



MAPLE-BROWN ABBOTT

INVESTMENT MANAGERS SINCE 1984

Maple-Brown Abbott Global Listed Infrastructure Task Force on Climate-related Financial Disclosures (TCFD) Report

November 2021



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Introduction

We are pleased to share the Maple-Brown Abbott (MBA) Global Listed Infrastructure (GLI) Task Force on Climate-related Financial Disclosure (TCFD) Report.¹ The report details our approach to identifying and managing climate change-related risks and opportunities in line with the recommendations of the TCFD. We have undertaken detailed bottom-up climate transition scenario analysis on the companies held in the GLI strategy² alongside industry-by-industry insights and case study examples. While the recommendations of the TCFD are not solely concerned with scenario analysis, we have made this the centrepiece of this report to provide our stakeholders as much transparency as possible, inform our investment process and test our thinking.

Our TCFD commitment

How can capital be allocated positively, into attractive infrastructure investments, to facilitate a timely and just transition to a low carbon world while delivering returns to our clients? How should we account for companies that have a high greenhouse gas (GHG) emissions footprint? Are they responsive to the urgency of climate change, and to what extent can we exert influence? These are complex questions that as a responsible investor we have a role in answering.

Climate change and decarbonisation have been at the forefront of our environmental, social and governance (ESG) research, engagement and proxy voting activities over 2020/21. As long-dated assets that provide essential services to society, infrastructure companies face the double challenge of supporting and facilitating the energy transition while building resiliency and adaption to the risks of more frequent and extreme weather events.

The [Maple-Brown Abbott Climate Change Policy](#) formalises our firm-wide to commitment to integrating climate change factors into investment decisions, company engagement, climate risk management and reporting in line with the TCFD.

Our inaugural TCFD report is structured according to the four pillars of the TCFD, that is, by detailing our approach to climate-related governance, strategy, risk management and targets and metrics.


The climate change imperative

The GLI strategy is exposed to climate change risks. The physical impacts of climate change, such as more extreme and frequent weather events, and the transition risks associated with the shift to a low carbon economy, such as renewable energy and grid infrastructure, will have an impact on the long-term viability of infrastructure assets.

As the Intergovernmental Panel on Climate Change (IPCC) explains, the science of human-induced climate change is unequivocal and the transition to a low carbon world is not happening at anywhere near the pace and scale needed to achieve the long-term temperature goal of the Paris Agreement.³ As fiduciaries acting on behalf of our clients and as responsible investment managers, we do not take the scale of this problem lightly and recognise the important role we, and the financial services sector at large, have to play through our investment decisions.

Only a few months before the IPCC sounded the alarm bells on the accelerated speed of climate change and its detrimental environmental and societal impacts, the International Energy Agency (IEA) released its seminal Net Zero by 2050 roadmap, detailing a pathway to limiting the global temperature rise to 1.5°C above pre-industrial levels in line with the Paris Agreement.⁴ This report uses the full range of the IEA's energy transition scenarios – ranging from inertia, middle-of-the road and deep decarbonisation pathways – to assess the climate-related risks and opportunities to the GLI strategy.

Four pillars of the TCFD framework



Governance

Governance around climate-related risks and opportunities



Strategy

Actual & potential impacts of climate risks and opportunities on business and strategy



Risk management

Processes used by the organisation to identify, assess and manage climate risks



Metrics and targets

Metrics & targets used to assess and manage relevant climate risks and opportunities

¹ As at 30 June 2021.

² A representative fund of the GLI strategy has been used as a proxy for the analysis and is referred to as the "strategy" throughout this document.

³ IPCC 6th Assessment Report.

⁴ IEA, 'Net Zero by 2050: A Road Map for the Energy Sector', (May 2021).

Memberships and frameworks

Principles for Responsible Investment

We became an early signatory to the Principles for Responsible Investment (PRI) in 2008. In 2020, the PRI awarded us an A+, the highest possible rating, for our ESG Strategy and Governance in the 2020 PRI Assessment Report. For full details [refer to our website](#).

Climate Action 100+

We are a member of the Climate Action 100+, an investor-led initiative designed to engage with the world's largest GHG emitters to take action on climate change. As part of this, we are a member of the Enbridge engagement working group. Our CA100+ engagements offer one tool in our toolbox of active stewardship.

Net Zero Asset Managers Initiative

In 2021, the GLI strategy joined the Net Zero Asset Managers Initiative. As at November 2021, the initiative was backed by 220 global investors managing over \$57.4 trillion in assets under management and is part of the Race to Zero initiative. In becoming a signatory, we've made a commitment to align the GLI strategy with net zero emissions by 2050 and set an interim emissions target to assist with this trajectory.

Transition Pathway Initiative

We are a supporter of the Transition Pathway Initiative (TPI). The TPI is an open-source tool that scores companies on their transition potential and alignment with a net zero emissions pathway by 2050. We use the tool as one of the inputs in our ESG research.

Signatory of:



Part One: Governance

Governance oversight of climate-related risks and opportunities

Board oversight

The Maple-Brown Abbott Limited (MBAL) Board is responsible for establishing firm-wide responsible investment policies and routinely reviewing these to ensure they remain aligned to the firm's and its affiliates' values and strategic priorities. These policies provide high level guiding principles on areas such as climate change, proxy voting and engagement.

