

TRANSITION INVESTING

Powering the Transition to Net Zero

February 2021

Executive Summary

- The transition to net zero—a target of completely eliminating additional greenhouse gas (GHG) emissions—will require investment of over \$100 trillion over the next three decades.
- Global efforts to address climate change are broadening, deepening and accelerating. Over 125 countries now have net-zero emissions commitments—including China, the European Union and Japan—and the Biden administration is committed to building a clean energy economy in the U.S. by 2035.
- As public expectations for climate action grow and climate policies become more concrete, major companies are committing to net-zero targets and will be under increasing pressure to develop science-based transition plans.
- Investors will increasingly be expected to manage climate risks and realize the enormous opportunities from the transition, which will involve virtually every sector of the economy.
- Driving the transition to net zero will require both significant capital and deep operational/development expertise. Those with extensive operating experience and knowledge of renewable power, infrastructure and business transformation are well positioned to help companies become more competitive in a zero-carbon world.

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Introduction

By November 2021, when the 26th United Nations Climate Change Conference (COP26) takes place in Glasgow, governments around the world will need plans to drastically reduce their greenhouse gas (GHG) emissions.

More than 125 countries, including the global giants, have set net-zero targets. Roughly 25% of Fortune 500 companies have also committed, including global leaders like Amazon, Apple, Microsoft, Shell and BP. Five hundred companies have set science-based targets consistent with the Science Based Targets initiative (SBTi), and another 500 are in the process of doing so.¹ In addition, more than 1,200 major companies support the Task Force for Climate-related Financial Disclosures (TCFD),² and a number of governments around the world are moving to make TCFD-quality disclosure mandatory, including the U.K. and European Union (EU).

The pressure on governments and companies is growing, compelling action. Beyond providing forward-looking disclosure, investors are demanding that major companies present credible plans for how they will manage—and mitigate—their emissions going forward. And investors themselves increasingly will be judged on how well they are positioned for the net-zero transition.

Two global transitions are necessary to achieve net zero: a clean energy transition and a transformation of businesses across the economy. These require a rapid move away from fossil fuels, which produce carbon dioxide (CO₂) and other greenhouse gases (such as methane), to non-emitting sources of energy, such as solar, wind and hydroelectric power. They also require a decarbonization of existing production processes, the electrification of industries and the commercialization of carbon-capture technologies.

All this creates an enormous commercial opportunity. It is estimated that over \$100 trillion will need to be invested through 2050 to drive the decarbonization of energy systems and our economy—approximately \$3.5 trillion every year.³ Companies that are on the path to net zero will benefit as tougher climate regulations come into force and investors and lenders favor those on the right side of climate history. Correspondingly, companies on the wrong side of this transition will see their traditional sources of capital become more expensive, and ultimately, their businesses and assets becoming stranded—unless they act.

Companies are beginning to recognize that carbon competitiveness will be imperative for the future success of their businesses. In the energy sector, for example, the higher cost of capital for deepwater offshore oil developments, compared with that for

73%

of global emissions come from the energy sector

\$100+ trillion

of investment is needed to decarbonize energy systems and the economy

renewables, implies an \$80-per-ton carbon price (see Figure 1). In other words, even though there is not an \$80-per-ton carbon price on a publicly traded market today—or by a government mandate—this is what the capital markets are already pricing in. This is the thin edge of a wider valuation wedge that will broaden across the market and across all sectors—not just energy. Carbon competitiveness is a new determinant of value.

Market participants began by focusing on current Scope 1 emissions, which are direct emissions from owned or controlled sources, and current Scope 2 emissions, which are indirect and also consider emissions from the generation of purchased energy. They are increasingly focused on the forward-looking path for Scope 1 and 2 emissions and, in a number of sectors, will move to adding material Scope 3 emissions.

FIGURE 1

Higher Cost of Capital for Hydrocarbon Developments

Carbon price implied by the IRR premium for offshore oil projects compared with renewables (US\$/tn CO2)



Source: Goldman Sachs Global Investment Research. IRR—Internal rate of return.

For a number of participants, it's the consideration of Scope 3 emissions that will lead to a step change in how companies think about transition. This is because Scope 3 emissions are all indirect emissions, not included in Scope 2, that occur across the value chain of the reporting company, including both upstream (of suppliers) and downstream emissions (of customers in the use of their products or services).⁴ The net effect of this change is the creation of a much larger opportunity set of decarbonization requirements—it increases the focus

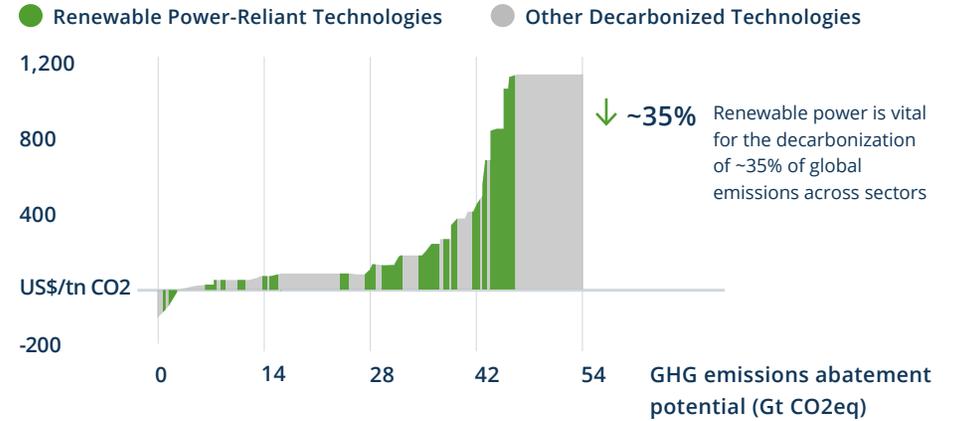
on power supply, and it encourages the backward integration of clean energy solutions. It also draws on sectors like tech—where companies will look to decarbonize their supply chains—dramatically increasing the number of businesses and companies for which decarbonization objectives will become an immediate focus. This opportunity set would include assets like data centers, manufacturing processes of equipment input manufacturers, and more.

