



# Opportunities in Decarbonisation Disruption

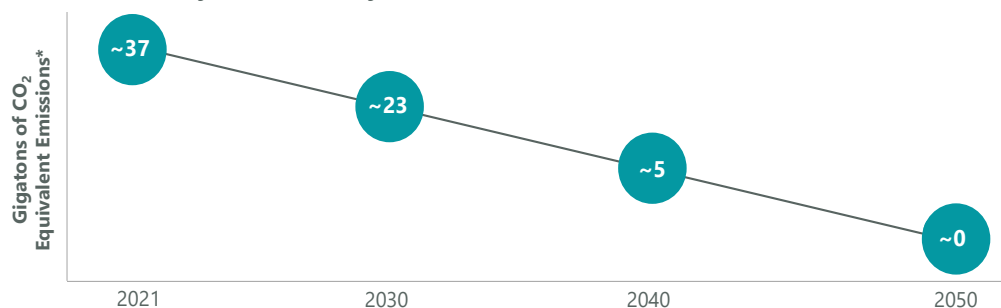
## Key Takeaways

- ▶ Actions to mitigate and adapt to climate change will disrupt many sectors, creating both winners and losers as changing market conditions and policies affect business models, competitive dynamics, technology developments and capital allocation decisions.
- ▶ A wave of government commitments to net zero and technological advancements driving down the cost of decarbonisation solutions are key pillars in the investment case for decarbonisation, while challenges include grid interconnection, project permitting, raw material availability, climate justice and deglobalisation.
- ▶ In addition to seeking out winners in industries most affected by decarbonisation, active managers can encourage portfolio companies to make specific changes that lead to real-world emissions reductions.

Decarbonisation is increasingly sparking debate about its urgency and possibility, as governments and corporations continue to commit to net zero. It is driving innovation in many sectors, with industries aiming to lower carbon emissions while still enabling the global economy to thrive.

Decarbonisation, simply put, means reducing the global economy's annual carbon emissions to net zero. Doing this by 2050 would enable us to meet the goal of limiting global temperature rise to 1.5° Celsius and help us avoid the worst effects of global warming (Exhibit 1).

**Exhibit 1: Pathway to Net Zero by 2050 is Narrow but Achievable**



Source: \*Adapted from International Energy Agency (2022), World Energy Outlook 2022.

A significant portion of the global economy has committed to reaching net zero: roughly 92% of global GDP, accounting for 88% of global emissions and 85% of the world’s population has made net-zero commitments (Exhibit 2). Most countries have set 2050 as a date to reach net-zero carbon emissions, while some have earlier target dates (Germany and Sweden are targeting 2045) or later (China’s goal is 2060, and India’s is 2070).

**The Investment Case for Decarbonisation**

The wave of government commitments to net zero is a key pillar of the investment case for decarbonisation. The other key pillar is technological change, which continues to drive down the cost of decarbonisation solutions. Decarbonisation is a key secular theme that will have long-term implications on the global economy. It will drive an immense amount of investment: between \$3 trillion and \$4 trillion per year is required globally to meet the goals of the Paris Climate Agreement. According to BloombergNEF (BNEF), ~\$1.1 trillion was invested in clean energy in 2022 (Exhibit 3). While this was an impressive 31% increase versus 2021 these investment levels still need to triple to get on track for net zero, so we expect the level of investment to ramp up over time. Importantly, this investment will span multiple sectors.

There is a clear opportunity for businesses — companies that can solve decarbonisation challenges will get rewarded, as there are large addressable markets for companies innovating and finding new ways to perform almost any economic activity in a way that is lower carbon. This includes scaling up existing technologies, as well as commercialising new technologies; there is roughly equal need for both, according to analysis by Bank of America.

