

Playing offense to create value in the net-zero transition

Decarbonization will reshape the economy, opening new markets and imperiling others. Now is the moment for companies to spot green growth opportunities and move boldly to take advantage.

This article is a collaborative effort by Michael Birshan, Stefan Helmcke, Sean Kane, Anna Moore, and Tomas Nauc ler, representing views from McKinsey's Sustainability and Strategy & Corporate Finance Practices.

Call it the Great Reallocation. As the dangers of climate change have become more apparent and urgent, investors, customers, and regulators have raised their expectations for companies, demanding that they set targets for reducing net emissions of greenhouse gases (GHGs) to zero and offer clear plans for achieving them. The momentum toward net zero is undeniable: nearly 90 percent of emissions are now targeted for reduction under net-zero commitments,¹ and financial institutions responsible for more than \$130 trillion of capital have declared that they will manage these assets in ways intended to hold warming below 1.5 C.²

This wholesale shift toward institutions and projects that emit minimal GHGs may create the largest reallocation of capital in history. At present, about 65 percent of annual capital spending goes into high-emissions assets. But in a scenario where the world reaches net zero in 2050, McKinsey analysis suggests that this pattern would reverse; 70 percent of capital outlays through 2050 would be spent instead on low-emissions assets. And as organizations adjust their operating budgets, they would pay trillions of dollars for renewable energy, circular materials, and other low-emissions inputs during this time frame.³

¹Net Zero Tracker, Energy and Climate Intelligence Unit; Data-Driven EnviroLab; NewClimate Institute; and Net Zero Climate; all sites accessed in 2021. Includes countries that have achieved their net-zero targets or have put them into law, in policy documents, or made a declaration or a pledge.

²Via the Glasgow Financial Alliance for Net Zero.

³For more, see *The net-zero transition: What it would cost and what it could bring*, McKinsey Global Institute, January 2022. The report's analysis is not a projection or a prediction and does not claim to be exhaustive; it is the simulation of one hypothetical, relatively orderly path toward 1.5 C using the Net Zero 2050 scenario from the Network for Greening the Financial System (NGFS).

These dynamics mean that businesses must make bolder moves. For years, many large companies have responded to the prospect of a net-zero transition by playing defense—protecting their cash flows with sustainability programs that address regulatory mandates and the basic expectations of shareholders and nonfinancial stakeholders. But the reallocation under way to achieve net-zero goals will spur booming demand for climate-friendly goods and services and the green energy, equipment, and infrastructure needed to produce them. Some sectors will grow by several multiples.⁴ Considering this trend, we've identified 11 high-potential value pools that could be worth anywhere from \$9 trillion to more than \$12 trillion of yearly revenues by 2030.

Growth-conscious executives should see these sustainability-driven shifts in value as a call to play offense. Pivoting their strategy to embrace this moment, first movers are gaining the upper hand by using low-cost green financing to build out carbon-free production capacity and fill big, recurring orders for scarce commodities such as green steel or recycled plastics. Risk won't disappear, of course, but leaders in the net-zero transition will be those companies that recognize new possibilities for value creation and make credible efforts to pursue them.

Four approaches define the strategies of companies that are already taking advantage of the net-zero growth opportunity. First, companies are adjusting business portfolios with particular attention to industry segments with major growth potential. Second, building green businesses then enables companies to penetrate markets that their current models cannot serve. Third, differentiating with green products and value propositions in existing markets allows companies to gain market share and price premiums. Finally, decarbonizing legacy businesses boosts their value. In this article, we lay out the opportunities, parse the trade-offs, and set out a path for thriving in the net-zero economy.

New industry dynamics, new opportunities

A net-zero economy would differ greatly from our present economy—which means the transition to net zero would involve profound, sometimes disruptive, changes. McKinsey analysis suggests that, in a scenario where the world reaches net zero by 2050, economic output would progressively (and permanently) tilt away from goods and services that are emissions-intensive and toward those that can be made and used without emitting GHGs. These shifts would, in turn, ripple along entire value chains, altering the dynamics within industries.⁵

Automakers, for example, would cease to manufacture cars with internal-combustion engines and roll out electric vehicles (EVs) instead. Oil consumption would drop, in part because drivers would no longer need to fuel up—and electric-power generation would increase to help charge the world's expanding fleet of EVs. A much greater share of that electricity would come from renewable sources such as solar and wind, rather than today's coal- or gas-fired power plants.⁶