Transitioning to net zero is possible. According to Goldman Sachs, almost 60% of GHG emissions can

FIGURE 2

Decarbonizing Global Emissions Across Sectors

2020 conservation carbon abatement cost curve (US\$/tn CO2eq)



Source: Goldman Sachs Global Investment Research. Gt—Gigatons.

be economically removed at a \$100-per-ton carbon price—largely through decarbonization technologies such as renewable power, clean hydrogen and carbon sequestration (see Figure 2). One issue, however, is the speed of achieving the transition—and critical to this, the speed at which economically viable solutions emerge for the remaining 40% of emissions. Costs for decarbonization and associated technologies need to continue to decline. This will require capital to simply improve the technology, but then more capital will be needed to replace the old technology with the new technology.

This takes time, and the slower it moves, the more extra carbon is produced and the greater the need for further decarbonization in the future.

The current focus of governments on “green” budgets demonstrates the changing landscape. For example, through a 10-point plan announced in November 2020, the U.K. is committed to turning into the “Saudi Arabia” of wind, by increasing its offshore wind goal from 30 gigawatts (GW) to 40 GW of capacity by 2030. It will also end the sale of new petrol and diesel cars and vans by 2030—putting the U.K. at the forefront of the electric vehicle revolution. In addition, funding from the plan targets 5 GW of low-carbon hydrogen production capacity by 2030. And it includes new investment for carbon capture and storage, nuclear power, and greater energy efficiency for homes and public buildings.

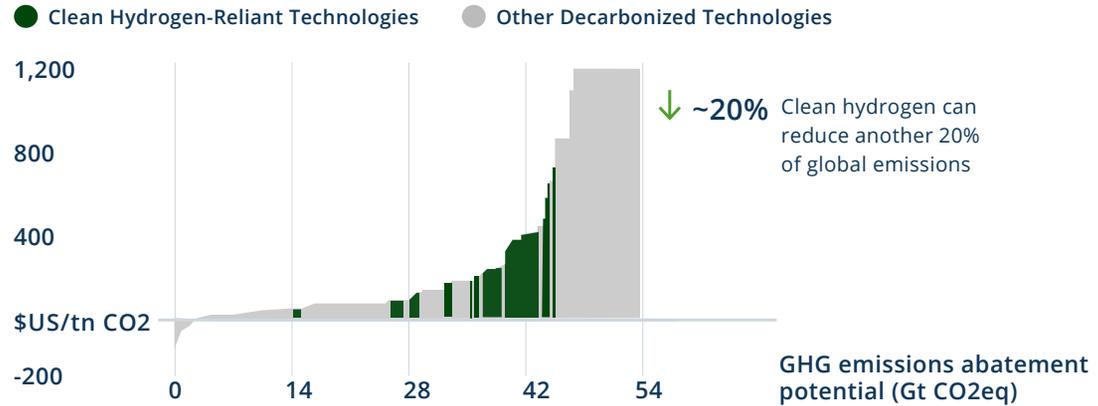
The EU’s €750 billion pandemic recovery fund, which was agreed to this past December and is part of a larger €1.8 trillion EU-wide budget, shows how more spending will be earmarked for climate initiatives. It targets 30% for climate-relevant spending in the EU budget for the 2021-2027 period. This spending will likely accelerate the development of clean hydrogen, among other green initiatives. And to help pay for this spending, the EU’s emissions trading scheme (ETS), a cap-and-trade system for polluting industries to buy carbon credits, increases revenue.

Government commitments also serve the purpose

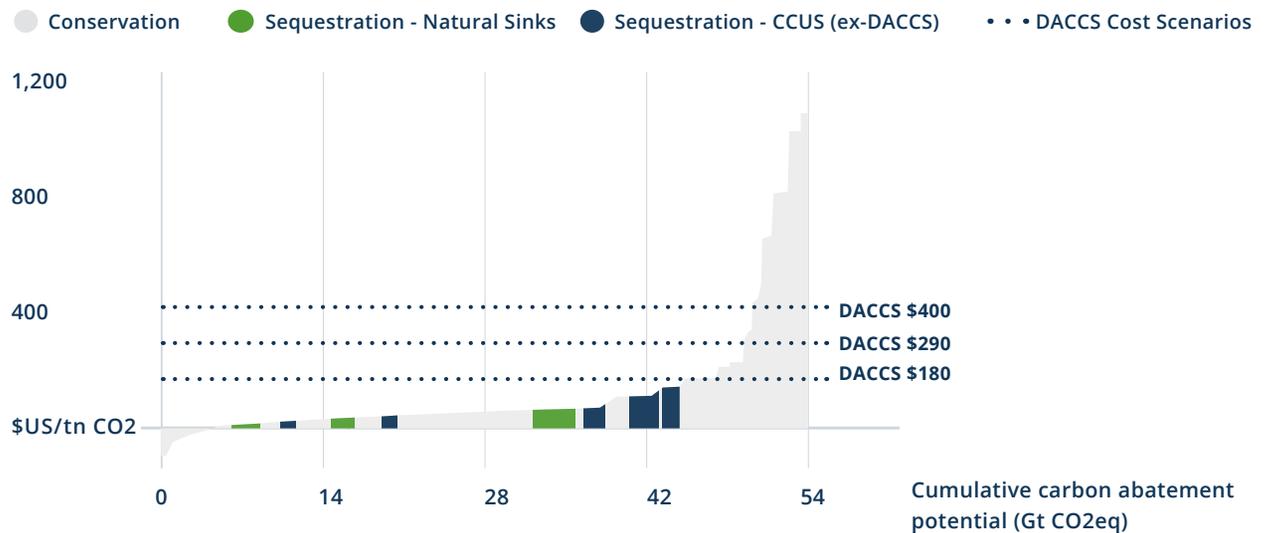
FIGURE 2 (CONT'D)

Decarbonizing Global Emissions Across Sectors

2020 conservation carbon abatement cost curve (US\$/tn CO₂eq)



Total conservation and sequestration cost curve based on current technologies and associated costs



Source: Goldman Sachs Global Investment Research. CCUS—Carbon capture, utilization and storage. DACCS—Direct air capture with carbon storage. Gt—Gigatons.

FIGURE 3

Public and Private Sectors' Role in Shaping the Transition to a Net-Zero Economy

Credible public policies, transition plans and disclosure of climate-related risks and opportunities lay the groundwork for the transition to a net-zero economy:



PUBLIC POLICIES

Public policies will have to shape the incentives for the transition to net zero



POLICY CREDIBILITY

Policy credibility will reduce uncertainty around the future path of policy



TRANSITION PLANS

Companies will need to draw up transition plans to not be left behind on the way to net zero



DISCLOSURE

Disclosure of these plans allows the financial system to identify climate leaders and laggards

The financial system must build on this to redirect capital toward more sustainable technologies and companies. This involves:



RISK

Managing risks around the transition and reflecting these in the prices of less well-positioned assets



RETURN

Helping companies and investors identify opportunities to generate sustainable returns



ACCELERATING AND AMPLIFYING THE TRANSITION

This process will help accelerate and amplify the effectiveness of public policy

of aligning climate finance by establishing what government expectations are for the financial sector. The U.K. plan “will mobilize £12 billion of government investment, and potentially three times as much from the private sector.”⁵ For the transition to be as effective as possible, speed and size of action will be differentiating factors.