**Which Decarbonisation Industries are Investable Today?**

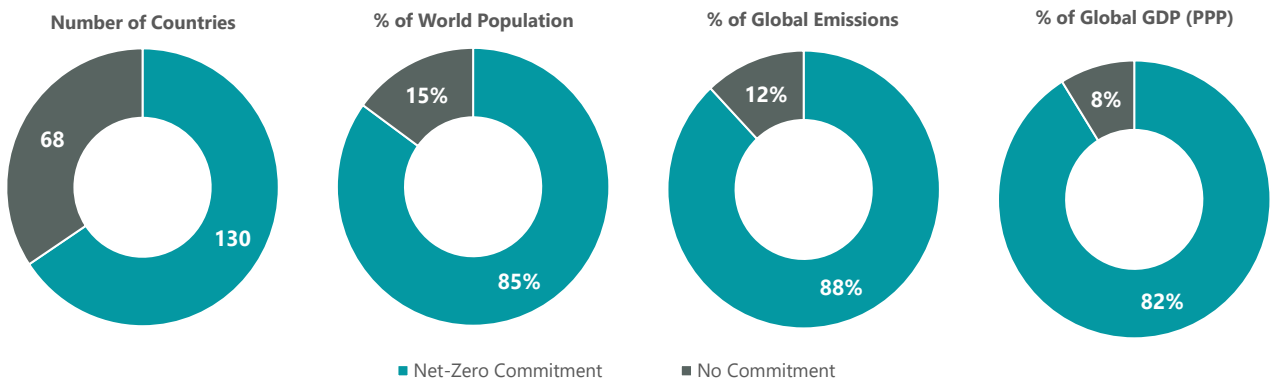
Broadly, there are six components to the energy transition (Exhibit 4). The first major decarbonisation transition is occurring in the power sector, where wind and solar are replacing coal and gas. While there are policies encouraging this transition in some jurisdictions, it is being driven primarily by economics as technology advancements are lowering the levelised cost of electricity from wind and solar (Exhibit 5).

Even with temporary cost increases for renewables in the form of higher interest rates, the gap to fossil fuel power generation continues to widen due to fuel and carbon prices rising even faster. New-build onshore wind and solar projects are now around 50% lower than BNEF’s global benchmarks for new coal- and gas-fired power. We have seen exponential cost reductions in wind (~50%) and solar (~90%) in the past decade. Solar and wind are now the cheapest forms of energy in countries with two-thirds of the global population and 90% of world electricity generation.

Accordingly, many industries offer ways to invest in decarbonisation, including: mobility; renewable energy and storage; building efficiency; industrial efficiency and products; food and agriculture; technology and software; and materials. Across this wide range of industries, there are many different business models at different stages of maturity, suggesting the need for being selective. Key decarbonisation industries include:

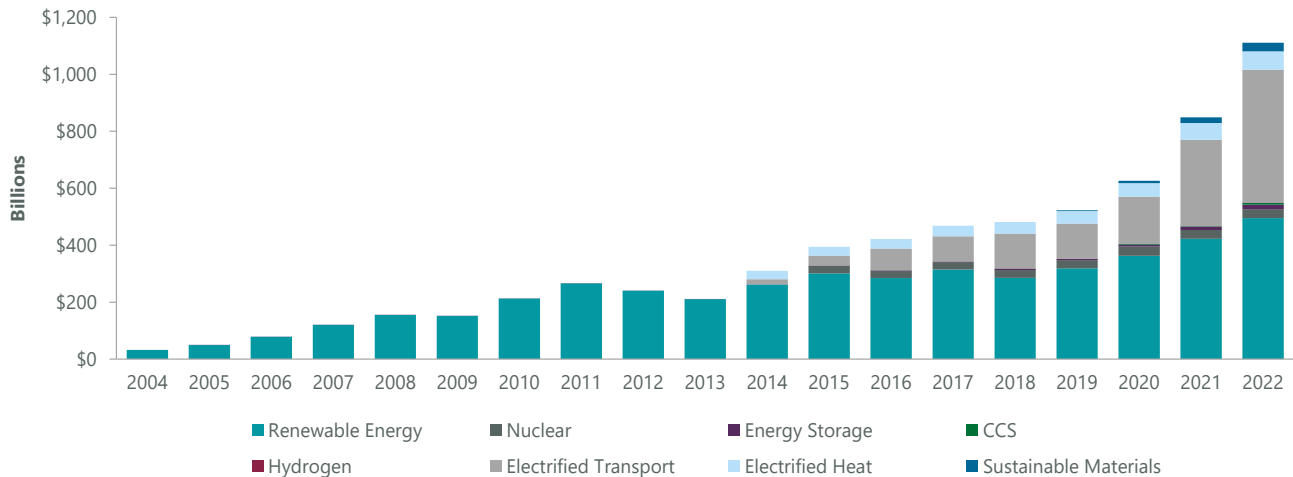
- **Renewable energy and storage:** This includes the solar energy value chain, with solar panels dominated by Chinese suppliers due to cheap polysilicon availability in China. There is perhaps greater differentiation among other parts of the solar value chain, such as solar inverters (the “brains” of the system) and other electrical components, as well as the software needed to manage a solar plant. Energy storage is less

