

From Pledge to Practice: Delivering Corporate Net-Zero Emissions Commitments

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Introduction

Even in the face of headwinds from the Russian invasion of Ukraine and the resulting global energy crisis, supply chain disruptions, and deep political divides – including a backlash against ESG (environmental, social, and governance) reporting – the pressure on companies to revamp their business models for the clean-energy future continues to build.¹ Hardly a day passes without a major company pledging to step up to the challenge of decarbonization with a commitment to net-zero greenhouse gas (GHG) emissions. As of 2023, almost 9,000 companies and financial institutions have signed onto the UN-backed Race to Zero campaign.² Over 4,500 business and financial institutions are working with the Science Based Targets initiative (SBTi).³ And more than one third of the world's largest companies have publicly set net-zero targets.⁴ This momentum toward net-zero GHG emissions by mid-century – established as a global goal at the 2021 Climate Change Summit (COP26) in Glasgow and reinforced at the 2022 COP27 Climate Summit in Sharm el-Sheikh – signals that the *sustainability imperative* has emerged as a business norm and a strategic issue for corporate leaders.⁵

Although the need to regear for a low-GHG emissions future cuts across all sectors, deep decarbonization is complex, and thus no two companies will follow precisely the same emissions reduction pathway. Corporate net-zero goals, strategies, and implementation mechanisms will vary by industry, geography, organizational structure, size, and ownership model. Mindful of the diversity of possible approaches, this article unpacks the challenges underpinning corporate net-zero GHG pledges and provides recommendations for a path forward. It synthesizes previously disparate information to provide a comprehensive taxonomy of net-zero pledge issues and a strategic roadmap for business leaders. Building on our extensive research on corporate net-zero strategies, a recent survey of the emissions reduction commitments of the world's largest (Global 500) companies, and interviews with a diverse set of corporate executives, we offer insights that will enable management teams to respond thoughtfully and strategically to the growing pressure to make a net-zero GHG pledge.⁶

Critical Drivers of Net-Zero Pledges

Before spelling out *how* to establish a net-zero GHG pledge, we believe it is important to understand *why* the pressure for net-zero pledges has burst onto the business scene. Through our research with a wide range of companies, we have identified three critical drivers*: (1) emerging reporting standards and regulatory regimes; (2) sustainability-minded shareholders and financial institutions; and (3) stakeholder scrutiny.

*To comply with the ICSD page limit requirement we have omitted explanations of the three critical drivers. Please refer to the full forthcoming article in MBR for a comprehensive overview.

As interest in climate change rises and the push toward a clean-energy future picks up speed, companies face ever more intense questioning from shareholders about whether their business models position the enterprise to emerge a winner from the energy transition that is now underway. It seems increasingly clear that which companies will thrive and gain competitive advantage in the years ahead depends on how their CEO and leadership teams respond to the changing marketplace realities imposed by climate change and other sustainability concerns.⁷ Like other sustainability initiatives, well-designed corporate decarbonization efforts can deliver efficiency gains, lower costs, spur product and service innovations, and drive business model transformation – all of which can enhance competitiveness and increase shareholder value.⁸

Taxonomy of Corporate Net-Zero Pledges: Challenges, Pitfalls, and the Path Forward

With a deeper understanding of the drivers behind corporate net-zero GHG commitments, we now turn to *how* companies can create high-credibility, strategy-enhancing pledges. Based on our review of corporate sustainability strategies and a survey of top executives trying to make sense of decarbonization pressures, we have identified eight common problems in net-zero GHG pledges that result from the complexity of decarbonization. In analyzing this list of concerns, we highlight common pitfalls to avoid and offer corresponding pathways forward to ensure the optimal results from a corporate climate change commitment. We note that there is rarely a single right answer when it comes to making net-zero pledges and to designing decarbonization strategies more generally. Our pathways do not therefore purport to offer a one-size-fits-all solution, but rather we endeavor to highlight critical choices and outline a range of possibilities and approaches.