Shifting regulation, along with carbon pricing, means companies that act will be more competitive. This past December, the Canadian government announced legislation that will increase the carbon tax in Canada by C\$15 per ton each year, from C\$50 per ton in 2022 to C\$170 per ton by 2030.

In a recent G30 paper, U.S. Treasury Secretary Janet Yellen underscored the larger point: Credible, forward-looking public policy pulls forward adjustments in the wider market.⁶ As governments undertake proactive measures and become more serious about the need to slash emissions, forward-thinking companies will anticipate these moves and respond accordingly (see Figure 3). But it will require focus—and enormous investment. From an investor’s point of view, it’s an opportunity to get in early ahead of this adjustment—and to help smooth the transition.

Companies will need to partner with investors who have not only the capital firepower, but also the expertise to help firms transition to cleaner power (see Figure 4). This includes experience in managing

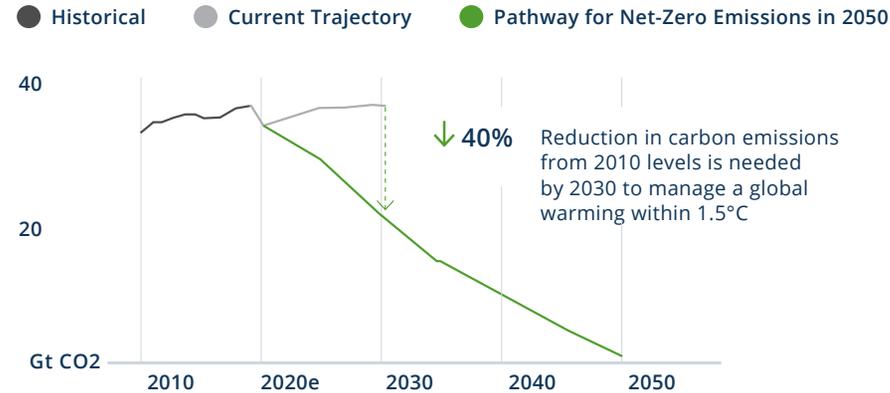
Source: G30 Steering Committee and Working Group on Climate Change and Finance, “Mainstreaming the Transition to a Net-Zero Economy,” October 2020.

the infrastructure, construction and development risks that arise in the process of implementing new technologies to decarbonize a company's underlying industrial practices. Scale and global reach will also matter.

Ultimately, we believe businesses and assets that are carbon neutral—or are on a viable pathway to achieve this status—will benefit from premium valuations versus their peers, as investors will perceive the risk associated with them as lower. This, in turn, has the potential to result in strong returns for the investors who funded that transition. Bottom line: This investment matters, especially for the companies that aim to be on the right side of climate history, and therefore be competitive in a new sustainable economy.

FIGURE 4

Global Energy Infrastructure CO2 Emissions Current Plans vs. Pathway for Net Zero by 2050 (Gt CO2)



Source: World Energy Outlook 2020 & IPCC. Gt—Gigatons. Note: 2020e = estimated values for 2020. Represents emissions from all energy sector and industrial processes including power plants, industrial facilities, buildings and vehicles. Current pathway reflects all announced policy intentions and targets as of September 2020, insofar as they are backed up by detailed measures for their realization.



Transitioning to Net Zero

Transitioning to net zero means that both economies and businesses must take the necessary steps to neutralize the amount of GHGs⁷ produced by human activity; in addition, changes in farming, as well as wider land use, will also be crucial. Net zero can be achieved through a combination of dramatically reducing GHG emissions and implementing methods of removing carbon dioxide from the atmosphere (such as tree planting or direct air capture). This means net-zero strategies do not require zero GHG emissions. Rather, the GHG emissions generated must be balanced with an equivalent amount of carbon removal (negative GHG emissions).

Achieving net-zero carbon emissions by 2050 is necessary to reach the ultimate goal of the Paris Agreement: limiting a global temperature rise this century to well below 2°C above pre-industrial levels (note: it is estimated that 2°C would be 10 times more damaging than 1.5°C). By meeting this target, the world could potentially lessen the severity and frequency of the most catastrophic consequences of climate change, a list that includes

heat waves, wildfires and rising sea levels. Limiting climate change through the achievement of net-zero emissions would also help to alleviate certain dire economic consequences, including some assets becoming “stranded”—or no longer viable before the end of their economic life.⁸

The reality of the transition means that stranded assets are a real risk. For sizable energy companies, vast swaths of their coal, oil and gas reserves may never be extracted and burned—and could face significant valuation impairments.⁹ A 2015 study on stranded assets found that 80% of the world’s known coal reserves, 33% of oil reserves and 50% of gas reserves are unburnable if warming is to be kept below 2°C.¹⁰ Recent estimates are in a similar ballpark. This could represent a \$7 trillion dollar loss of asset value on a global basis.

As COP26 draws closer, governments, providers of capital and companies themselves will have to answer one simple question: “What’s your plan for the transition to net zero?” The process of answering this question will expose the challenges they will face along the way and signal to the market where investment is needed—ranging from large scale commercial technologies in “conventional” renewables to emerging, but essential technologies, such as green hydrogen and carbon capture and storage. While governments will play a role, the scale of the transition means that it can only be funded by private markets,

80%

of world's known coal reserves

33%

of oil reserves and

50%

of gas reserves are unburnable if warming is kept below 2°C



FIGURE 5

Cycle of Innovation and Investment for Net Zero



Source: UKCOP26.ORG.

especially from investors with the capabilities and expertise to execute on the required transition business plans, deliver on the construction of new projects and operate these new carbon-efficient assets in the future (see Figure 5).

Overall, we believe that companies that successfully manage these transition risks will eventually enjoy access to cheaper and more plentiful capital. Laggards, meanwhile, will see their access to capital eventually dry up. This is already happening in some sectors, and as appreciation of the challenges and opportunities increases, it will accelerate. This limited access to capital, in addition to how their valuations might change, provides a strong incentive for companies to take the move to net zero seriously—and to start taking action now.