**Exhibit 2: Portion of World Covered by Net-Zero Commitments**



As of March 2023. Source: Net Zero Tracker, <https://zerotracker.net/>.

**Exhibit 3: Global Energy Transition Investment by Sector**



Note: Start years differ by sector, but all sectors are present from 2019 onward. As of January 2023. Source: BNEF, “Energy Transition Investment Trends 2023.”

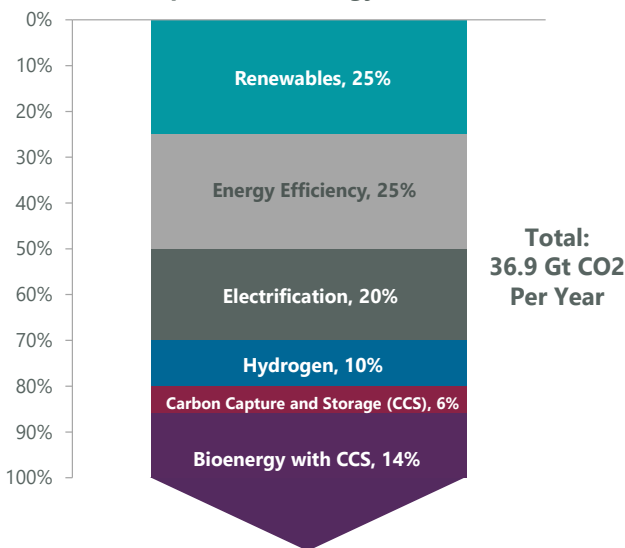
mature relative to solar and wind but is growing rapidly: batteries are beginning to play a critical role in stabilising the grid and evening out the intermittency of renewable sources.

- **Mobility:** The auto industry will see continued disruption and the creation of new winners and losers as the industry transitions from internal combustion engine (ICE) vehicles to electric vehicles (EVs). While brand name EV manufacturers come to mind, companies making connectors and other electrical components for cars will also benefit from the transition to EVs because they have higher electrical content per car and represent a revenue opportunity 2x larger than for a traditional car. Semiconductors for power conversion and sensing capabilities likewise will see more demand in EVs, with 5x the amount of semiconductor content in an

EV compared to an ICE vehicle. Losers may include auto parts aftermarket companies, since EVs have far fewer parts and need less maintenance. Some related industries are emerging but the business models are unproven, such as EV charging infrastructure businesses, as well as alternative technologies like hydrogen fuel cells.

- **Materials:** Copper and rare earth minerals will play an important role in the energy transition. Electrification requires large amounts of copper, for conducting electricity, and battery materials such as cobalt and lithium, for storing it. EVs require 3x more copper than ICE vehicles, while solar and wind power require between 2x and 6x as much copper compared to coal, natural gas and hydro. At the same time, [mining these minerals entails substantial environmental and social risks that must be managed.](#)

**Exhibit 4: Components of Energy Transition**



Source: International Renewable Energy Agency.