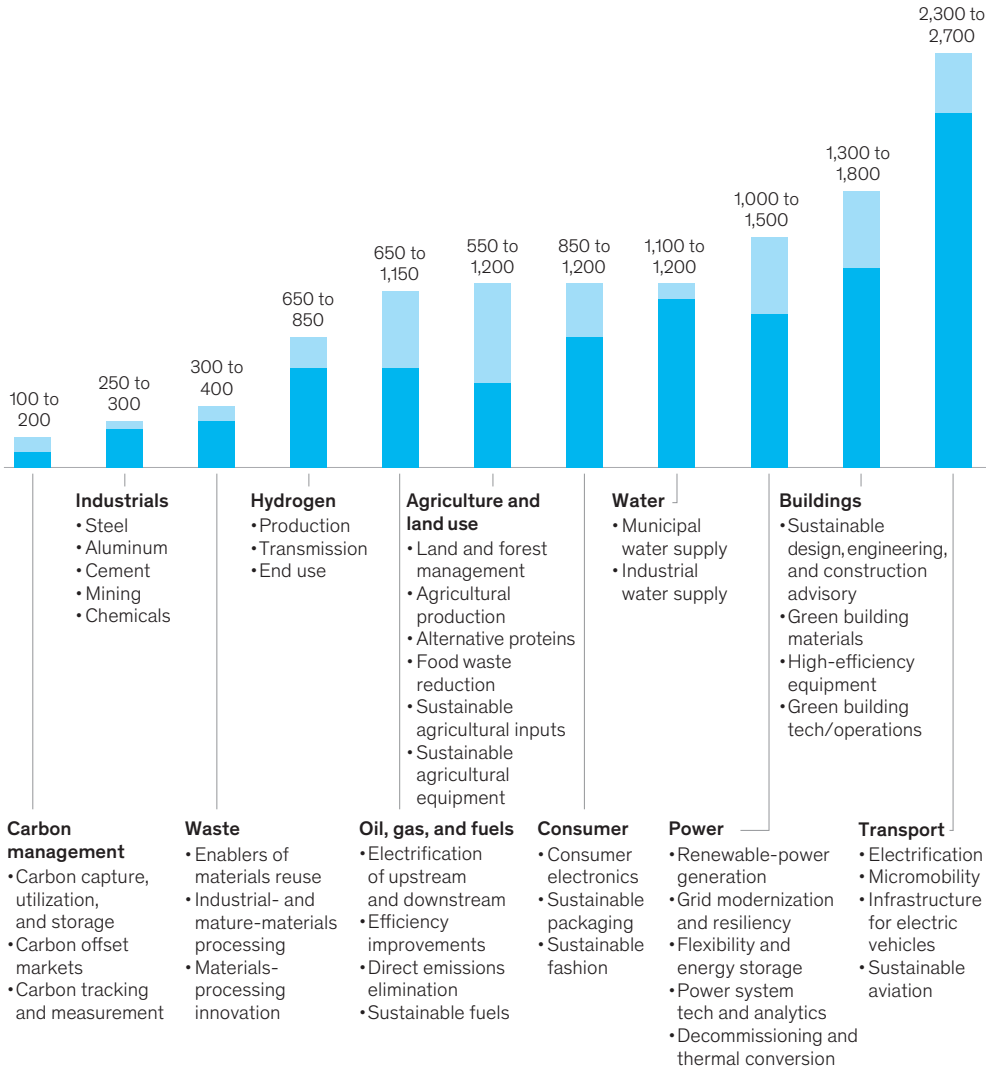
⁴Ibid. The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

⁵Ibid. The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

⁶Ibid. The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

Eleven high-potential value pools could be worth more than \$12 trillion of yearly revenues by 2030 as the net-zero transition advances.

Addressable market size in 2030, selected categories, \$ billion



Note: Preliminary, not exhaustive.

Dynamics like these have already begun to play out. In categories such as energy and materials, vehicles, food, and packaging, demand for green products and services is growing strongly. And as the net-zero transition advances, markets for zero-emissions offerings should expand further, while markets for emissions-intensive offerings shrink. For example, in the net-zero scenario noted above, production of hydrogen and biofuels would increase more than tenfold by 2050. Fossil fuels, however, would account for a dwindling share of energy use, with oil production dropping by 55 percent and gas production by 70 percent in 2050, compared with today.⁷ We estimate that burgeoning demand for net-zero offerings would create unprecedented opportunities: 11 value pools could generate more than \$12 trillion of annual sales by 2030. These include transport (\$2.3 trillion to \$2.7 trillion per year), buildings (\$1.3 trillion to \$1.8 trillion), and power (\$1.0 trillion to \$1.5 trillion) (Exhibit 1).