The Paris Agreement

The Paris Climate Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC). It was negotiated by 196 countries and adopted in December 2015 at COP21 (the 21st Conference of Parties). The objective is to keep the world temperature rise limited to well below 2°C above pre-industrial temperatures. The most aggressive targets would require a global transition to net-zero greenhouse gas emissions by 2050. Participating countries must consider the best available scientific knowledge; regularly report on progress; and establish intermediate measurable, science-based targets every five years. COP26 will be held in Glasgow in November 2021 and is the deadline for countries to announce their plans to meet the Paris Agreement's objective.

Governments and Major Corporations Are Increasingly Committing to Net-Zero Action

In response to the call for global climate action, governments have started to turn their Paris Agreement commitments into more explicit targets and legislated objectives (see Figure 6). In June 2017, for example, Sweden passed legislation that legally binds the country to reach net-zero emissions by 2045. The EU is now aiming for net-zero emissions by 2050—and the U.K., France and Denmark have already set that target into law.

Recent announcements show a growing number of governments committing to a net-zero objective. In 2020, Chinese President Xi Jinping pledged that China would be carbon neutral by 2060. The pledge was significant because it implies dramatic changes in China's energy system—with over 50% of its current energy use derived from coal, a global net-zero transition would have been impossible without the cooperation of the world's second-

largest economy. Also in 2020, both Japan and South Korea pledged carbon neutrality; their goal is to achieve net-zero emissions by 2050. And with a new administration, the U.S., the world's largest economy, has rejoined the Paris Agreement, and is committing to a clean energy economy by 2035.

Corporations are also taking an active role in moving to a net-zero economy. Some of the most influential companies in the world are setting their own ambitious targets and decarbonization goals—and these companies are set to become major procurers of green power. For example, Amazon has committed to reaching net-zero carbon by 2040 and is on a path to powering the company's operations with 100% renewable energy by 2025.¹¹ Meanwhile, Microsoft announced it will be carbon negative by 2030—and by 2050, the company will remove all the carbon it has emitted, either directly or by electrical consumption, since its founding in 1975.¹²

Capital providers are already pushing ahead (see Figure 7). Representing over \$5 trillion of AUM, members of the UN-convened Net-Zero Asset Owner Alliance have committed to moving their portfolios to carbon neutrality by 2050.¹³ Members of this alliance, who joined forces in September 2019, will also support initiatives proposed by the SBTi and the Climate Action 100+, an organization made up of 545 global investors that are responsible for more than \$52 trillion in assets under management across 33 markets.¹⁴