The Maple-Brown Abbott Global Listed Infrastructure Pty Limited (GLI) Board and the GLI Investment Committee independently determine the strategy-specific implementation of these policies through process integration, company engagements, climate risk management and reporting.

The GLI Board is responsible for overseeing GLI portfolio risks and opportunities, including climate change-related risks such as stranded assets and portfolio exposures to low carbon transition opportunities. The GLI Board is also responsible for guiding the strategic direction of the GLI strategy on ESG-related matters – including investor initiatives such as the Net Zero Asset Managers Initiative and climate reporting frameworks such as the TCFD. As detailed later, various committees also support the integration of climate-related risks and opportunities into the investment process.

Global Listed Infrastructure governance and overview

GLI Managing Director

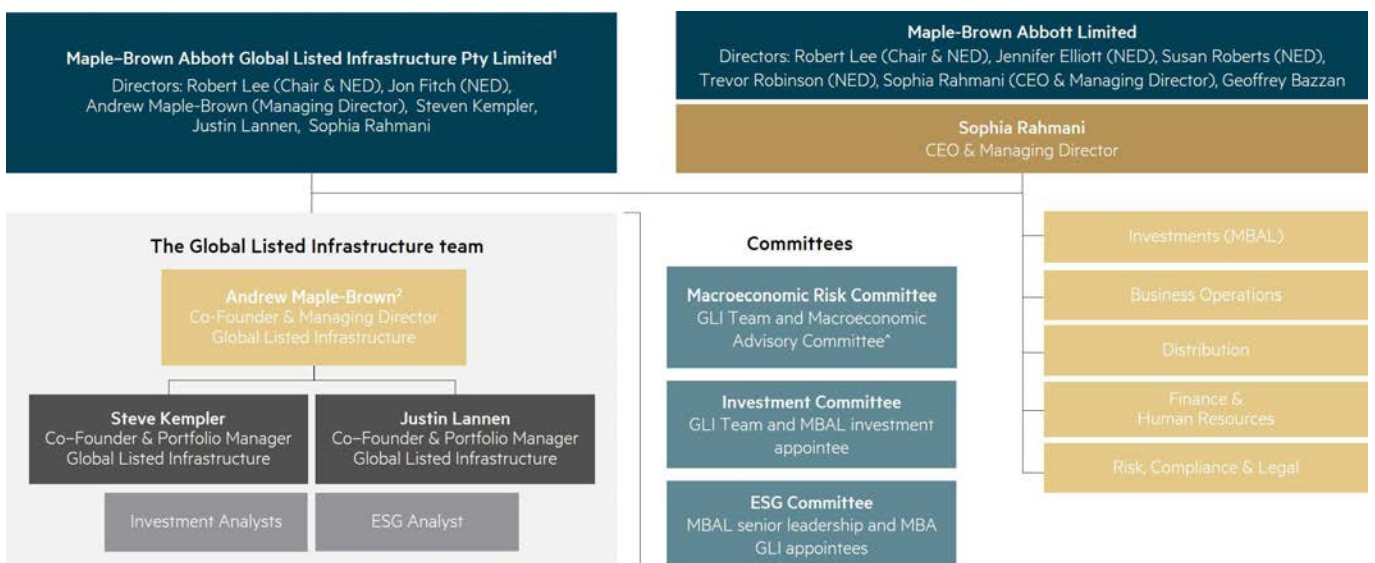
The GLI Managing Director, Andrew-Maple-Brown, reports to the GLI Board on all investment and business-related matters including ESG and climate change. As part of this, his role is to communicate, make recommendations, and seek approval on climate change risks and strategic ESG-related matters as appropriate.

Risk management

Maple-Brown Abbott recognises climate change (as part of ESG) as a risk in the company's risk management framework. ESG risk is described as a risk arising from failure to incorporate ESG considerations into our long-term business strategy for improved investment performance and client confidence. The Risk Management team monitors and reports on the performance of these material risks on a quarterly basis to the Audit, Risk and Compliance Committee (ARCC). The ARCC reviews the risk profile of the firm to ensure appropriate risk mitigations remain effective or are assessed as required. For further detail, refer to the 'Risk Management' section.

Policies guiding our approach to climate-related risks and opportunities.

- [Climate change policy](#)
- [Engagement policy](#)
- [Proxy voting policy](#)
- [Responsible investment policy](#)



1 Maple-Brown Abbott Global Listed Infrastructure Pty Limited is 54% equity owned by its Founding Partners and staff and 46% owned by Maple-Brown Abbott Limited.
 2 Andrew Maple-Brown, Co-Founder & Managing Director of Maple-Brown Abbott Global Listed Infrastructure also reports to the Maple-Brown Abbott Global Listed Infrastructure Board.
 3 Macroeconomic Advisory Committee includes independent appointees – Jennifer McKeown (Capital Economics) and Gerard Minack (Minack Advisors).

Management's role in assessing and managing climate-related risks and opportunities

The GLI Portfolio Managers

The GLI Portfolio Managers are responsible for investment decision-making and portfolio construction. The Portfolio Manager's primary objective is to outperform the strategy's investment objective. To do so, they factor in all known risks and opportunities including ESG and climate-related risks and opportunities into buy and sell decisions and when setting target weights.