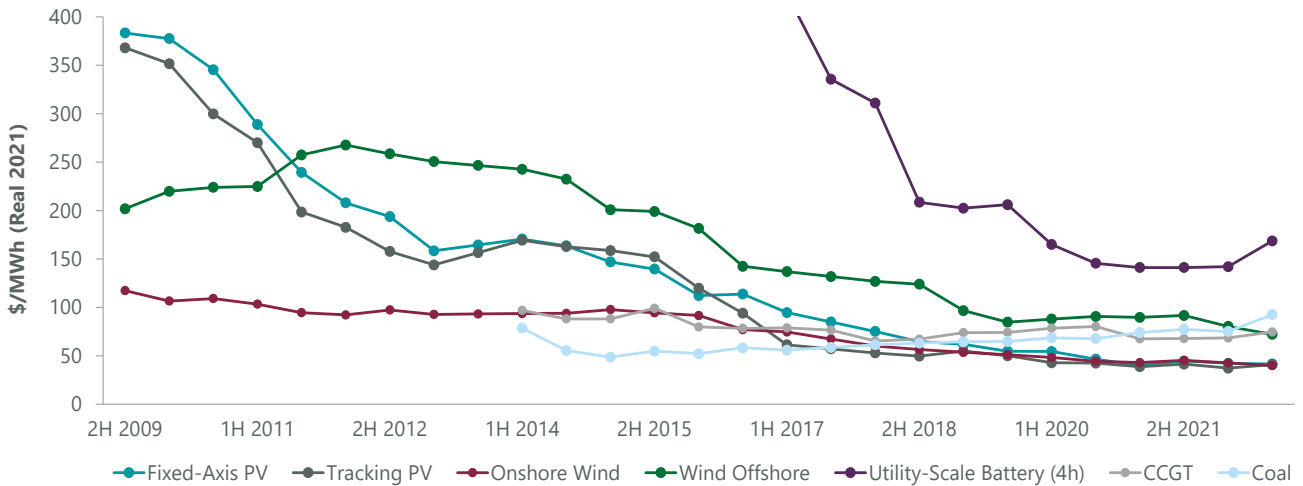
### Key Challenges to Decarbonisation

While there are clear opportunities driven by decarbonisation, there are also challenges to consider. Companies able to address and help overcome these challenges may see attractive market opportunities.

#### Grid interconnection and project permitting:

Hooking up a renewable energy project to the grid can present a challenge to developing renewable energy. Currently, there are 1,900 renewable power projects in the U.S. awaiting interconnection while the Federal Energy Regulatory Commission (FERC) looks to reform interconnection procedures to reduce the backlog. Meanwhile, permitting remains a problem for renewable projects and for the additional transmission lines needed to move the power from its source to large demand centers like cities — both can face fierce local opposition from residents.

**Exhibit 5: Wind and Solar Now Cheaper than Coal**



As of March 2023. Source: BNEF 2H 2022 Levelised Cost of Electricity.

**Raw material availability:** Clean energy technologies such as solar panels, wind turbines, batteries and electric motors require more critical minerals than the conventional technologies they are replacing. This means the transition to clean energy will lead to significantly higher demand for minerals such as copper, lithium, nickel, cobalt and rare earth elements. In fact, reaching net zero globally by 2050 would require up to 6x more mineral inputs in 2040 than today.<sup>1</sup> This creates significant challenges as some of these materials have limited geographic availability and entail meaningful environmental and social risks to produce. Securing enough critical minerals to enable decarbonisation is a key hurdle to achieving net zero.

**Climate justice:** There are two elements to climate justice. Firstly, countries are experiencing differing levels of disruption from the physical impacts of climate change — such as sea level rise, or increased weather events like floods, wildfires and droughts. The cost of responding to extreme weather events can be a significantly larger burden for countries with smaller economies that are less able to afford the investments.

