and reliable climate-related disclosures,” meaning that companies will need to be prepared with strategies to reliably manage these evolving and potentially expanding reporting requirements.<sup>11</sup>

<sup>11</sup> Securities and Exchange Commission, “Statement on the review of climate-related disclosure,” February 24, 2021.



## 4. Accelerate climate-focused partnerships

**Many of the world's leading brands are setting the standard with ambitious goals of eliminating their GHG emissions. It is becoming increasingly common for leading companies to pursue their agendas in partnership with industry peers, industry groups, NGOs, and suppliers that can help leaders hone their strategies.**

All the mechanisms for achieving net-zero are not yet apparent. However, the pain points across organizations are similar. By looking outward for partners and alliances across sectors, organizations can collaborate on action, spark innovation, and accelerate broader progress toward larger societal goals.

### **Engage supply chain partners.**

For many organizations, Scope 3 carbon emissions represent the largest pain point in their carbon footprints, due to the degrees of separation from the points of origin. However, in starting the conversation with suppliers there are opportunities to collaborate. For example, in 2017 Walmart announced Project Gigaton to avoid one billion metric tons (a gigaton) of greenhouse gases from the global value chain by 2030.

**Organizations can collaborate on action, spark innovation, and accelerate broader progress toward larger societal goals.**



### Join inter- and intra-industry associations.

Peer group coalitions, both existing and new, are incorporating an ESG lens into their work to share leading practices, foster networking, and provide the recognition that stakeholders are looking for. The Sustainable Purchasing Leadership Council was founded to bring together procurement professionals across sectors to develop ways to leverage their collective purchasing power for societal good; their 175+ members currently represent over \$300B in spend annually. As part of Hilton's annual leadership awards in 2020, the company was recognized for their commitment to reducing single-use plastic at their hotel in Bali, Indonesia. Hilton has been able to eliminate over 460,000 single-use water bottles and realize a 40-percent cost savings by partnering with a local Bali-based small business. They invested in a gap assessment and relevant certifications for the team and provided training on leading procurement practices in order to expand this effort.<sup>12</sup>

<sup>12</sup> Sustainable Purchasing Leadership Council, "SPLC Leadership Awards," January 2021.

### Think outside the box.

The climate crisis is unlike any other challenge faced by organizations and the planet before. While daunting, new and creative thinking on the issue will continue to emerge. One example: In 2020, Microsoft announced a partnership with the French energy company ENGIE to purchase a long-term 230MW Power Purchase Agreement (PPA) from a wind and solar farm in Texas. Though PPAs are an increasingly common avenue for pursuing decarbonization, Microsoft and ENGIE took the idea one step further by leveraging ENGIE's Darwin software in conjunction with Microsoft's Azure cloud services. Together they are scaling the use of AI and Internet of Things (IoT) to improve the reliability and performance of renewable energy.

#### **\$20+ trillion**

The likely accumulated global benefit of limiting average global temperature warming to 1.5°C relative to 2°C.<sup>13</sup>

<sup>13</sup> Nature, "Large potential reduction in economic damages under UN mitigation targets," May 2018.

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**It is promising to see the creative solutions corporations are developing to achieve their net-zero targets, but it leads to a fundamental question – what happens in five or 10 years if a sizable portion of Fortune 500 companies claim to be 'carbon neutral' and yet emissions continue to go up? Which companies have the credibility to withstand the scrutiny, which sectors collapse from the weight of a carbon tax and what happens to all the other companies in between?**

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Pravin Chandran  
Director, Enterprise Innovation

# 5. Build trust and prove results

**Demonstrating provable progress is critical when it comes to capitalizing on the strides made through decarbonization programs. Customers, investors, lenders, and stakeholders are looking for transparent and high-fidelity data to support claims of progress, i.e., reputational and financial benefits.**

The convergence of powerful technologies – cloud computing, machine learning, blockchain – to drive insights into emissions, arrives at a tipping point when time is running out to prevent global atmospheric temperature from rising above the threshold marked by 1.5°C.

## Report and prove results.

With precise data across emission footprints, companies can begin to assess where and how to act. Organizations can better understand their environmental impact and their progress when they have reporting and analytics tools based on verifiable data at their fingertips. Here's a look at where KPMG's services fit into our client's net-zero efforts:

- *Gathering granular data.* Many companies across industries have already invested in advanced sensors to measure emissions and consumption. Gathering and integrating real-time, asset-level data alongside existing disparate and often incomplete internal and external systems and data sources are significant barriers to an organization's ability to understand its emissions footprint.
- *Ingesting data in an automated way.* Emissions are omnipresent throughout any organization's operations. To demonstrate progress in emission reduction, organizations need to roll up emissions from an asset level to the enterprise level. By creating automated mechanisms for managing, processing, and cleaning incoming data, organizations can significantly reduce pain points and the manual processes associated with data collection. For example, energy companies leverage technologies such as natural language processing (NLP) to ingest data from various sources, and they use it to contextualize and enhance emissions insights.
- *Gaining visibility through insights and analytics.* Machine learning detects patterns of consumption and emissions, which enables organizations to make proactive and prescriptive changes, such as when to turn on the lights or adjust HVAC systems based on occupancy patterns. This technology-driven approach helps to mitigate emissions and improve overall operational efficiency, thereby reducing costs. Asset-level analytics also help identify which assets are under- or over-performing against targets, enabling proactive adjustment of decarbonization strategies.
- *Leverage digital-trust technology.* The marketplace must trust the data – and blockchain is the platform for proof. Designed to be an immutable ledger, blockchain is the trust mechanism that answers questions around “how much,” “where” and “when,” proving results in a secure and demonstrable way.
- *Satisfy stakeholders and share your success.* Establishing credibility is just the first step. Organizations need a consistent way to carve out a climate success story, backed with verified measurements and metrics. Including emissions data in external disclosures, traced to the original source and stored on the blockchain, will enable organizations to derive the insights that their stakeholders want to see.



**Verifiable data will be critical for companies that want to demonstrate progress toward their climate goals, satisfy customers and investors, and get ahead of claims of greenwashing. Organizations with strong data and technology approaches to their carbon footprint will establish themselves as climate leaders in their space.**



Tegan Keele  
Managing Director, Enterprise Innovation

# The era of climate action demands climate accounting

**Five pillars of climate change action can help leaders facing the challenge of reaching net zero.**

## 1. Decarbonize with strategic foresight

Use a mix of renewables, avoidance, carbon capture, and carbon credits.

## 2. Operationalize sustainable behavior

Monetize mitigation efforts and use insights to gain efficiencies.

## 3. Gain regulatory agility

Become more nimble in a shifting regulatory landscape.

## 4. Accelerate climate-focused partnerships

Coordinate and align overall efforts with a range of partners and alliances.

## 5. Build trust and prove results

Collect, analyze and disseminate data to gain the trust of stakeholders.

**The era of climate action has arrived: Stakeholders want to see net-zero strategies in place – and they will want to see proven results. The degree to which an organization can pursue action-oriented strategies will depend on the nature of the business and how far the company has already advanced its efforts on net zero. At the center of the effort is the ability to report mitigation results. The very technologies driving wholesale transformation are the foundations of a platform that serves up two key elements: traceability and accountability.**

**Expect legislation** in the coming years that will push the country further toward net-zero emissions. From a regulatory perspective alone, companies will need to act to attain compliance. Meanwhile, consumers and investors will continue to demand action around mitigation and the adoption of renewable energy sources. Action is not only about emitting less and moving toward net zero; it is also about generating energy from renewables that emit zero greenhouse gasses.

### **Move beyond unbundled RECs.**

As investors focus on additionality, they are increasingly questioning the environmental benefit of “legacy RECs” or those associated with projects that were funded and became profitable years ago. Fortunately, between on-site and virtual generation, enterprises have a variety of options to choose from to meet unique needs driven by demand, local regulations, grid infrastructure, availability of space and funding models. As entities increase the use of renewable energy, climate accounting can help measure the impact.

**Open opportunities with climate accounting.** With highly granular, quality emissions data and analytics, companies can:

- Demonstrate compliance to regulators
- Respond to the demands of investors and consumers
- Offer low-carbon products
- Gain financial efficiencies, such as reduced insurance premiums
- Maintain competitive advantage in a marketplace that is becoming increasingly oriented to ESG and focused on the actions behind net-zero pledges.

### **Maintain competitive advantage.**

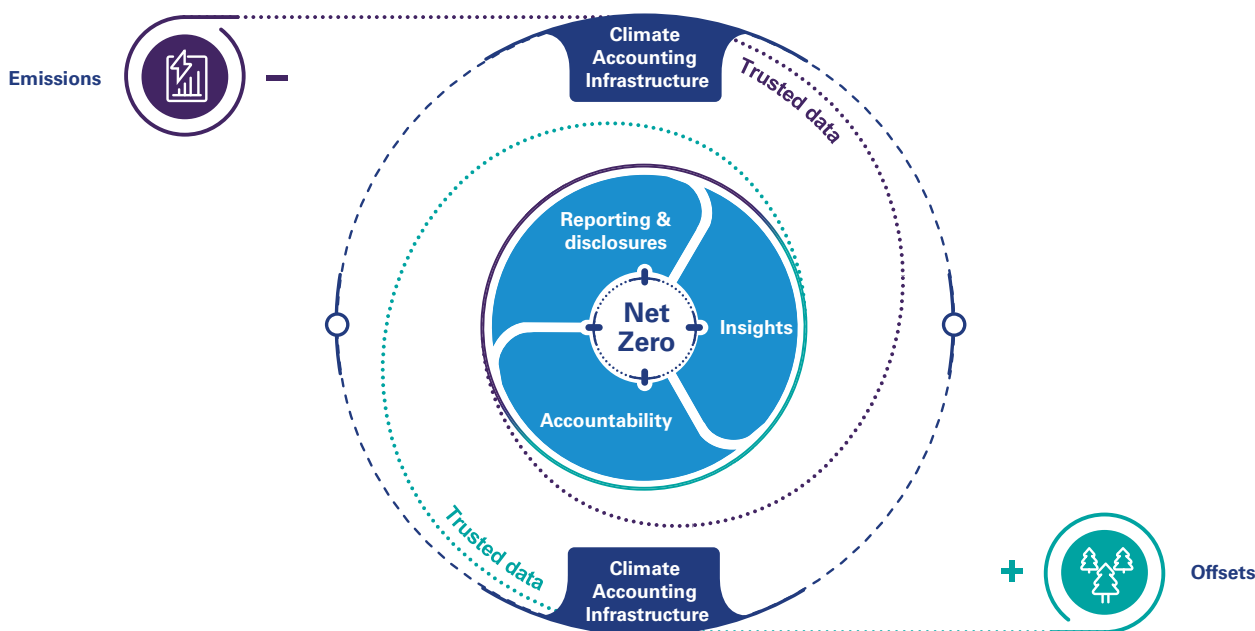
As companies pursue deals, their action or inaction on climate change may result in a weeding out process through which consumers and regulators take their money elsewhere and impose hefty penalties. Calls to shift tax burdens from income to carbon should also be on the radar of leaders in the midst of a growing green economy.