⁷ Ibid. The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

Certain markets for green products and services are also proving to be more lucrative than markets for conventional offerings, as green premiums start to kick in. The most profitable opportunities have emerged in fast-growing niches such as recycled plastics, meat substitutes, sustainable construction materials, and chemicals, where margins can be 15 to 150 percent higher than usual as demand for traditional products softens. In the plastics market, for example, consumer-packaged-goods players are changing their sourcing practices to reach sustainability targets. According to the Ellen MacArthur Foundation, six of the top ten fast-moving consumer goods companies have committed to use less virgin plastic and more recycled content in their packaging by 2025.⁸ Now, recycled polyethylene terephthalate (PET) commands a price premium of \$300 per metric ton, on average, over virgin PET (compared with an average premium of \$40 per metric ton from 2011 to 2019).⁹ Other recycled polymers, such as high-density polyethylene (HDPE) or polypropylene (PP), are trading at even higher premiums. Green premiums may decline over time, as supply catches up to demand. In the near to medium term, though, we expect these premiums to widen in sectors with significant supply–demand imbalances—creating opportunities for suppliers.

Some of the markets described above are for the low-emissions real assets—such as solar and wind farms, industrial machinery, ships, and trains—needed to drive business operations in a net-zero economy. Demand for these would trigger unprecedented capital reallocation: \$3.5 trillion in new spending on low-emissions assets each year through 2050. Another \$1 trillion per year that now goes toward high-emissions assets would instead pay for low-emissions capital stock.¹⁰

The flip side of increased spending on low-emissions assets is the stranding of today's emissions-intensive assets. McKinsey analysis suggests that some \$2.1 trillion of assets in the global electric-power sector alone could be stranded by 2050. And since many assets that are prone to stranding now sit on the balance sheets of listed companies, their early retirement could erode enterprise values.¹¹

Other signals herald the flow of capital toward enterprises and projects that exhibit readiness for a net-zero future. The more than 450 institutions belonging to the Glasgow Financial Alliance for Net Zero, which represent more than \$130 trillion of financial assets, have promised to align their portfolios with net-zero goals. The European Union has pledged to mobilize €1 trillion in public and private financing to support the European Green Deal. And national governments are considering their own climate-finance packages. Amid these developments, companies should be able to raise the funds they need to reposition themselves for a net-zero economy.

The case for early action

Given that there is much uncertainty about the pace at which the net-zero transition will progress, executives may be apprehensive about mistiming their companies' net-zero moves. Understandably, many CEOs worry that their company will get ahead of its custom-

⁸ *Global commitment 2021 progress report*, Ellen MacArthur Foundation and United Nations Environment Programme, November 2021.

⁹ IHS Markit.

¹⁰ *The net-zero transition*, January 2022. The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

¹¹ *Ibid.* The scenario used in this analysis is the Net Zero 2050 scenario from the Network for Greening the Financial System.

ers, investing in new assets and incurring production-cost increases before those customers demand low-emissions offerings or are willing to pay green premiums. In that event, the company could put itself at a disadvantage to rivals that sit back and wait.

However, initial experience suggests that in many sectors, companies that are among the first to pursue net-zero opportunities enjoy greater success. First movers stand to gain the most in B2B industries in which demand for low-emissions offerings already exceeds supply, in part because incumbents with wide asset bases and thin margins have been reluctant to invest in new production capacity. Our research suggests that green leaders among EU chemicals companies, for example, have seen their enterprise multiples increase by a factor of two to five, while laggards' multiples have remained flat.¹² We have also observed the value-creation advantages of green leadership across many other sectors.

In some industries, bold new entrants are getting ahead by locking in customers to tap green financing and set up operations. For example, H2 Green Steel, a Swedish start-up, secured purchasing contracts from automotive OEMs and construction companies in need of low-emissions steel, then used these contracts to help raise \$105 million in initial funding—including stakes from some of the same OEMs that had agreed to become the company's initial customers. Situations like these could pose challenges for companies lagging behind: once first movers have won the earliest customers in a market where customer relationships are difficult to undo, fast followers will have trouble making up ground.