While climate change is already exacerbating hardships for vulnerable people in countries all around the world, the transition to a net-zero economy won't be politically viable (or morally acceptable) if the transition exacerbates existing inequalities, for example by increasing energy costs at unacceptable rates. This is sometimes referred to as the need for a "just transition". One-third of U.S. households already face some form of energy poverty, whether it is unaffordable energy bills, forgoing basic necessities like food and medicine, or the inability to keep the home at a healthy temperature.

There are also impacts to certain communities from the winding down of carbon-intensive industries such as coal mining. These communities will likely need to be supported through the transition. For example, in the U.S., the Inflation Reduction Act includes extra incentives for building clean energy projects or manufacturing plants in such communities — with the hope that these communities can receive some of the economic benefits from deployment of low-carbon technologies.

**Deglobalisation:** Several related geopolitical developments are causing globalisation to go into reverse. We are seeing a rise in trade tariffs and national industrial policies that prioritise domestic production for key industries like semiconductors and energy. For decarbonisation to occur at the pace required to reach net zero by the middle of this century, however, we need more international cooperation, not less. In support of this, the International Energy Agency and the International Renewable Energy Agency (IRENA) call for common standards, technology sharing and the removal of trade barriers.

**The Role of Active Managers: Seeking Strong Investments and Engaging for Change**

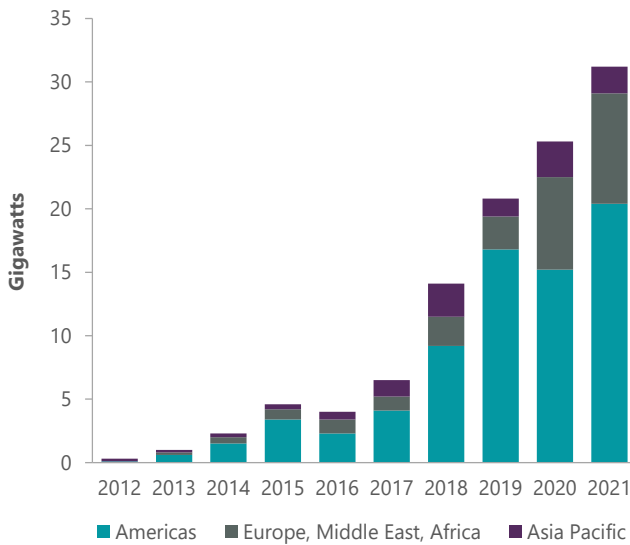
In addition to seeking out winners in industries most affected by decarbonisation, active managers can encourage portfolio companies to make specific changes that lead to real-world emissions reductions.

While most companies don't sell a product that directly reduces emissions, all companies can play a role in addressing climate change by changing the way they operate. Companies are significant users of power, and their buying decisions make a difference

<sup>1</sup> International Energy Agency (IEA), The Role of Critical Minerals in Clean Energy Transitions.

(Exhibit 6). Corporations have become a key demand driver for renewable power. Renewable power purchase agreements (PPAs) provide companies with both long-term price visibility and help achieve emissions reduction goals. Effective active management can include engaging with company management to share and promote best practices as well as proxy voting to encourage more ambitious climate action where relevant.

**Exhibit 6: Global Corporate Renewable Power Purchase Agreements**



Source: Science-based Targets Initiative.

### Key Investor Initiatives

Recently, several key initiatives have been launched to support active management’s ability to advance decarbonisation goals through portfolio companies. These initiatives provide valuable information to investors and portfolio companies as well as a common language to help set clear and meaningful goals.

#### The Net Zero Asset Managers Initiative

The Net Zero Asset Managers initiative (NZAM) is an international group of more than 300 asset managers with nearly \$60 trillion in assets under management that are committed to playing their part in getting the world to net-zero carbon emissions by 2050. Through NZAM, ClearBridge Investments has committed to the following goals:

- By 2030: Achieve at least 66% of current in-scope assets net zero aligned or subject to engagement.
- By 2040: Align 100% of the firm’s assets with the pathway to net zero by 2050.
- By 2050: Achieve net-zero emissions across all ClearBridge Investments portfolios.