GLI Analysts

The GLI Analysts are responsible for identifying and assessing climate change-related risks and opportunities relevant to their industry and stock coverage. A discussion of these factors is included in each research report whereby the valuation impact, where material, is either explicitly factored into company's earnings forecasts, or implicitly through the determination of the terminal value or discount rate valuation adjustments. Identified climate change-related factors and valuation implications are discussed at the subsequent research meeting (the forum where the Analysts review research reports) and incorporated into portfolio construction decisions made by the GLI Portfolio Managers.

Dedicated ESG resources

The GLI team benefits from having a dedicated ESG Analyst who reports to Andrew Maple-Brown, the GLI Managing Director, and is integrated into the full investment process. This includes company research, stock buy and sell decisions, company meetings, proxy voting decisions, portfolio construction and other investment-related activities. Climate change-related analysis is undertaken on each company considered for portfolio inclusion and included in each investment thesis. At the firm level, Maple-Brown Abbott Limited has a dedicated ESG function which includes an ESG Analyst who is responsible for coordinating the implementation of the firm's Climate Change Policy and associated ESG initiatives.

The GLI team's integration of climate-related risks and opportunities into the investment process is further supported by the work of the GLI Global Macroeconomic Advisory Committee, the GLI Investment Committee and the Maple-Brown Abbott ESG Committee.



GLI Global Macroeconomic Advisory Committee

To enhance our global research and portfolio construction process, the GLI team runs a Global Macroeconomic Advisory Committee comprising both GLI team members and specialist external appointees. The Committee meets quarterly and is charged with providing guidance to the investment process to:

- ensure the macroeconomic variables used as inputs into our valuation models are as timely, consistent and accurate as possible
- provide specific macroeconomic opinions to better account for any unintended country, currency or macroeconomic risks.

As part of our research and portfolio allocation process, climate change risks – where material and relevant – are discussed in our Global Macroeconomic Advisory Committee and Risk Review process. For example, in 2021 we have explored the potential economic impact of near-term transition risks, such as the impact of the European Union's Carbon Border Adjustment Mechanism, on regional growth and inflation forecasts. We also considered forecasts of longer-term economic scenarios under various climate pathways as modelled by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).



GLI Investment Committee

The GLI Investment Committee reviews the Focus List,⁵ performance, research updates, compliance and portfolio positioning. The Committee also conducts a formal Risk Review every month, where the GLI strategy is compared against data prepared through our macroeconomic analysis process. If the Investment Committee believes that the strategy may contain any unaccounted macroeconomic risks, it then advises the Portfolio Managers for review and consideration.

Key considerations of the portfolio Risk Review include:

- **country, sector, and currency exposures** – to compare strategy positions with GLI's neutral weights and account for macro scores produced by the GLI Macroeconomic Advisory Committee.
- **inflation exposure** – to calculate the strategy's exposure to changing inflation expectations and consider the current inflation outlook prepared through the macro analysis process.
- **portfolio limits** – to identify any portfolio concentrations contrary to the neutral weights, macro scores, inflation outlook or approaching the portfolio limits. These are referred to the Portfolio Managers for further review and consideration.

⁵ The Focus List is a proprietary list of infrastructure stocks considered by the investment team as providing the strongest combination of inflation protection and low cash flow volatility.

As part of this work, the Investment Committee actively discusses climate-related risks and opportunities at the stock, industry, regional and portfolio levels. Depending on the level of materiality, this may include a review of companies' energy transition plans, emissions reporting and targets, fossil fuel exposures and carbon intensity at the stock and portfolio levels. In addition to this, the Committee frequently considers the impact of new climate change-related policy and regulations in areas such as carbon taxes, investment incentives and regulatory oversight. Where a company is exposed to material physical climate change risks, such as hurricanes and droughts, the Committee will discuss how these risks are accounted for in company models and investment theses.



MBA ESG Committee

Maple-Brown Abbott runs an ESG Committee comprising the CEO, members from the GLI, Australian equity, Asian equity and Global Emerging Markets teams, the CIO, COO, Head of Distribution and ESG Analysts.

The ESG Committee is responsible for cross-strategy ESG decisions and also provides overarching direction on ESG initiatives, governance and risk management.

Strategy integration and team alignment

Factoring in climate change

Climate change risks and opportunities, along with other environmental, social and governance (ESG) factors have the potential to impact investment risks and returns. Consistent with our ESG integration and engagement investment strategy, we factor climate change-related transition and physical risks into our risk-return assessments. Companies with low emissions intensive business models and/or companies with transitioning and decarbonising business strategies aligned with the long-term temperature goal of the Paris Agreement are actively preferred in the stock selection process.

Exclusions

The GLI strategy does not apply ESG exclusions to the investable universe, however, we do not invest in companies investing capex in greenfield coal-fired power generation and those companies that derive the majority of revenue from fossil fuel exploration, extraction and/or production.