125+ countries

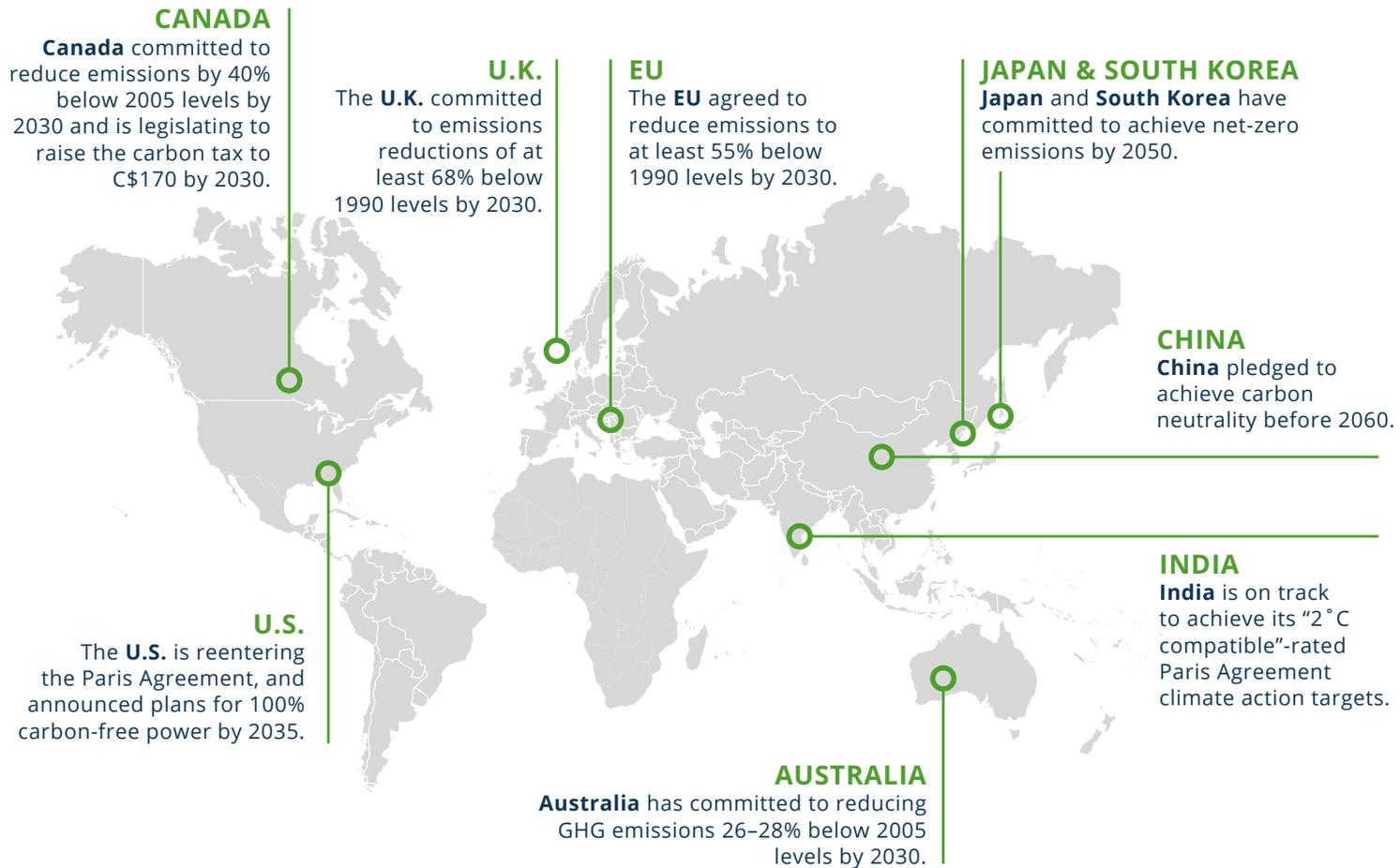
have now committed to net zero

Finally, better disclosure will play a key role for investors looking to make more informed, and more efficient, decisions on how to allocate their capital. The TCFD framework is the leading standard for reporting information on the impacts of climate change and provides comprehensive guidance for assessing climate risks and opportunities. Today, nearly 60% of the world's 100 largest public companies support the TCFD, report in line with the TCFD recommendations, or both.¹⁵ And new legislation will accelerate this process. The U.K., for example, recently announced new rules that will force certain listed companies to make disclosures in accordance with the TCFD; by 2025, these new rules will make TCFD-aligned disclosures mandatory across the U.K. Meanwhile, the EU is embedding climate disclosure legislation in its Non-Financial Reporting Directive—and a number of other countries and jurisdictions are expected to follow this year. Furthermore, the International Financial Reporting Standards Foundation (IFRS) has launched a sustainability reporting initiative, centered on climate and TCFD, that would potentially cover at least 140 countries.

FIGURE 6

Decarbonization Is a Global Goal

2020 saw increasing momentum among some of the largest carbon-emitting governments to adopt ambitious climate plans and targets



Source: Climate Action Tracker (December 2020). Gov. UK.

FIGURE 7

Rapid Increase in Support for Climate Action Initiatives

Number of Supporting Organizations



Source: Task Force on Climate-related Financial Disclosures, "2020 Status Report"; Science Based Targets, "Companies Taking Action," November 2020; Climate Action 100+, "2019 Progress Report," 2019.

The Clean Energy Transition Is Underway

The investment opportunity for the clean energy transition is significant. The Intergovernmental Panel on Climate Change (IPCC) estimates that almost \$3 trillion of annual investments are needed to limit warming to 2°C by 2050, or \$3.5 trillion annually to limit warming to 1.5°C.¹⁶ Goldman Sachs, meanwhile, sees a total investment opportunity of up to \$16 trillion by 2030 in a scenario that would be consistent with the global ambition to contain global warming within 2°C (see Figure 8).¹⁷

Plans for the clean energy transition are beginning to emerge. As an example, Iberdrola, the Spanish utility, has promised to invest €75 billion over the next five years to increase its renewable energy capacity from 32 GW in 2019 to 60 GW in 2025.¹⁸ And Enel SpA, a large Italian utility, announced that it would spend €70 billion over the next decade on growing its renewable power capacity from 45 GW today to 120 GW by 2030.¹⁹ It's telling that two of the biggest utilities in the world, which both have significant exposure to renewables, are investing further to take advantage of the clean energy transition.

FIGURE 8

A \$16 Trillion Opportunity

Cumulative Investment in Clean Energy Transition to 2030 (US\$ tn)

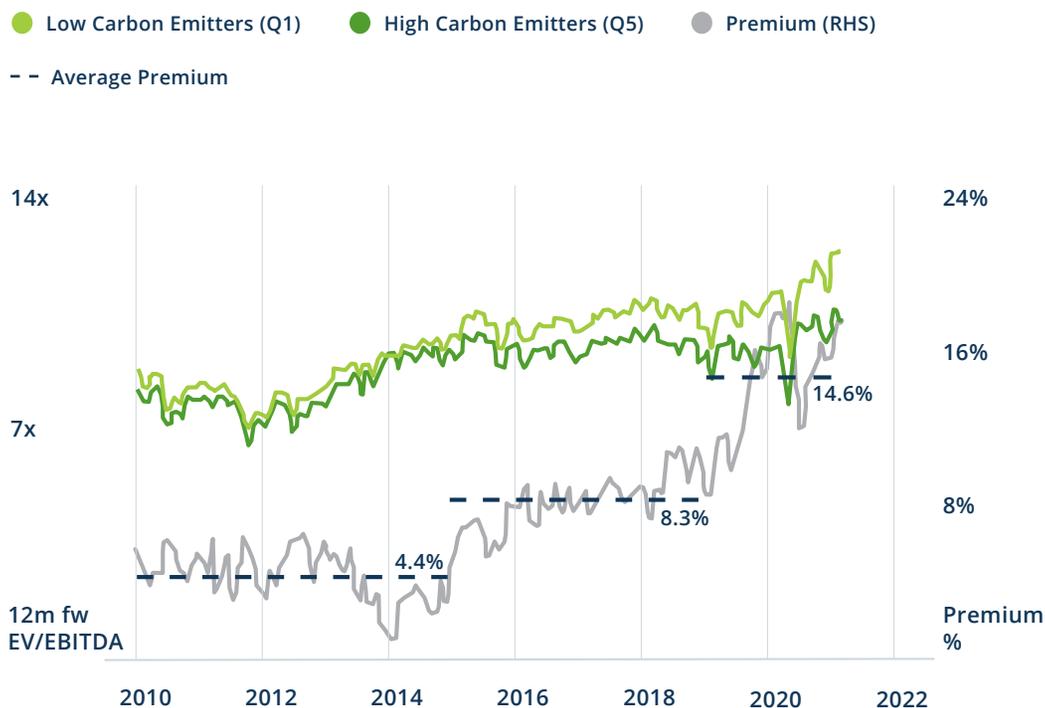


Source: IEA WEO (2019), Goldman Sachs Global Investment Research. EV—Electric vehicle. CCUS—Carbon capture, utilization and storage. FCEV—Fuel cell electric vehicle.

FIGURE 9

Low Carbon Emitters Are Trading at Increasingly Elevated Premiums

(Total Scope 1&2 GHG emissions/GFA) 12-month-forward EV/EBITDA multiples (2010-2021), excluding financials



Source: Refinitiv, FactSet, Bloomberg, Goldman Sachs Global Investment Research. EV/EBITDA—Enterprise value to earnings before interest, taxes, depreciation and amortization ratio. Q—Quintile. Low and high carbon emitters are determined by taking the average of total Scope 1&2 CO₂ emissions normalized to gross fixed assets in USD relative to GS Sustain industry peers since 2010, where at least 5 years of carbon data are available.

It is also telling that investors are rewarding these sizable renewable companies in the markets. NextEra Energy, a Florida-based utility that is sometimes referred to as a “clean energy supermajor,”²⁰ now has a market cap of \$160 billion—and, according to Bloomberg, is trading at 30x the sell-side’s projected 2022 earnings estimate.²¹ When one considers that NextEra’s market cap is not too far off from those of Exxon Mobil and Chevron, which both trade around 17x the sell-side’s estimate of 2022 earnings, it’s clear that investor preferences for which companies might be considered “energy giants” have evolved.