NZAM is an important step forward for the asset management industry because it is the first initiative of its kind to lay the foundation for hundreds of asset managers to set net-zero targets, and it provides verification of each manager’s approach as well as a mechanism for tracking progress over time.

The focus of our approach to net zero is high-touch engagement with portfolio companies on their decarbonisation strategies. As long-term investors, we want to ensure the companies we are investing in are prepared for the changes that a decarbonising economy and a changing climate will bring to markets around the world.

#### The Science Based Targets Initiative

The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector by enabling organisations to set science-based emissions reduction targets. A company’s emissions reduction targets are considered science-based if they are in line with what the latest climate science deems necessary to achieve net zero by 2050. SBTi is a partnership between CDP (formerly Carbon Disclosure Project), the U.N. Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi has developed detailed methodologies and guidance for setting science-based targets and offers a framework for independently verifying them; it reviews all targets set using its method to verify they meet the standard and give its seal of approval.

The SBTi framework is also one of several approaches accepted by NZAM to measure climate performance and setting targets (along with the Paris Aligned Investment Initiative’s Net Zero Investment Framework and the Net-Zero Asset Owner Alliance’s Target Setting Protocol). ClearBridge Investments uses SBTi’s criteria for target verification, as well as additional verification methods such as Climate Action 100+ (CA 100+), which covers a range of high-emitting sectors including oil and gas (currently excluded from SBTi). We also allow for the inclusion of climate solution providers, or companies whose products result in emissions reductions.

#### Climate Action 100+

CA 100+ is an investor-led initiative to engage the world’s largest greenhouse gas emitters in curbing emissions and improving climate-related disclosures. ClearBridge Investments has been a signatory since 2018 and has been involved in engagement campaigns with ClearBridge Investments portfolio companies such as electric power company AES. ClearBridge Investments engaged the company’s executives and board members, encouraging them to accelerate their carbon reduction plans. We saw

this as aligned with shareholder value creation because the market wasn't ascribing much value to AES's legacy coal plants; our view was that speeding the transition to renewables should drive higher valuation. Since our engagement began, AES has stopped investing in coal plants and begun shutting down existing coal capacity, while simultaneously adding renewable energy exposure in the form of wind, solar and industrial scale battery storage. AES has now committed to a 70% emissions reduction target by 2030 (previously it was targeting a 50% reduction). While we were by no means the only investors engaging AES on this topic, we believe our voice contributed to the changes we've seen at the company. As we had anticipated, AES's switch from coal to renewable energy in 2018-19 coincided with a run up in valuation multiple, as AES has positioned itself as a leader in the energy transition.

### Task Force on Climate-Related Financial Disclosures

The Task Force on Climate-related Financial Disclosures (TCFD) seeks to develop consistent metrics for use by companies in disclosing financial risks associated with climate change to investors and other stakeholders. Consistent and comparable company disclosure of climate-related risks directly inform ClearBridge Investments' assessment of a company's investment attractiveness, as actions to mitigate and adapt to climate change will disrupt many sectors, creating both winners and losers in the process. Changing market conditions and policies to transition toward a lower-carbon economy are likely to affect business models, competitive dynamics,

technology developments and capital allocation decisions in many industries.

ClearBridge Investments also aligns our [climate change reporting](#) with the recommendations of the TCFD, highlighting our commitment to addressing the challenge of climate change in our roles as active shareholders and stewards of our clients' capital.

### Summary

A broad mix of regulatory policy, strategic decisions by companies, technological innovation and investor initiatives is supporting the investment case for decarbonisation, driving change in several industries. ClearBridge Investments has been active in furthering these positive trends and is also well-positioned to benefit from them, investing in companies enabling the transition and engaging with companies to help them thrive and create value over the long term.

### About the Author



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- 10 years of investment industry experience
- 5 years of related industry experience
- Joined firm in 2013
- MSc in Environmental Technology from Imperial College London
- BSc in Biology from University of Manchester

## ClearBridge Investments [ClearBridgeInvestments.com.au](https://www.clearbridgeinvestments.com.au)

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