Internal training

Maple-Brown Abbott facilitates annual ESG training for all its investment professionals, and ESG training hours and ESG-related meetings are recorded centrally on compliance databases. The MBAL and GLI Boards both received training from an external consultant on climate change and the global energy transition in 2021. In addition to this formal training, the GLI ESG Analyst routinely facilitates informal training sessions for the GLI team on topics such as climate risk disclosure and the changing policy and regulatory environment.

Investment team alignment

Each GLI Analyst has been assigned a key performance indicator, linked to short-term variable remuneration, measuring the implementation and integration of ESG factors in the investment process. They are measured on their identification of ESG risks and opportunities within current and potential investments, the quality of research and valuation adjustments made, climate scenario analysis and the quality of engagement initiatives with companies.

For a more detailed explanation of how we integrate climate change into the investment process, refer to the 'Risk Management' section of this report.

Why engagement matters

Beyond climate scenario analysis and research, we believe it is through dedicated company engagement that we can fulfil our purpose as good stewards on behalf of our clients. One-on-one engagements over the reporting period have focused on areas such as climate change disclosures, greenhouse gas (GHG) emissions performance, capital expenditure plans and executive accountability for climate risk management.

Read about the GLI team's engagement and stewardship activities over 2020/2021.

[Read report](#)



Part Two: Strategy

An introduction to the energy transition

The Paris Agreement objective of limiting global temperature rise to well below two degrees Celsius from pre-industrial levels calls for a reduction in GHG emissions to net zero by 2050.⁶ The energy transition is about transforming the energy sector from one that is fossil-fuel based to one that is net zero by 2050 to combat the catastrophic effects of climate change.

The majority of today's energy has come from fossil fuels because, historically, they have been cheap, readily available and easy to convert into energy through combustion. As the world's population continues to grow and prosperity increases, global demand for energy will continue to rise, and meeting this demand in a safe, reliable, affordable and sustainable way creates a wide array of new challenges.

In 2016, the energy sector and its end-uses contributed to 36.2 billion tonnes of GHG emissions, representing 73.2% of total emissions.⁷ As the largest contributor to global emissions, the deep decarbonisation of the energy and utilities sectors is central to achieving the long-term temperature goal of the Paris Agreement. The energy transition is predicated on the need to displace GHG-intensive fossil fuel energies with low and zero emissions technologies to combat the adverse environmental impacts of climate change.

The rate of change we are seeing with climate change policy, rapidly declining costs of renewable energy technologies and evolving societal expectations borne out of concern for more extreme and frequent weather events are collectively putting downward pressure on demand for coal, oil, and to a lesser extent, natural gas. A disorderly transition will most likely heighten these risks, making it even more important for energy infrastructure companies to proactively monitor, invest and adapt accordingly.

What is a climate change scenario?



A climate change scenario is a data model used to explore a range of possible pathways to a low carbon world by adopting plausible socio-economic, energy, policy and technology assumptions over certain time periods.

A climate change scenario is neither a forecast nor a projection, but instead provides a description of what a future state could look like under various carbon pathways, for example, whether average global warming is limited to 1.5, 2, or 2+ degrees Celsius by 2050, and whether decarbonisation is smooth and coordinated, delayed and abrupt or stifled by inertia.

As climate change is a material financial risk, investors are increasingly using climate change scenarios as a stress testing tool to evaluate and uncover any valuation and stranded asset risk in their portfolios. They can also assist investors with assessing the overall alignment of their portfolio with a low carbon future. A plethora of climate change models exist. This report refers to assumptions modelled by the International Energy Agency (IEA).

⁶ Intergovernmental Panel on Climate Change (IPCC). (2018). Global warming of 1.5°C. An IPCC [Special Report](#) on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways. [Report]. World Meteorological Organization, Geneva.

⁷ Energy sector GHG emissions are defined by the World Resources Institute (WRI) as energy use in industry, transportation, buildings, agriculture, and fishing, and fugitive emissions from energy production. World Resources Institute (WRI). (2020). [Climate Watch](#).

Our approach to scenario analysis

Key to the analysis of transition risks and opportunities is the question of whether the global energy transition from fossil fuels to low and zero emissions sources will be gradual or rapid. For this reason, scenario analysis can assist market participants with analysing the breadth of potential transition trajectories by using different modelling assumptions. Scenario analysis outputs do not provide a forecast of the energy transition trajectory. Instead, it should be considered a stress testing exercise to explore the extreme ends of the energy transition and what this could look like for a portfolio of investments under very specific circumstances.

The process of undertaking this analysis is an important exercise to inform thinking and test long-standing assumptions held by investment teams. Equally important is the act of disclosure for the purposes of informing stakeholders on how, and to what extent, a portfolio is exposed to climate-related risks and opportunities.

Methodology

We undertook scenario analysis with the following objectives in mind:

- assess the breadth and type of investments exposed to transition risks and opportunities across the strategy
- define the potential financial impact from the low carbon transition down to an asset level
- incorporate transition impacts into financial models
- develop aggregate portfolio analysis
- inform investment decisions, company engagements and proxy voting.

Base case

For our transition scenario analysis, we used the IEA Stated Policies Scenario (SPS) as a proxy for our base case and flexed various assumptions to account for a slow transition (IEA Current Policies Scenario), a fast transition (IEA Sustainable Development Scenario) and the fastest transition (Net Zero by 2050 Scenario). Further detail on these scenarios can be found on page 8.