It suggests that the market is allocating value to those assets that are net zero, or are on a path to net zero—and giving them credit for being de-risked versus their peers (see Figure 9).

Renewable power is expected to become the world’s largest source of electricity generation by 2025

According to the International Energy Agency (IEA), renewables will account for 95% of the net increase in global power capacity worldwide through 2025.²² Hydropower is currently the largest source of renewable electricity globally. But in terms of growth, the trajectories for wind and solar stand out—with solar alone accounting for 60% of all renewable capacity additions through 2025, and wind providing another 30%.²³

Solar and onshore wind are already the cheapest ways of adding new electricity-generating capacity in most countries today (see Figure 10). They can be deployed at scale, they can provide significant amounts of power, and they are economically rational without government subsidies. These factors are spurring meaningful change in the global energy mix: “Renewables will overtake coal to become the largest source of electricity generation worldwide in 2025,” the IEA report

says (see Figure 11). “By that time, they are expected to supply one-third of the world’s electricity.” Hydropower’s share is expected to remain steady at almost half of global renewable electricity.

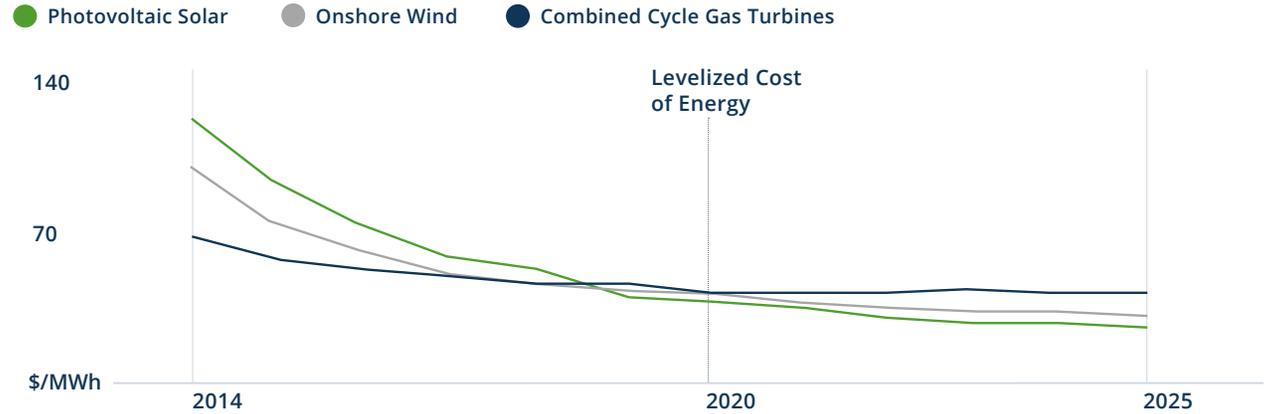
In the U.S., the proposed clean electricity policies of President Joe Biden could accelerate this clean energy transition, since they would lead to a more rapid deployment of wind and solar. Shortly after taking office, President Biden took executive action to tackle the climate crisis; the ambitious goals will lead to a clean energy revolution “that achieves a carbon pollution-free power sector by 2035.”²⁴ To reach these goals, significant capital—and know-how—will need to be invested into electricity grids. Transitioning away from carbon-dioxide-emitting sources of power generation, and into renewable resources, is the objective.

Energy storage is anticipated to accelerate the accessibility and use of renewable power

Wind and solar are, of course, intermittent sources of energy. Yet grid operators need reliability to keep the lights on. Energy storage technologies, therefore, will be key in ensuring a consistent supply of energy (see Figure 12). For wind and solar, government subsidies drove investment that led to an advancement in the technology, as well as manufacturing scale around the world—which then brought the cost curve down. The development of battery storage has been different for two reasons: the private sector is mainly

FIGURE 10

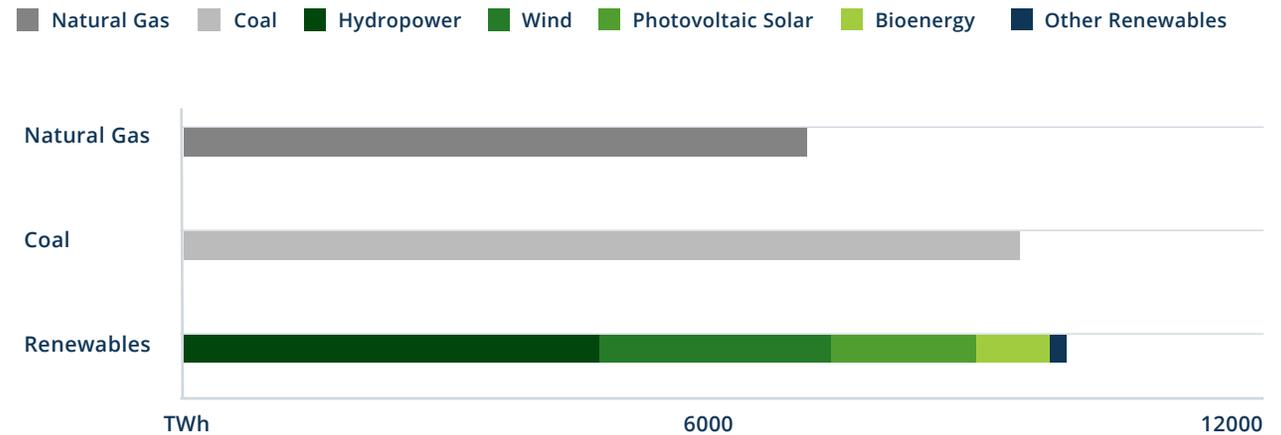
Wind and Solar Are Cheapest Sources of Bulk Generation



Source: Bloomberg New Energy Finance.

FIGURE 11

Electricity Generation by Technology in 2025



Source: International Energy Agency.

taking the lead, and the focus is on the electrification of transportation—not necessarily the stability of the electrical grid.