With first-mover advantages still up for grabs in many new value pools, now is the time for companies to rise out of a defensive crouch and start playing offense.

Playing offense: Four moves for creating value

Until recently, many companies have responded to the transition only by issuing net-zero plans that show they are keeping pace with rising stakeholder expectations and regulatory requirements. This is playing defense—trying to prove that a company will survive, perhaps generating less free cash flow but avoiding the mortal risks of stranded assets and a nil terminal value (see sidebar, “Playing defense: The basics of managing transition risk”).

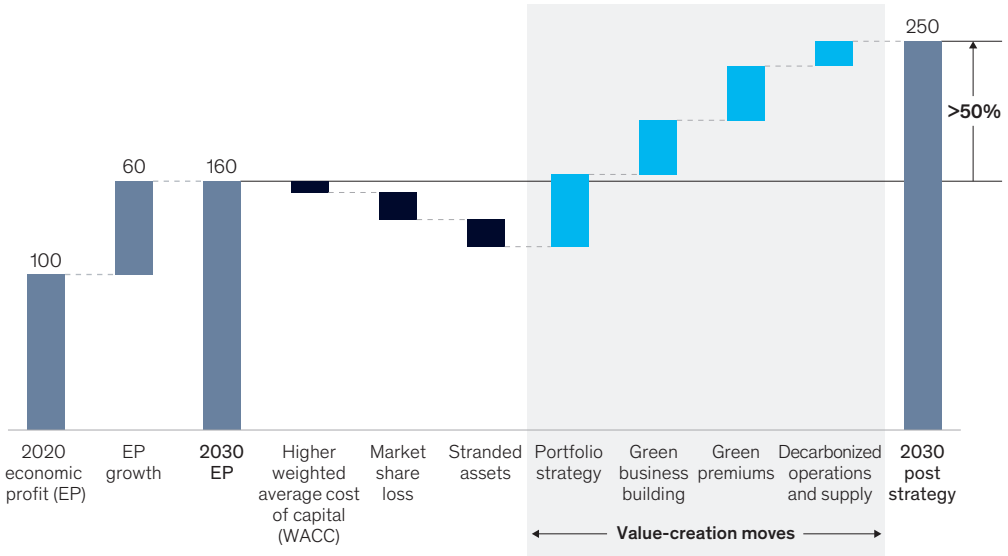
Playing offense means showing that your business model is built to outperform during the net-zero transition, with a free cash flow that grows relative to expectations. But because the world's transition pathway is unclear and difficult to predict, companies will need to develop “strategy under uncertainty” like never before.¹³ No single formula will work for every company, or even for all companies in a given industry. In the oil and gas sector, for example, some companies are choosing to dispose of hydrocarbon busi-

¹² “Enterprise multiple” refers to the ratio of enterprise value to earnings before interest, taxes, depreciation, and amortization (EV/EBITDA). Analysis includes all EU chemical companies rated by Refinitiv in 2020 in the industry of “chemicals” and is based on weighted average of TSR of the companies in the respective clusters; “green leaders” are defined as companies that improved environmental, social, and governance (ESG) score as well as shifted toward a green portfolio; “green laggards” are defined as those that improved neither ESG score nor did a green portfolio shift. An ESG score increase is defined as a greater than five improvement in “ESG combined” score in Refinitiv rating between 2016–19; portfolio shift assessment based on analysis of M&A moves since 2011.

¹³ “Solving the net-zero equation: Nine requirements for a more orderly transition,” McKinsey, October 27, 2021.

To create value in the net-zero transition, leading companies are making four complementary moves.

Economic profit modeled with top-down assumptions,¹ illustrative



¹ Based on a selection of leading companies that have made meaningful use of all four value-creation levers.

nesses. Others are staying in these markets by seeking resources with low emissions intensity and low breakeven prices.¹⁴

What these divergent strategies have in common is their intention to create value. Here, we describe four complementary moves for playing offense in the net-zero transition (Exhibit 2).

Transform the portfolio

McKinsey research on corporate strategy holds two important lessons for executives who are thinking about how to create value during the net-zero transition. The first is that a company’s choice of industry to compete in accounts for roughly half its share of available economic profit.¹⁵ The second is that successful companies regularly reallocate capital, shifting resources away from businesses as soon as they detect a slowdown in their growth and putting those resources into businesses with stronger prospects.¹⁶ With these lessons in mind, executives will want to make careful assessments of their current industries’ growth potential and reorient business portfolios toward healthier segments.