We chose the Stated Policies Scenario as a proxy for our base case because it reflects current policy settings based on a sector-by-sector assessment of the specific policies that are in place, and assumes all commitments announced by governments around the world will be met in full. In this respect, it acts as a useful barometer for the current and likely trajectory of the energy transition at this point in time and is not overly reliant on assumptions.

It is worth noting that even if successfully fulfilled, all current government pledges and commitments to date would still leave around 22 billion tonnes of unmitigated CO₂ emissions in 2050. The continuation of this trend would be consistent with a temperature rise in 2100 of around 2.1°C.⁸

The policy and regulatory environment

The climate change-related regulatory and policy landscape has changed considerably in recent years, with a swathe of jurisdictions ratcheting up emissions reduction targets and introducing 'green' recovery stimulus measures in the wake of the COVID-19 pandemic. Other areas of policy and regulatory attention include carbon taxation measures, energy efficiencies, electrification and a just transition.

Given we invest in global listed infrastructure companies across regulated, contracted and concession assets or networks that provide essential services, the policy and regulatory environment is particularly relevant to our investment universe. We closely monitor these changes as a potential source of risk and/or opportunity for the companies we invest in.

What is stranded asset risk?

Stranded assets are assets impacted by downward revaluations or are converted to liabilities. Stranded assets can be caused by changing policy or regulation, reputational impacts, and shifts in markets and technology. Asset stranding could affect a variety of infrastructure assets, particularly fossil fuel assets such as coal-fired power plants.

For all companies in the energy sector, we believe the downside risks associated with a failure to support and facilitate the energy transition are significant and give rise to issues such as stranded assets over the medium to long term.

8 [IEA Net Zero by 2050](#), p. 13.

Climate change-related policy highlights relating to the companies we analysed

Jurisdiction	Recent policy and regulatory changes
Australia	<p>Federal policy in Australia has contributed to the large-scale uptake of behind-the-meter solar and utility-scale renewable energy capacity over the past decade, specifically through policy measures such as the Renewable Energy Target. While federal policy has lagged behind on climate change-related targets and measures, the states themselves have implemented more ambitious measures with jurisdictions such as New South Wales and Victoria committing to net zero emissions in recent years.</p> <p>For example, in the case of NSW, the state has developed a roadmap detailing transmission infrastructure investment, EV uptake and renewable energy project incentives with the goal to halve emissions by 2030 (relative to 2005 levels).</p>
Brazil	<p>In December 2020, Brazil affirmed a previously indicative target of a 43% reduction in emissions by 2030 (relative to 2005 levels), supplementing its existing 37% emissions reduction target by 2025. The country does not have a formalised net zero target but has indicated its intention to be net zero by 2060.</p> <p>Deforestation is Brazil's largest source of emissions. Under the Bolsonaro government, progress towards ending deforestation has drastically regressed due to a series of forest protection policy roll-backs. In fact, deforestation and the subsequent emissions it causes have reached 12-year highs.⁹ Although Brazil ranks among the top 10 in terms of renewable capacity,¹⁰ its current policies and action are insufficient to achieve its emissions reduction targets.</p>
Canada	<p>In June 2021, Canada enshrined its net zero by 2050 target into law and boosted its interim emissions reduction target to at least a 40-45% reduction below 2005 levels. The federal government strengthened its climate strategy, which proposes \$15 billion (CAD) of initial investments targeted towards five pillars: energy efficiency enhancements, improving affordability of clean transportation and power, supporting decarbonisation projects of Canada's heaviest emitters, strengthening carbon pricing frameworks and climate resilience and biodiversity.¹¹</p> <p>The 2021 federal budget consisted of further climate-related policy measures and funding announcements, including a proposed new tax credit for investments in carbon capture projects, and a targeted \$5 billion (CAD) green bond framework to finance further climate action.¹²</p>
Chile	<p>Chile has made significant strides towards carbon neutrality over the past year, most notably legislating an Energy Efficiency framework that will contribute to over 2% of emissions reductions per year until 2030. The country is tracking well ahead of schedule on its coal phase-out program, having already achieved its goal of retiring eight coal plants by 2024, and has promptly increased its ambition to decommission a further three coal plants by 2024.</p> <p>If Chile continues on this trajectory, by 2025, approximately 65% of the country's coal-fired plants will have been retired or retrofitted to operate on natural gas or biomass, implying a 60% capacity reduction.</p>

⁹ Reuters, [Brazil's Bolsonaro, Under U.S. Pressure, Vows Climate Neutrality by 2050](#).

¹⁰ BloombergNEF, [Country Profile](#).

¹¹ IEA, [A Healthy Environment and a Healthy Economy – Canada's Strengthened Climate Plan 2020](#).

¹² Mondaq, [Environmental Funding In Canada's 2021 Federal Budget](#).

Europe

In 2021, the European Union (EU) Commission announced its 'Fit for 55' package, a suite of legislative proposals and policy initiatives to support the EU in achieving its 55% emissions reduction target by 2030 (relative to 1990 levels), and net zero by 2050.