### Tell a success story.

An increasingly important component of a brand will be the story it tells around its climate impact. Words and pledges won't be enough to tell a story about climate action; numbers will be needed to prove the results. And those numbers can become the foundation of external narratives that speak directly to concerned stakeholders. They will be emblems of progress.

Organizations facing pressures to commit to – and make progress toward – net-zero emissions need to take effective action to reduce and eventually eliminate their greenhouse-gas footprints. KPMG can support companies as they develop decarbonization strategies, implement Corporate PPA programs and demonstrate progress towards their pledges with trusted data.

Our experts can help organizations design and implement a carbon offset program, capture and integrate data needed to build out GHG measurement capabilities and advise leaders on tax incentives related to net-zero initiatives.



## Visibility into emissions

**Net-zero pledges won't mean much to consumers and investors unless there is action and verifiable progress behind them. Regulators will want proof of compliance.**

A net-zero strategy that deploys emissions accounting can provide the trusted traceability and reporting that are the critical stepping stones toward honoring net-zero pledges.

The KPMG Climate Accounting Infrastructure comprises a set of capabilities and accelerators that

help leverage digital technologies – IoT, cloud, machine learning, and blockchain – enabling companies to capture, measure and verify emissions data that all interested parties can trust. Combined, these technologies give leaders the capability to demonstrate in detail that they have managed and reduced greenhouse gases.

The KPMG Climate Accounting Infrastructure can help organizations integrate existing systems and data from internal and external sources to establish a verifiable trail of emissions and offsets that will be

recorded on the blockchain. The blockchain enables regulators, customers, third-party certifiers, and other interested stakeholders to see the data lineage and emissions footprint. For example, if an energy producer has made significant progress reducing methane intensity, it will be visible right there in the data and on a dashboard.

**The KPMG Climate Accounting Infrastructure is a game-changing emissions-data ecosystem backed by AI and blockchain that can enable organizations to better pursue their net-zero journey.**



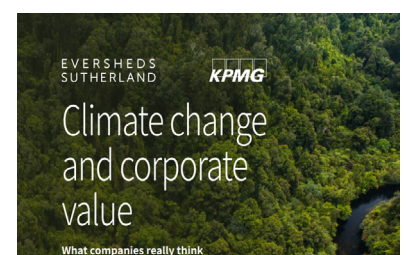
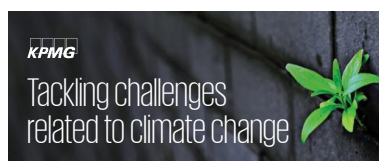
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KPMG IMPACT helps achieve your ESG imperatives. It is a holistic ESG solution that paves a clear path to sustainable business while driving measurable growth today. Our extensive services and capabilities focus on priority ESG issues, such as climate change, sustainable finance, and reporting, with a wide range of data-driven solutions and deep industry expertise. Find out how we can simplify your ESG journey. **Sign up for ESG Alerts at <http://visit.kpmg.us/IMPACT>.**

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# Authors



**Mike Hayes**  
KPMG IMPACT, Global  
Climate Change and  
Decarbonization Leader  
mike.hayes@kpmg.ie



**Tegan Keele**  
Managing Director,  
Enterprise Innovation -  
Climate Data and Technology  
tegankeele@kpmg.com



**Amy Matsuo**  
Principal & Lead, ESG &  
Regulatory Insights  
amatsuo@kpmg.com



**Pravin Chandran**  
Director, Enterprise Innovation -  
Climate Data and Technology  
pravinchandran@kpmg.com



**Arun Ghosh**  
Principal, Advisory  
Enterprise Innovation -  
Climate Data and Technology  
arunghosh@kpmg.com



**Alistair Hall**  
Senior Associate, Advisory,  
Transformation Delivery  
alistairhall@kpmg.com



**Katherine Blue**  
ESG and Decarbonization  
Advisory Services Leader  
kblue@kpmg.com

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