Challenge #1: Definitional inconsistencies in net-zero commitments

Despite the momentum behind the concept of corporate GHG net-zero pledges, the lack of standardized terminology often makes it hard to understand exactly what a company has committed itself to do.⁹ Some corporate pledges are framed in terms of *zero carbon*. Others talk about being *climate neutral* or *climate-positive*.¹⁰ In fact, across the Forbes Global 2000 companies, we find more than fourteen different terms used to describe corporate net-zero GHG targets.¹¹ And whatever the language used or terms chosen, these pledges often provide little clarity about the company's *real* commitment to GHG emissions reductions. Unclear definitions and divergent interpretations of targets may obscure corporate pledge objectives, confuse investors and other stakeholders, make monitoring difficult, and render benchmarking or comparative analyses useless.

While we think the business world would benefit from a common framework for ESG reporting, we think the structure and emphasis of net-zero pledges should vary from industry to industry. The global consensus that *net-zero emissions* refers to “the state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere” provides a baseline for net-zero pledges.¹² But this common endpoint does not mean all pledges must be in the same format. As the University of Oxford Net Zero initiative highlights, different terms refer to divergent ways in which emissions sources and sinks are accounted for in the decarbonization context.¹³ A single pledge structure would greatly limit the range of approaches companies might want to take – reflecting diversity across industries, business models, technological capabilities, and access to capital. We advocate transparency and clarity. Regardless of the terms a company chooses, a net-zero pledge should be clearly specified – and provide a basis for tracking of progress and ensuring accountability.

Pitfall: Use of unclear definitions or disfavored terms can obscure the commitment being made and even raise suspicions that the company has something to hide.¹⁴ For example, a promise to be *carbon neutral* might be read as advancing a limited focus on CO₂ and not a pledge to reduce all GHGs.

Path Forward: Clearly define whatever terms frame the net-zero GHG pledge – explicitly stating the full scope of the GHG emissions reduction, timeline, activities covered, and role of carbon removals.¹⁵ Ensure consistency across all internal and external climate change messaging, strategy documents, and reporting. Update definitions if needed and explain why such updates are being made to stakeholders and the public through annual sustainability reports (e.g., to respond to new climate science or mergers and acquisitions). While this guidance may seem common sense, multiple Forbes Global 2000 companies with decarbonization commitments do not specify the gasses covered.¹⁶ Moreover, an investigation of corporate voluntary GHG emissions disclosure found inconsistent messaging and reporting, with French companies disclosing lower emissions information in their corporate reports than to the CDP.¹⁷

Challenge #2: What GHGs should be covered?

Meeting the global challenge of climate change demands that corporations take into account the full suite of greenhouse gases, including the six major GHGs covered by the Kyoto Protocol and subsequent GHG Protocol Corporate Accounting and Reporting Standards: carbon dioxide (CO₂), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), and methane (CH₄), as well as industrial gases such as sulfur hexafluoride (SF₆), and perfluorocarbons (PFCs).¹⁸

Although CO₂ is the most prevalent GHG and persists in the atmosphere for hundreds of years, shorter-lived gases, such as methane and HFCs, have a larger Global Warming Potential (GWP), meaning that they trap substantially more heat in the atmosphere. Multiple studies have identified companies with decarbonization commitments that do not specify clearly whether they cover CO₂ or a wider basket of GHGs.¹⁹ A pledge with a limited CO₂ focus will be seen by many as incomplete and insufficient, especially in industries such as agriculture, oil and gas, and waste management, in which non-CO₂ GHGs represent a significant share of emissions.²⁰ In farming, for example, nitrous oxide can account for more than half of the GHGs emitted, and methane represents another one third of the sector's emissions.²¹ Just 12 percent of the emissions from agriculture come from CO₂. Thus, food companies disclosing only their CO₂ emissions would be substantially under-reporting their climate change impact.

Pitfall: With the need for a comprehensive response to climate change that covers all GHGs, any company that narrowly frames its net-zero pledge in terms of CO₂ emissions might well face pushback and criticism. For example, companies in the aviation sector have recently come under scrutiny for reporting CO₂ emissions without covering all non-GHG climate forcers such as contrails, which experts estimate may be responsible for nearly two-thirds of aviation's climate impact.²²

Path Forward: Monitor and report on the full spectrum of *material* GHG emissions from the entire enterprise – covering all business units and subsidiaries and across all geographies in which the company operates. Non-CO₂ emissions should be translated into CO₂ equivalents using factors defined by the GHG protocol.²³ Some companies are expanding their emissions reporting outside the traditional GHGs to include additional

climate forcers such as black carbon, the major component of soot. Maersk, for example, reported on black carbon emissions for the first time in 2022 in recognition of the public health and air pollution impacts.²⁴ The company also reports against absolute intensity reduction targets disaggregated by air cargo, terminals, logistic facilities, and landside activities.²⁵