Starting with the existing portfolio, sustainability leaders reallocate from emissions-intensive businesses to low-emissions businesses, either transforming emissions-intensive businesses through decarbonization, which we explain below, or divesting them. Neste, a fuel and chemicals producer based in Finland, earned more than 50 percent of its operating

¹⁴ “The big choices for oil and gas in navigating the energy transition,” McKinsey, March 10, 2021.

¹⁵ Chris Bradley, Martin Hirt, and Sven Smit, “Strategy to beat the odds,” *McKinsey Quarterly*, February 13, 2018.

¹⁶ Stephen Hall, Dan Lovallo, and Reinier Musters, “How to put your money where your strategy is,” *McKinsey Quarterly*, March 1, 2012; Sandra Andersen, Chris Bradley, Sri Swaminathan, and Andy West, “Why you’ve got to put your portfolio on the move,” *McKinsey Quarterly*, July 22, 2020.

Playing defense:

The basics of managing transition risk

Companies that are slow to adjust to the net-zero transition face real risks, including stranded assets, a higher cost of capital, and revenue slippage due to lost market share or shrinking markets. But even businesses that move quickly will have exposures. Here are three basic moves that companies can make to find and mitigate their vulnerabilities.

- **Know your ratings:** Environmental, social, and governance (ESG) ratings are imperfect and sometimes obscure, but important nonetheless: they provide a basis for the stock indexes that some asset managers use to construct passive index funds, and they also help inform active investment choices. Companies can “tear down” their ESG scores by examining the underlying performance measures and making comparisons with peers and rivals.
- **Understand—and manage—your exposure:** Climate change presents significant financial risk—much of it not yet fully priced into either company plans or valuations.¹ As stewards of shareholder capital, companies must take stock of their true exposure, both physical risks from a

changing climate and changes to market share and margin as markets evolve. Preparing reports according to the framework of the Task Force on Climate-related Financial Disclosures, underpinned by climate risk modeling, is one way to do this.

- **Move from pledges to plans:** Some transition risks arise because important stakeholders have too little information about how companies intend to approach the transition. If investors aren’t convinced that a company has a sound plan in place, for example, they may charge a higher cost of capital. Businesses can manage risks such as these by building on their net-zero commitments; setting out actionable, detailed transition plans; and discussing these plans with investors so they better understand the company’s thinking about how it will avoid risks and create value during the transition.

¹“The Inevitable Policy Response 2021: Policy forecasts,” Principles for Responsible Investment, March 17, 2021.

profit from oil products in 2015. But in 2018, the company's renewable-products business contributed 70 percent of its operating profit. The company's market capitalization tripled from 2015 to 2021, with 90 percent of the valuation based on the renewable-products business.¹⁷ Major investments in new technology, feedstock platforms, and green-refinery capacity, along with targeted go-to-market strategies, played a large part in this transformation.

Next, leading companies look for transition-driven growth opportunities at the granular level of industry subsegments and fund growth initiatives with capital taken from parts of the business that are less likely to see increasing demand during the net-zero transition. They also think creatively about ways to match their existing capabilities to growing niches. One industrial-equipment company identified growing end markets for components used in renewable energy and air treatment and applied its expertise in tooling to develop new machinery types. The business has earned significant green premiums from the sale of these new products, which now make up the bulk of its portfolio.

Many portfolio-transforming moves require substantial capital outlays. They also carry real risk, not least because of undecided regulation, which could greatly influence the markets for emerging climate technologies such as green hydrogen or carbon capture. Companies can mitigate some market risks by forming consortiums where buyers, sellers, financiers, and other value-chain participants might work together on innovation or reach offtake agreements that stabilize demand against regulatory uncertainty. The Mission Possible Partnership is one effort to get institutions in hard-to-abate sectors to work together on advancing climate solutions.

Build green businesses

Innovative green upstarts are emerging across nearly every sector, from transport (for example, Einride, Northvolt, Tesla) to nutrition (for example, Beyond Meat, Impossible Foods). Incumbents, however, often struggle to build successful green businesses. Sometimes, practical challenges hold them back, such as the difficulty of incubating nimble new ventures within larger corporate structures. In other cases, the barrier is a lack of ambition—an unwillingness to create a new business that might overtake or disrupt the old one. Incumbents can also find it difficult to reckon with the uncertainties, in areas such as technology, regulation, and demand, that can surround emerging markets for green offerings. For these reasons, they can miss opportunities to create value.