Notable measures include tightening of the existing EU Emissions Trading System (EU ETS) with an increased linear reduction factor on cap emissions and phasing out free emissions allowances in the aviation sector. The EU ETS will expand to cover shipping, and a parallel ETS will be introduced for the building and road transport sectors. Emissions standards for new cars will be made more stringent, targeting a 55% reduction in average emissions by 2030, and 100% by 2035 (relative to 2021 levels).

A carbon levy will also be introduced for imports of select carbon-intensive products (iron, steel, cement, fertiliser, aluminium and electricity) through the Carbon Border Adjustment Mechanism (CBAM). The package also revises the EU's target share of renewable energy up to 40% by 2030.

Mexico

As one of the world's largest oil producers, it is no surprise that Mexico ranked as the 11th heaviest GHG emitter in 2018.¹³ The country has a Nationally Determined Contribution (NDC) as part of its commitment to the Paris Agreement to reduce emissions by at least 22% below a business-as-usual case by 2030 and up to 36% if the country receives financial, technical and capacity-building support from other countries.

Mexico legislated the General Law on Climate Change in 2012, which incorporates the nation's emissions reduction targets and additional targets for 35% clean power generation by 2024 and 50% by 2050. The government elected in 2018 has dragged the country's progress backwards by discouraging renewable energy investment and promoting investments in the fossil fuel sector, including the construction of an oil refinery and budget allocation towards the 'modernisation' of fossil fuel plants.¹⁴

Despite a challenging outlook for Mexico under its current policies, the country has taken some positive steps, including the expansion of clean energy projects, the introduction of a carbon tax and piloting an emissions trading scheme.

UK

Throughout 2020 and 2021, the UK announced upgraded interim emissions targets for its sixth carbon budget in line with recommendations from the Committee on Climate Change (CCC). The country is now targeting a 68% emissions reduction by 2030, 78% by 2035, and net zero by 2050 (all relative to 1990 levels). Pleasingly, the CCC assessed the UK's climate targets as being compatible with a 1.5°C scenario.

In April 2021, it was announced that the UK's sixth carbon budget will incorporate emissions from aviation and shipping for the first time, which will accelerate the UK three-quarters of the way to achieving net zero by 2050.

United States

In 2021, shortly after re-joining the Paris Agreement, US President Joe Biden announced a target of a carbon-free power sector by 2035 and an emissions reduction goal of 50–52% by 2030 relative to 2005 levels to put the country on a net zero emissions trajectory by mid-century. Since his election, President Biden has been actively rolling back climate-averse policies enacted by the Trump administration and commissioning climate-related federal bodies, such as the National Climate Task Force, responsible for progressing the nation's climate policies and actions to align with its net zero targets.

During the year, the US Senate passed the *Infrastructure Investment and Jobs Act*, (Act) a US\$ 1 trillion bipartisan bill targeting climate-friendly infrastructure investments including electric vehicle infrastructure upgrades, pollution clean-up, and asset hardening to mitigate the risks associated with intensifying natural disasters. The Act was signed into law on 15 November 2021. Further funding to support the US in achieving its climate goals are anticipated to be included in the 'Build Back Better' bill to be announced in late 2021.

In addition to federal policy, more than 24 states and the District of Columbia have established economy-wide greenhouse gas emissions targets.¹⁵ Indeed, to date, the majority of energy transition and climate change-related policy progress has taken place at the state level.

¹³ Carbon Brief, [Profile on Mexico](#).

¹⁴ Climate Action Tracker, [Policies & Action: Mexico](#).

¹⁵ C2es, [Greenhouse Gas Emissions Targets](#).

Overview of the IEA climate change scenarios

The energy transition carries both risks and opportunities which could unfold gradually or through sudden shocks. These risks and opportunities vary across geographies, sectors and time horizons and according to government and company commitments to limit global temperature rises. Climate change scenarios can help investors identify short, medium and long-term risks and opportunities and gauge the extent to which these could materially impact investments.

Our decision to use the IEA scenarios was driven by factors such as transparency and availability of underlying model data, frequency of updates, range of assumptions and global perspective with regional-specific insights. We have used the IEA 2020 World Energy Outlook's Current Policies Scenario, Stated Policies Scenario and Sustainable Development Scenario, along with the IEA Net Zero 2050 Scenario.