Challenge #3: Scope of GHGs covered

Most companies recognize the need to address their scope 1 and 2 emissions – that is, their direct emissions and those associated with their purchased electricity, steam, heating, and cooling. Scope 1 emissions are relatively straightforward to measure, as Bolton and co-authors explain in a recent *Management and Business Review* article.²⁶ Most companies report these direct emissions.

Scope 2 emissions are also commonly reported, yet differing energy sources and accounting methodologies can affect comparability. A company that has signed a power purchase agreement from a wind farm, for example, cannot claim to use 100 percent renewable energy if, on windless days, their energy comes from a grid that relies on fossil fuels. This mismatch between renewable electricity generation and electricity consumption can lead to different scope 2 emissions numbers depending on the accounting method – market-based versus location-based. Moreover, some forms of green electricity procurement, such as renewable electricity certificates (RECs) can suffer from credibility issues related to certificate oversupply and double counting.²⁷ As renewable or *green* electricity becomes increasingly important to business operations and new fuel products, stakeholders will demand greater transparency on scope 2 emissions and electricity sources.

Scope 3 (supply chain and emissions from customer use of the product) poses a yet greater number of methodological, logistical, and financial challenges.²⁸ But these emissions may be the most critical for some companies – and may present the most significant opportunities for corporate GHG reductions. The Rocky Mountain Institute reports that the average company's supply-chain emissions are more than five times higher than direct emissions from the company's own operations and assets.²⁹ For some companies, such as Unilever, Volkswagen, and Nestlé, scope 3 emissions account for over 95 percent of all their GHGs.³⁰ Yet only one third of the Forbes Global 2000 companies with net-zero pledges report scope 3 emissions alongside scopes 1 and 2.³¹ Moreover, some of those reporting scope 3 emissions have chosen to rely on industry estimates, as permitted by the widely followed GHG Protocol.³² But industry estimates, although a useful starting point, can be misleading indicators of the performance of particular companies.³³ Relying on such estimates can even allow companies with moderate-to-poor scope 3 performance to reap the benefits of supply chain innovations introduced by competitors, because such innovations reduce the entire industry's average emissions.³⁴

Companies in industries where emissions derive largely from *product use* rather than *production* are under particular pressure to report scope 3 emissions. ExxonMobil, for instance, drew significant criticism for excluding scope 3 emissions in their 2050 net-zero goal – and faced a shareholder challenge on this decision.³⁵ Although the shareholder resolution to set scope 3 targets was ultimately voted down, the company will almost certainly eventually have to follow suit behind Shell, BP, and Chevron, all of which established scope 3 targets after shareholder votes to force the issue.³⁶

Pitfall: Low-quality RECs might not generate the intended scope 2 GHG emissions reductions. Similarly, by ignoring scope 3 emissions companies narrow the picture of their GHG footprint. In doing so, they may appear to be misleading those who want a clear and comparable representation of corporate emissions and dodging their responsibility for climate change.

Path Forward: Account for the company's full GHG emissions footprint (including scopes 1 and 2 – and scope 3 where these emissions are material). For scope 2, the ISO Net Zero guidelines recommend companies prioritize renewable energy through on-site installations or power purchase agreements (PPA).³⁷ Google, for example, sources 77 percent of energy from on-site generation or local PPAs and is pioneering 24/7 monitoring and matching renewable energy generation with consumption.³⁸ To increase scope 2 reporting accuracy, we support the ISO recommendations that companies report both market-based and location-based scope 2 emissions, and use the larger of the two values towards their aggregated total emission estimates.³⁹

For scope 3, Comello and co-authors propose a time-consistent corporate carbon reporting framework that incorporates upstream emissions calculations in accordance with the general E-liability framework⁴⁰ – which combines environmental engineering, basic cost-accounting methods, and blockchain technology to measure a product's cradle-to-gate carbon footprint – as well as downstream product carbon footprint metrics.⁴¹ This comprehensive scope 3 accounting method can overcome some data accuracy and transparency barriers.