Rather than surrender before these challenges, established companies should recognize that they can endow in-house ventures with significant advantages over independent start-ups. In our experience, this is a matter of exploiting three resources that start-ups typically lack: assets, capabilities, and relationships.¹⁸

- **Assets.** Incumbents can use their balance sheet to provide green ventures with capital. They can also share real and intellectual assets, reducing a new venture's start-up costs. Polestar, the EV brand valued at more than \$20 billion, built its first models using automobile platforms and technologies from its parent company Volvo Cars—allowing for an asset-light business.

¹⁷ Neste annual reports, 2015 and 2018.

¹⁸ "Building new businesses: How incumbents use their advantages to accelerate growth," McKinsey, December 12, 2019.

- **Capabilities.** Incumbents possess the talent, processes, corporate services, and technologies that new ventures often need. Hydro-Québec, for example, made use of the utility's existing technical expertise, deep knowledge of power networks, and capital engineering capabilities to develop the Electric Circuit, the province's largest and most reliable EV-charging network.
- **Relationships.** Incumbents can provide new ventures with an edge by giving them access to important stakeholders, particularly existing customers. In some instances, the parent company itself can act as a customer to the new venture—providing captive demand. Mercedes-Benz Group and Daimler Truck Holding have announced a joint plan to build a battery-recycling plant that will process end-of-life batteries from the EVs they make. Many of the portfolio companies in Launchpad, BP's clean-energy ventures arm, sell into the parent company. Incumbents' relationships with suppliers, investors, partners, and regulators can also be valuable to new green ventures.

Seek price premiums through differentiation

As discussed above, companies can charge premium prices for goods such as recycled plastic that are in high demand because customers prefer their sustainability attributes. Some companies selling products with strong sustainability attributes—whether lower-carbon materials or items needed for climate resilience and adaptation—have seen their sales grow 50 percent faster, or more, than competitors selling conventional offerings. To capture such opportunities and identify others that might emerge, businesses should develop an outlook on markets for sustainable products. Two considerations stand out as especially important when gauging a customer's willingness to pay green premiums: their commitments to lower supply chain (Scope 3) emissions and their potential carbon-tax liabilities.

To charge green premiums, companies should also help customers understand the green attributes of their products and the value conferred by these attributes. Customers often struggle to distinguish between sustainable and greenwashed products, so companies must explain their products' sustainability attributes in clear, accurate terms. Leaders furnish customers with transparent, independently verified information, including environmental product declarations (EPDs) and life cycle assessments (LCAs). They also take care to teach marketing and sales teams how to communicate technical information in ways that customers can understand.

Smart branding can help companies reach sustainability-minded customers. New companies may have an easier time achieving a credible position of distinction. But some incumbent businesses have successfully repositioned themselves after making meaningful portfolio shifts. Florida Power & Light, for example, both transformed its business and rebranded as NextEra Energy and has since seen its shares increase in value more than sixfold.¹⁹

Transform operations and supply chains

We have described how some companies are moving into faster-growing markets and collecting green premiums by decarbonizing their existing goods and services. But companies that decarbonize their operations can create value in other ways, too. When they use the discipline of sustainability to make their operations more efficient—in

¹⁹ As of mid-February 2022.

both environmental and financial terms—they can achieve cost savings that allow them to lower prices and gain market share, boost profits, or generate funds for other sustainability projects. Evonik Industries, the specialty chemicals player, reduced its operating costs and increased its sales by decarbonizing its operations.