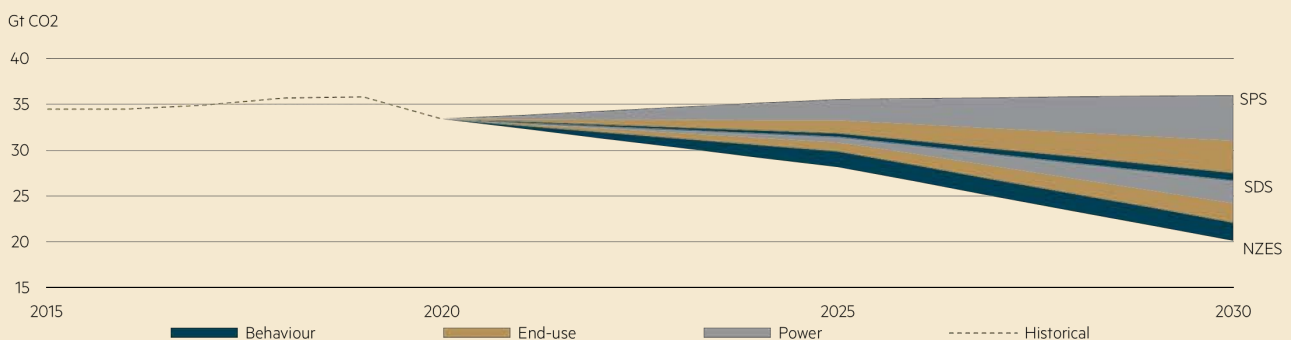
	IEA Current Policies Scenario (CPS)*	IEA Stated Policies Scenario (SPS)*	IEA Sustainable Development Scenario (SDS)*	IEA Net Zero 2050 Scenario (NZS)^
Definition	Government policies that have been enacted or adopted by mid-2019 continue unchanged. This scenario is marked by inertia incompatible with the Paris Agreement.	Existing policies and recently announced commitments and plans, including those yet to be formally adopted, are implemented in a cautious manner. This scenario is incompatible with the Paris Agreement.	Specifies a pathway to provide universal access to affordable, reliable, sustainable and modern energy by 2030 (SDG 7); reduce air pollution (SDG 3.9); and combat climate change (SDG 13). Aligned with a 2°C warming pathway and net zero emissions by 2070.	In line with the pathways used by the IPCC for the Special Report on Global Warming of 1.5°C (IPCC SR1.5). Sets out a narrow pathway comprising 400 milestones to decarbonise the global economy in three decades.
Objectives	To provide a baseline that shows how energy markets would evolve if underlying trends in energy demand and supply are not changed.	To reflect the impact of today's existing policy frameworks and announced policy intentions. The aim is to provide a detailed sense of direction in which today's policy ambitions would take the energy sector out to 2040.	To demonstrate a plausible path to concurrently achieve universal energy access, set a path towards meeting the objectives of the Paris Agreement on climate change and significantly reduce air pollution.	To chart a narrow but achievable roadmap to a 1.5 °C stabilisation in global temperatures and other energy-related sustainable development goals.

* IEA World Energy Outlook (2020).

^ IEA Net Zero 2050 (2021).

The IEA Sustainable Development and Net Zero scenarios are modelled backwards, in other words, they target a defined global average temperature increase (and therefore GHG emissions) as the end point and detail a specific trajectory to get there. For energy and industrial processes, the three main levers of decarbonisation are power, end-use and behavioural changes. The following chart illustrates the role of these three levels over the next 10 years if the pathways to 1.5 and 2°C by mid-century are to be achieved.

Energy and industrial process CO2 emissions and reduction levers in the scenarios



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

A note on the challenges and limitations of climate change scenarios

Climate change scenario analysis, while becoming more mainstream in the investment management industry as a tool to assist with identifying climate-related risks and opportunities, has several limitations that should be noted, specifically:

- **Model limitations:** The global energy system and the factors that impact it are more complex than any scenario or narrative can capture. Energy projections and assumptions offer only one perspective and are therefore subject to a level of bias.
- **Inconsistent and incomplete company disclosure:** There is a lack of consistent and complete reporting across companies and projects relating to climate change and the energy transition. This makes it difficult to quantify and assess valuation sensitivities to different transition assumptions. For example, whether the company uses an internal price on carbon and how this impacts investments, or how much of a utility company’s regulated asset base is derived from coal-fired power generation and how this is expected to change over time through capex plans. We expect climate-related reporting requirements to increase as regulators and investors require greater disclosure.
- **Subjectivity:** There is quite a bit of subjectivity in translating the IEA models and data to assess transition risks and opportunities for individual companies and assets. The IEA scenarios capture impacts at a macro and industry level whereas there are micro level implications for companies that can often be the bigger driver of value. We have used the directional assumptions outlined by the IEA and tried to avoid over-extrapolation to the point of undermining the scenarios themselves.

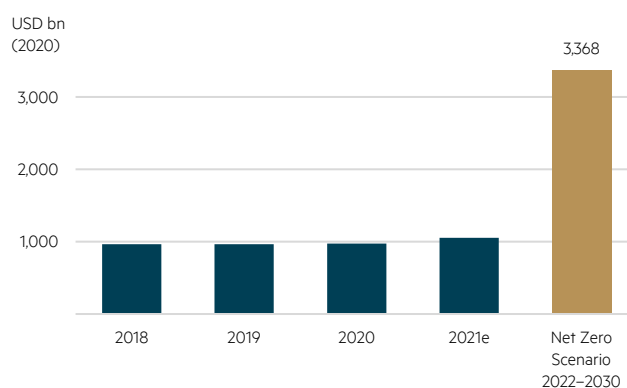
With this in mind, we are cautious about the definitiveness of any modelling assumption and have weighed the analysis with our own deep understanding of the global listed infrastructure universe and how the various policy and regulatory, technology, market and stakeholder risks and opportunities could play out in the coming years. Quantitative assessment is only valuable from a directional sense and provides one tool to help us think about the range of sensitivities to company value.