Regardless of scope 3 calculation method, getting the data required may well involve working with suppliers to improve their GHG tracking and reporting capacity.⁴² For example, Walmart collaborated with environmental NGOs, including the Environmental Defense Fund and World Wildlife Fund, to launch a centralized supplier sustainability platform. This *Project Gigaton* platform provides suppliers with a GHG reduction toolkit, emissions impact calculators, and financial resources to support access to renewable energy.⁴³ Similarly, Apple helps its suppliers access green finance or clean energy technologies through its *Supplier Green Energy Program*.⁴⁴ Where renewable energy procurement options are limited, Apple and its suppliers invest in a common fund that is used to create new renewable electricity capacity.⁴⁵ By sourcing high-quality renewable energy and helping suppliers measure emissions and procure clean energy sources, companies can more accurately track and report the full GHG emissions footprint.

Challenge #4: Establishing an emissions baseline

Decarbonization efforts begin from an emissions *baseline*: the GHG emissions as measured in a past year that serves as a reference point for calibrating the scope of emissions reductions. Failing to communicate this starting point impacts reduction targets and may impede comparative analysis of businesses and/or industries. Companies should not only state their baseline, but also demonstrate a clear logic for the chosen starting point.⁴⁶ Selecting an extraordinarily high emissions year as the historical baseline requires explanation, as doing so creates the impression that a company has strategically chosen that year to make its short-term reduction targets easier to meet.

Pitfall: Any suggestion of GHG baseline manipulation is likely to be called out and could damage the company's reputation for honest climate reporting. For instance, CVS Health selected 2019 as its baseline year, which allowed the company to declare in 2020

that it had nearly achieved its interim 2030 GHG reduction target.⁴⁷ But when NewClimate Institute and Carbon Market Watch questioned this choice of a baseline year – and it turned out that CVS Health’s 2019 scope 3 emissions were 70-80 percent higher than in 2017, 2018, and 2020 – the company’s climate change reporting credibility took a hit.⁴⁸

Path Forward: Set and clearly communicate a historical GHG emissions baseline. Provide comprehensive justification for why the specific baseline year was selected and a transparent explanation for any missing or inconsistent data.

Challenge #5: Use of carbon offsets

Although far-reaching GHG reductions are fundamental to the transformation required for a company to thrive in a low-GHG economy, many companies will need to rely on high-quality GHG offsets and/or carbon capture and storage technologies in the short- and medium-term as they work towards emissions reductions.⁴⁹ But as has been widely reported, not all GHG offsets are created equal.⁵⁰ Critics point to inadequate oversight, projects that have unintended negative impacts on humans or ecosystems, the re-release of stored carbon, and the risk of “moral hazard” (i.e., triggering environmentally counterproductive behavioral responses).⁵¹ These criticisms have driven some companies to avoid the term “offsets” altogether – instead opting for “compensation,” “counterbalancing,” “neutralization,” or “climate contributions.”

Although multiple non-profit, third-party organizations have established standards used to certify and verify the integrity of carbon offsets that are produced – including the Gold Standard, Climate Action Reserve, American Carbon Registry, and Verra – voluntary carbon markets are highly fragmented and largely unregulated.⁵² This weakness can result in improper carbon accounting and projects that may not achieve the GHG reductions promised.⁵³

Ultimately, government action will be needed to create an enabling environment for high-durability carbon dioxide removal (CDR) solutions including offsets and other forms of carbon capture. In the interim, companies are left to their own devices to navigate the fragmented global carbon market and myriad carbon dioxide removal technologies. Offset integrity initiatives such as The Integrity Council for the Voluntary Carbon Market’s Core Carbon Principles, Oxford Principles for Net Zero Aligned Carbon Offsetting, and Microsoft and Carbon Direct Criteria for High-Quality Carbon Dioxide Removal provide some basic buyer guidelines.⁵⁴

Pitfall: Over-reliance on offsets and carbon capture and storage technologies may elicit criticism for dodging the real work of business model transformation and deep decarbonization. Saudi Aramco, the world’s largest oil producer, came under intense scrutiny after releasing its net-zero by 2050 goal that relied on a 52 percent reduction from carbon offsets and carbon capture, utilization and storage.⁵⁵