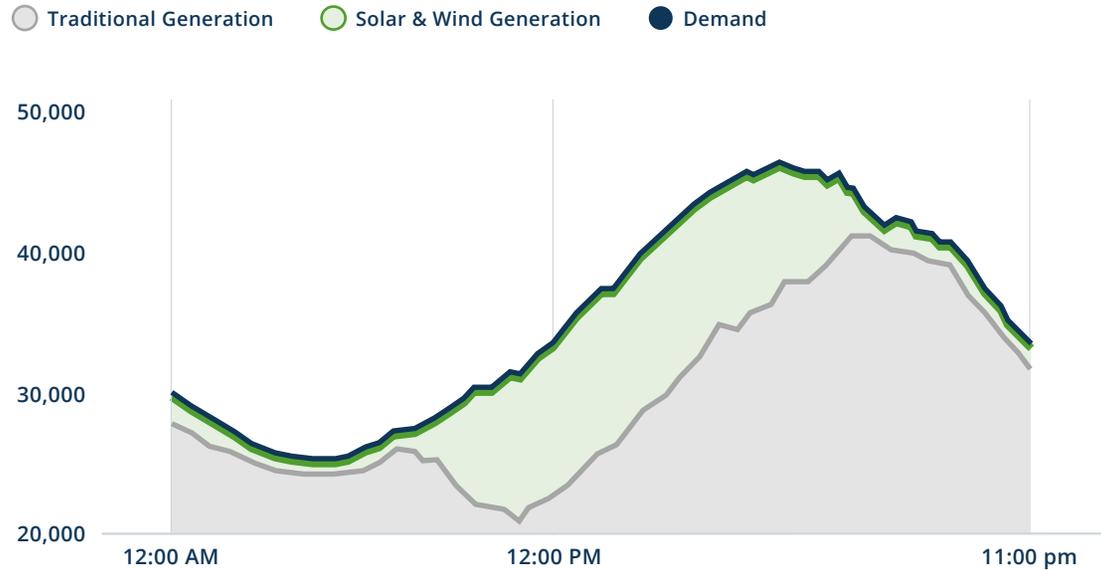
Today, batteries are an expensive technology, and while the process has taken longer than many had expected, they are becoming more cost competitive. But the importance of batteries, which store electricity as chemical energy, cannot be overstated. Incorporating this energy storage technology will bolster the transition away from coal-fired electricity generation—and into renewables. For example, Tesla and Neoen, the French renewable energy company, announced in November they were partnering to build one of the world’s largest lithium-ion batteries in Geelong, southwest of Melbourne.²⁵

Going forward, battery storage will present a significant commercial opportunity. However, it will favor those with experience in investing in clean energy assets, managing the intermittency of renewable power, and operating renewables as clean energy increases penetration on power grids.

FIGURE 12

Reliable Base-Load Power Needed to Accommodate Wind and Solar Intermittency

California Independent System Operator Daily Generation Mix (MW)



Source: California ISO.

Operational Expertise Will Help Spur the Business Transformation

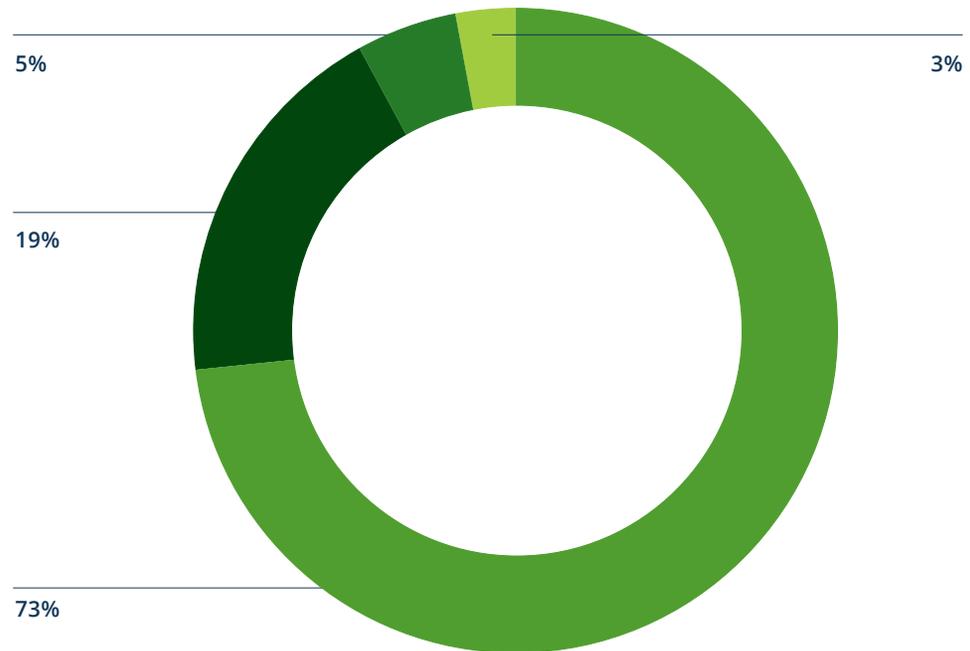
The business transformation opportunity emerging from decarbonization is both global and sector-agnostic. The need for new products and solutions to reduce carbon emissions is creating a compelling business proposition for providers of private capital—one that generates a positive impact on a company’s activity, which leads to measurable outcomes in the real world.

The energy sector is the biggest greenhouse gas emitter. This sector—which includes electricity, manufacturing, transportation and buildings—represented 73% of global emissions in 2017 (see Figures 13 and 14).²⁶ Thus, there are many ways to drive change, such as through offtake contracts on energy, and many adjacent opportunities, such as storage. Furthermore, it won’t be difficult to find these commercial opportunities, especially since companies are publicly disclosing their net-zero targets. But for the transformation to be as effective as possible, we believe a prerequisite to being a

FIGURE 13

Share of Global Greenhouse Gas Emissions

■ Energy and Power Generation ■ Industrial Processes ■ Waste ■ Agriculture, Forestry and Land Use



73% Energy and Power Generation Breakdown

- 24% Energy in Industry
- 18% Energy in Buildings
- 16% Energy in Transport
- 15% Energy in Other

Source: Climate Watch & World Resources Institute.

potential partner for companies will be to possess both operational expertise and power generation expertise.

Consider a typical oil & gas company. In addition to the cost to fund its transition, the company will need to consider procuring carbon capture systems, removing carbon emissions from the atmosphere, and investing in the infrastructure required to do so. It will also have to source renewable electricity to power its operations, and determine whether it needs to go out on the market and procure carbon offset credits. These are all highly complex operational demands.