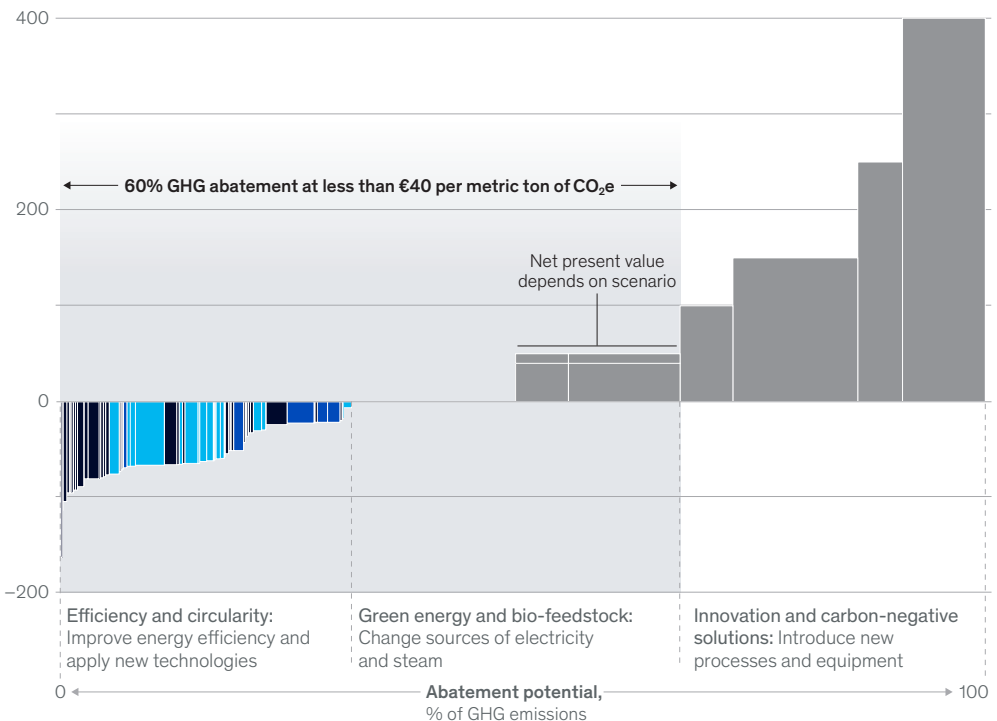
There is considerable room for improvements in sustainability performance. In our experience, the heaviest-emitting mines can have 20 times the GHG intensity of the least-emitting mines. In metals, the spread can be a factor of up to 15. The financial spread could get wider still: as the cost of renewable energy falls and the price of carbon rises, companies with the least carbon-intensive assets and operations should find that their operating expenses decrease more.

Decarbonizing often does require some up-front capital spending. Leading businesses prioritize investments in decarbonization and other sustainability efforts as they do other capital outlays—by seeking the most economical options. We see them using company-specific GHG abatement cost curves to identify initiatives with positive or neutral net present value (NPV). One materials company found that it could abate 30 percent of its GHG emissions with NPV-positive measures, plus 15 percent using measures that were NPV-neutral, and a further 15 percent at moderate cost. The total: 60 percent emissions abatement, all for less than €40 per metric ton of CO₂ equivalent (Exhibit 3).

Exhibit 3

One materials company identified the potential to abate 60 percent of greenhouse-gas emissions for less than €40 per metric ton.

Greenhouse-gas emissions (GHG) abatement cost curve for one site, preliminary, € per metric ton of CO₂e¹



¹ Carbon dioxide equivalent. Includes all greenhouse gases.

In many cases, companies can improve the sustainability of their products by working closely with suppliers. That is because energy, materials, and components account for much of the typical product's GHG footprint. Switching to low-emissions inputs, however, can be complicated for various reasons. Scarcity is one of these. As noted above, demand for recycled plastics already exceeds supply, and the same is true for some other low-emissions materials. For example, McKinsey analysis suggests that demand for flat green steel in Europe could exceed supply by up to 50 percent in 2030. To secure the green supplies they need, companies should move now and sign long-term contracts. Companies that achieve supply security can not only make good on their net-zero pledges but also distinguish themselves from competitors that run into shortages and fail to deliver low-emissions offerings as a result.²⁰

Many companies will find it impossible to decarbonize completely—that is, to achieve net zero—without future breakthroughs in technology or end-to-end transformations of their products and operations. That is to be expected: the net-zero transition is, after all, a transition, a process expected to unfold over almost 30 years. But this reality should not discourage companies from initiating feasible changes today, for the first-mover advantages available now are too great to pass up.

The commitments and actions of governments, investors, and customers have gotten the net-zero transition under way. As it progresses, the economy will change, and vast new markets for low-emissions offerings will open. Companies that approach the net-zero transition only as a potential source of risk to their existing business run a risk of a different kind—the risk of failing to capitalize on the Great Reallocation. Instead, their task should be to anticipate where growth is likely to occur and go on the offensive, making bold moves in pursuit of immense opportunity. [Q](#)

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²⁰ Anna-Christina Fredershausen, Eric Hannon, Stefan Helmcke, and Tomas Nauc ler, "It's not easy buying green: How to win at sustainable sourcing," McKinsey, February 25, 2022.