Likewise, not disclosing the details underlying offsets or any other external GHG reduction project for which credit is claimed will be seen as substandard. Recent criticism of Accenture’s offset pledge, based on tree planting, provides a case in point. Observers expressed concern about the limited information shared about the project’s carbon uptake volume, procurement mechanisms, and strategies to combat potential tree loss over time.⁵⁶ Indeed, so many companies have announced tree planting initiatives that skeptics wonder whether this approach to carbon removal can be undertaken at the target scale.⁵⁷

Path Forward: Experts advocate internal GHG emissions reductions as the centerpiece of any corporate net-zero pledge.⁵⁸ Consider offsets as a *complement* to changed business practices that lead to emissions reductions. Explicitly state what *share* of the announced goal will be achieved by emissions reductions, direct removals, and offsets – recognizing that, in line with the latest climate science and International Energy Agency’s (IEA) data models, for most industries anything above 5-10 percent of a target attributed to offsets will be considered excessive.⁵⁹ The exception to this guideline (drawn from SBTi and the IEA) would be for companies in difficult-to-decarbonize industries such as chemicals, cement, aviation, or shipping.⁶⁰

If offsets are used, provide a detailed plan including project time scale, resource commitment, environmental justice considerations, community benefits plan, environmental impact assessment, implementing partner due diligence, demonstration of additionality, permanence, leakage prevention, contracted durability, external verification and reporting, and safeguards against double-counting.⁶¹ Microsoft makes their carbon offset information publicly available through an interactive website, that includes aggregated volume of credits as well as contracted durability and details for each offset project.⁶²

Attention to projects with positive social, economic, and environmental outcomes where programs are located, such as protecting biodiversity or building resilience to climate impacts, can tie into companies’ broader sustainability ambitions.⁶³ Companies with a higher ability to pay for carbon dioxide removal (CDR) can consider purchasing more expensive credits that not only generate measurable emissions removal but also catalyze CDR technology development and scaling. These innovative financing approaches include equity investments such as Microsoft both investing in and purchasing from Climeworks, multi-company initiatives such as the Frontier Project, which involves an advance market commitment to buy \$1 billion in GHG removals by 2030, as well as corporate R&D philanthropy from companies such as Stripe.

Challenge #6: Insufficient or non-existent target dates

Corporate net-zero target dates vary widely.⁶⁴ While more than 400 businesses have signed *The Climate Pledge*, committing to achieve net-zero carbon by 2040, only around 20 percent of the Fortune Global 2000 companies have established 2050 as their decarbonization target.⁶⁵ Unsurprisingly, companies that set very distant target dates tend to be slower to invest in decarbonization strategies and actions, leaving their short-term GHG impacts largely unaddressed.⁶⁶

Compounding the problem of distant target dates, many companies have failed to set interim target dates or provided inconsistent short-term goals.⁶⁷ The 2022 *Net Zero Stocktake report* found that only about half of the Forbes Global 2000 companies with net-zero pledges have any type of interim GHG emissions reduction target.⁶⁸ The UN High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities assert it is *crucial* that companies prioritize short-term reductions and not rely excessively on offsets to comply with emerging regulations, minimize transition risk, and catalyze low-carbon product and technology innovation.⁶⁹

Pitfalls: Companies that fail to set a target date or set a target date that falls short of the Paris Agreement 2050 net-zero commitment risk media or stakeholder pushback and perhaps even legal challenge.⁷⁰ For example, activist shareholders partnered with an

environmental NGO in March 2022 to sue Shell's directors for breaching their fiduciary duties because the company's net-zero pledge and climate change strategy were seen as misaligned with the Paris goal.⁷¹

Path Forward: Establish a specific decarbonization target date – no later than 2050 – supported by a concrete interim reporting schedule with clear goals. Companies seeking recognition as sustainability leaders should set a target no later than 2040 and commit to updating their target dates in alignment with evolving climate science.⁷²