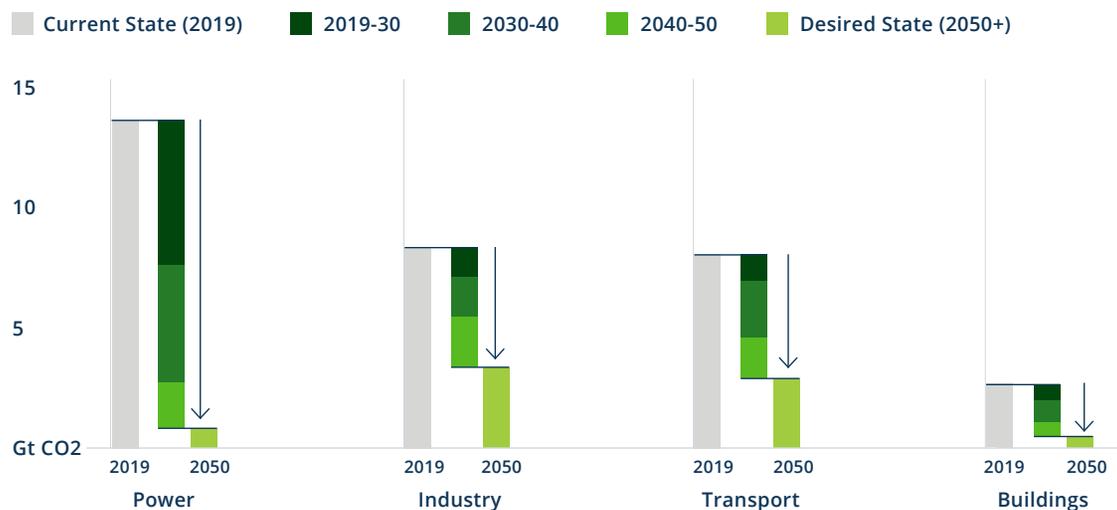
But companies outside the energy sector will also need help on their journey to net zero. For example, the global steel industry accounts for 8% of the emissions that contribute to climate change.²⁷ To meet the minimum goals of the Paris Agreement, the steel industry must reduce its emissions by at least 50% by 2050. Steelmaking is difficult to decarbonize, yet it's an essential part of a functioning global economy. A recent McKinsey study states that approximately 14% of the industry's potential value is estimated to be at risk if it does not reduce its environmental impact.²⁸

Innovation will need to play a large part in decarbonizing steel production. Potential solutions include hydrogen-based "green" steel. Companies today are looking to partner with firms with industrial operating experience that have the capital, scale and operational expertise to fund new projects to support such innovation.

FIGURE 14

Electricity Generation Is Critical, But All Sectors Must Lower Emissions

CO2 Emissions Reductions Required to Meet Paris Agreement Temperature Goal



Source: International Energy Agency (2020), World Energy Outlook 2020, IEA, Paris and IPCC.

Private capital can also assist in speeding up the transition across many industries that are core to the global economy—energy, utilities, steel, cement and others. Put simply, companies that have neither the capital nor the operational expertise to execute this transformation on their own will need outside help. In addition, a number of these companies now have overleveraged balance sheets following the distress caused by the COVID-19 pandemic.

Simultaneously, pressure is building as more investors call for companies to announce credible transition

plans. Climate Action 100+ recently demanded that 161 companies—including the highest emitters—publish strategies for how they will reduce emissions by 45% by 2030, compared with 2010 levels, to meet their net-zero targets.

The transition to net zero will vary by sector and implementation, requiring businesses to seek a partner with a strong understanding of the technologies and operational efficiencies needed to decarbonize various industries.

Conclusion

Sustainability will play a large part in driving growth in economies post-COVID-19. Governments are already announcing high shares of fiscal spending dedicated toward sustainability goals. Private capital will play the decisive role in funding the \$3-plus trillion in annual investment required for the next 30 years.²⁹

Soon it will become increasingly clear which companies are on the right or wrong side of climate history. Companies that are slow to adapt their operations will risk being left behind, with decreased valuations and diminishing access to capital. Therefore, the opportunity to create real value—by helping companies transition from where they are, to where they need to be—is massive.

To be successful, the energy and business transitions will require large-ticket investments from investors with both operational expertise and a deep understanding of electrification and clean energy technologies. Looking ahead, we believe this support can make all the difference.

Glossary

Additionality – Whether an investment increases the quantity or quality of an enterprise’s output beyond what would have otherwise occurred.

COP26 – The global conference to be held in Glasgow in November 2021, where countries are expected to have their own individual plans ready to achieve the Paris Agreement objective.

Decarbonization – The process of reducing the amount of GHGs produced by human activity.

Impact Investing – Investing with a dual focus of generating both financial returns and positive, measurable social and environmental impact.

Net Zero – A target, applying to a business or country, of completely negating the amount of greenhouse gases (GHG) produced by human activity. It can be achieved by a combination of 1) dramatically reducing GHG emissions and 2) implementing methods of removing or absorbing carbon dioxide from the atmosphere (i.e., tree planting, air carbon capture, etc.). Note: a “net-zero” strategy does not require zero GHG emissions. Rather, the GHG emissions generated need to be balanced with an equivalent amount of carbon removal (negative GHG emissions)—hence “net zero.”

Paris Alignment – A business, investment or economic strategy that is consistent with achieving the goals of the Paris Agreement. Therefore, a goal that is consistent with keeping a temperature rise well below 2°C—or even to 1.5°C.

Science-based targets (SBTs) – Targets that provide a clearly defined pathway for companies to reduce GHG emissions, helping prevent the worst impacts of climate change and future-proof business growth. Targets are considered “science-based” if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement—limiting global warming to well below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.

Stranded assets – Assets that are no longer able to provide an economic return as a result of changes associated with the energy transition.

UN Sustainable Development Goals (SDGs) – Set of 17 goals agreed to and adopted in 2016 by 193 countries. The goals cover economic, social and environmental issues and set specific objectives to achieve by 2030 within these focus areas. Many sustainable and impact investors reference the UN SDGs and might state how their individual investments or strategies are aligned with, or help to achieve, a specific UN SDG.

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Investors should consult with their advisors prior to making an investment in any fund or program, including a Brookfield-sponsored fund or program.

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- ⁸ In simple terms, stranded assets are those that turn out to be worth less than expected as a result of changes associated with the energy transition. The stranded assets concept has been interpreted as encompassing a range of different factors, including: 1) economic stranding due to a change in relative costs/prices, 2) physical stranding due to distance/flood/drought, and 3) regulatory stranding due to a change in policy of legislation. Source: Carbon Tracker Initiative, "Stranded Assets," Aug. 23, 2017.
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