Challenge #7: Metrics, transparency, and reporting

Not only do definitional inconsistencies confound net-zero pledges, they also complicate the use of performance metrics and reporting frameworks to verify and communicate progress on those pledges.⁷³ While some companies track the full suite of GHG emissions, others only quantify CO₂. Certain companies rely on emissions estimates, while others create their own methodology for calculating GHG emissions – sometimes without disclosing the details and assumptions underlying their reporting. This lack of consistency reflects widely divergent standards of transparency and makes it challenging to benchmark a company's GHG emissions performance against its industry peers.⁷⁴ Moreover, the use of obscure metrics or loopholes (e.g., setting targets against an abnormally high baseline year or using purposely ambiguous language) undermine data quality, credibility, and comprehensiveness.⁷⁵

Pitfall: Obscure, inconsistent, and/or non-existent GHG data metrics, tracking, and reporting make it challenging to determine a company's GHG footprint and may elicit pushback from employees, shareholders, or other stakeholders.⁷⁶

Path Forward: Develop a comprehensive and methodologically rigorous strategy for managing data and metrics, with a focus on *triple consistency*: (1) internal comparability of company metrics over time, (2) external consistency with the evolving sustainability reporting best practices, and (3) financial reporting consistency to provide clarity on the investments being undertaken to achieve deep decarbonization and the alignment of the net-zero pledge with the company's business transformation plan.⁷⁷ Externally-audited annual reports should detail performance against interim targets and across all GHGs, emissions scopes, markets, subsidiaries, product lines, and geographies.⁷⁸ These reports should be consistent across messaging/reporting platforms, which may seem like an obvious communications principle in our era of radical transparency, but our research suggests that many companies have stumbled in this regard.⁷⁹ For example, fifty two of the largest French listed firms were found to report lower GHG emissions in their corporate reports than in their CDP submissions – “customizing” corporate report information by excluding scope 3 emissions or modifying emissions sources (i.e., not including all operational activities, or excluding certain factories/subsidiaries).⁸⁰

Challenge #8: Implementation

While more than one third of the Global 2000 companies have announced net-zero commitments, only half have embedded these decarbonization objectives into corporate strategy documents or reports.⁸¹ According to the International Energy Agency, around 40 percent of companies committed to net-zero targets have offered almost no plan for *how* they intend to achieve that objective.⁸² The October 2022 Climate Action 100+ Net Zero Company Benchmark Interim Assessment found even more dismal results, with just 19 percent of the 159 focus companies producing quantified decarbonization

strategies and 10 percent of companies setting short-term (2025) targets aligned with a 1.5°C future that cover all material scopes of emissions.⁸³

Pitfall: Issuing a net-zero pledge as a company announcement or press release without integrating this commitment into the company's business strategy, operational plans, investment framework, and corporate reporting as well as public communications risks creating a gap between pledge and reality that will quickly become visible. Implementation shortfalls undermine the seriousness of the pledge.⁸⁴ Without clear commitment from a company's leadership team and evidence of a net-zero pledge being built into the enterprise's strategy, net-zero pledges will seem more like a PR initiative than a commitment to transformational change.

Discontinuities between corporate language and action will not only be noticed, but reported, as evidenced by the hard-hitting analysis of BP, Chevron, ExxonMobil, and Shell's climate communications compared to their fossil fuel investments between 2009 and 2020.⁸⁵ The study, which included textual review of these companies' annual reports and financial analyses of their production, expenditures, and earnings from fossil fuels and clean energy investments, found a significant increase in *energy transition* rhetoric, yet little evidence of transition away from fossil fuels-dependent business models.

Path Forward: Create a comprehensive business transformation strategy laying out the company's proposed pathway to net-zero emissions.⁸⁶ This business model transition strategy will of course vary by industry, geography, company size, and regulatory environment, as there is no single roadmap to decarbonization. The strategy should highlight how the enterprise will achieve competitive advantage and ongoing profitability in the clean-energy world to come. Consider the technology, process, and human resources investments needed to execute the vision, as well as the reporting systems and checkpoints needed to monitor progress. Multiple companies are working on product and service innovations to reduce their most significant emissions: Maersk is investing in alternative fuels and vessels, Apple is working to prolong the lifetime of its products, and Deutsche Post DHL is investing in electrifying its fleet and scaling up the production of low-carbon fuels. A comprehensive and credible net-zero GHG pathway touches all aspects of a business – corporate mission and vision, business strategy, marketing, corporate governance, employee engagement, partnerships, R&D, and political responsibility (aligning sustainability objectives with public affairs goals).⁸⁷

From Ambition to Action

The world is changing. The proliferation of corporate net-zero GHG pledges reflects the inescapable fact that the business world faces rising climate change expectations. While net-zero pledges are one potential indication of corporate decarbonization commitment, they are a meaningful signal only when grounded in transparency (disclosure), integrity (quality and credibility of data and goals), and strategy (detailed discussion of business model transformation). The intent and operationalization of corporate net-zero pledges have been and will continue to be subject to close scrutiny as investors and stakeholders attempt to separate genuine commitment from public relations-driven platitudes.⁸⁸ Pledges that are accompanied by robust implementation plans will help to overcome public mistrust, limit litigation risk, and reduce financial exposure. Accountability expectations – from investors, consumers, employees, and (in some cases) governments – are already in place and cannot be ignored. Yet perhaps even more importantly, net-zero pledges also position businesses to grow and innovate in the emerging low-GHG economy.

Footnotes

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- ⁴ Jean-Marc Ollagnier, Peter Lacy, and Mauricio Bermudez Neubauer, “Accelerating global companies toward net zero by 2050,” *Accenture*, November 2, 2022, <https://www.accenture.com/us-en/insights/sustainability/reaching-net-zero-by-2050>; “What is Net Zero?” Oxford Net Zero, accessed July 13, 2023, <https://netzeroclimate.org/>.
- ⁵ United Nations Framework Convention on Climate Change, *Glasgow Climate Pact*, 1/CP.26, pt. 17, https://unfccc.int/sites/default/files/resource/cma3_auv_2_cover%20decision.pdf; David A. Lubin and Daniel C. Etsy, “The Sustainability Imperative,” *Harvard Business Review*, May 2010, 42-50.
- ⁶ This empirical research was led by the Yale Initiative on Sustainable Finance and conducted in collaboration with BNY Mellon. For additional survey insights, please refer to Daniel C. Etsy and Nathan de Arriba-Sellier, “Zeroing-In on Net-Zero: Matching Hard Law to Soft Law Commitments,” *University of Colorado Law Review* 94, no. 3 (April 2023).
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- ⁸ Empirical evidence supporting these propositions continues to mount. Unilever’s Sustainable Living Brands, for example, have grown 69 percent faster than the company’s traditional brands; John Pontillo, Celia Bravard, and Andrew Hoffman, “Courageous Leadership,” *Management and Business Review* 2, no. 1 (2022); Kieren Mayers and Jonathan G. Koomey, “The Case for Climate Optimism: A Response,” *Management and Business Review* 1, no. 1, 125-129, <https://mbrjournal.com/2021/01/26/the-case-for-climate-optimism-a-response/>; Matthew P. Johnson, Theresa S Rötzel, and Brigitte Frank, “Beyond conventional corporate responses to climate change towards deep decarbonization: a systematic literature review,” *Management Review Quarterly* 73, 921-954 (2023), <https://doi.org/10.1007/s11301-023-00318-8>; Heleen de Coninck, et al., “Strengthening and Implementing the Global Response” in *Intergovernmental Panel on Climate Change Special Report: Global Warming of 1.5°C* (Cambridge University Press, 2018), 313-444, https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Chapter_4_LR.pdf; Janet Raganathan, et al., *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition* (World Resources Institute and World Business Council for Sustainable Development, 2004, <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>); Daniel Etsy and Andrew Winston, *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage* (Yale University Press, 2006).
- ⁹ Frederic Hans, et al., *Net Zero Stocktake 2022: Assessing the status and trends of net zero target setting across countries, sub-national governments and companies* (NewClimate Institute, Oxford Net Zero, Energy & Climate Intelligence Unit, & Data-Driven EnviroLab, 2022), <https://ca1-nzt.edcdn.com/Net-Zero-Tracker/Net-Zero-Stocktake-Report-2022.pdf?v=1655074300>; Albert C. Lin, “Making Net Zero Matter,” *Washington and Lee Law Review* 79, no. 2 (2022): 679-767, <https://www.proquest.com/scholarly-journals/making-net-zero-matter/docview/2681521495/se-2>; Peter Boyd and Casey R. Pickett, *Defining Net-Zero: Addressing climate change requires a clear, bold explanation of our shared global goal* (Yale Center for Business and the Environment, 2020), <https://cbey.yale.edu/research/defining-net-zero>.
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