“ Achieving net zero calls for nothing less than a complete transformation of how we produce, transport and consume energy.
IEA Net Zero by 2050. ”

The role of infrastructure in the transition to a net zero world

According to the IEA, to reach net zero emissions and therefore limit the global average temperature increase to 1.5°C by mid-century, investment in infrastructure will need to increase by more than 150% in real terms from 2020 to 2030 – equating to approximately US\$0.7 trillion per annum to US\$2.5 trillion respectively.¹⁶

Clean energy and infrastructure investment per annum 2018–2030



Source: IEA, [Clean energy and infrastructure investment, 2018–2030](#), IEA, Paris.

Global listed infrastructure sub-sectors are navigating unique trajectories through the energy transition. Some stand to benefit considerably and others face an increasingly uncertain future – such as gas utilities, midstream pipelines and energy storage. Much of this depends on different industries’ exposure to the changing energy outlook, jurisdictional factors and/or how companies themselves are responding to the climate change imperative. In this sense, the impacts of the energy transition vary from industry to industry, company to company and asset to asset. The scenario analysis detailed within this report tests out the GLI strategy companies’ valuation sensitivities to a range of IEA transition scenarios.

No industry experiences the effects of the energy transition in tandem, for example, some multi-utilities could be well positioned to facilitate and benefit from the energy transition while others face vulnerabilities owing to a lack of decarbonisation strategy, regulatory incentives and policy direction, and/or medium to long-term exposures to ageing, inefficient and uneconomic fossil fuel assets. For this reason, we believe fundamental bottom-up company and asset due diligence is becoming increasingly crucial to identifying the beneficiaries from those that face risk of capital loss and asset stranding.

16 IEA, Net Zero by 2050, May 2021.

The assumptions we tested

From a quantitative perspective, we considered company valuation sensitivities to a range of industry-specific assumptions aligned with each transition scenario.

Assessment industry category	Tested assumptions
Regulated utilities (electric, multi, gas) and commercial renewable energy developers	We looked at varying levels of capital investment (capex) on the basis this will be the biggest valuation driver for this sector over the long-term.
Midstream infrastructure	We looked at the growth rates for fossil fuels across different markets as the key driver of volume throughput, as well as the evolution of commodity prices and growth in renewable investments.
Energy storage	We looked at different growth rates for consolidated revenue and joint venture (JV) results while taking into account differences between product type and region.
Transportation infrastructure	<p>Toll roads: we looked at short and long-term traffic growth, toll growth, operating expenditures (opex) growth and capex growth.</p> <p>Airports: we looked at passenger growth, tariff growth, opex growth and capex growth.</p> <p>Railroads: we looked at vehicle growth,¹⁷ revenue per passenger growth, opex growth and capex growth.</p>
Communications infrastructure	We looked at opex and tenancy growth rate inputs (such as new anchor tenants and small cell tenants).

From a qualitative perspective, we mapped out the climate-related risks and opportunities for each company using the following categories. It is worth noting that these categories are interchangeable, for example, policy and regulatory changes can render both risks and opportunities for a company.

Risks and opportunities

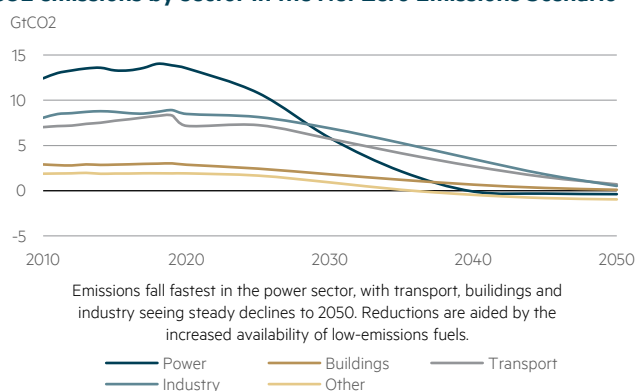
- **Policy and regulatory changes** – such as carbon taxes, renewable energy investment incentives, regulatory stance on allowable ‘pass through’ costs for utilities, bans on natural gas for new builds and asset securitisation.
- **Technology and market changes** – such as the levelised cost of energy (LCOE), supply chain constraints and the cost competitiveness of low carbon solutions including green hydrogen and sustainable aviation fuel.
- **Reputational pressures and shifts in market preferences** – such as access to new markets and sources of funding (e.g. sustainability-linked loans), societal pressures related to greenfield projects and uptake of behind-the-meter solutions.

About the IEA Net Zero by 2050 Scenario

The IEA Net Zero Scenario is centred around five key measures needed over the next 10 years to help bridge the gap between today’s emissions and climate-related pledges and a 1.5°C trajectory by mid-century. These are:

- Clean electrification:** Accelerating the decarbonisation of the electricity mix is the single most important lever. This requires a doubling of solar PV and wind deployment relative to the Stated Policies Scenario, a major build-out of electricity infrastructure and all forms of system flexibility, a rapid phase out of coal and expanding electricity use for transport and heating. The scenario calls for scaling up solar and wind rapidly this decade, reaching annual additions of 630 gigawatts (GW) of solar photovoltaics (PV) and 390 GW of wind by 2030, four times the record levels set in 2020. Electric vehicles (EVs) grow from around 5% of global car sales to more than 60% by 2030. Hydropower and nuclear, the two largest sources of low carbon electricity today, provide an essential foundation for transitions.

CO2 emissions by sector in the Net Zero Emissions Scenario

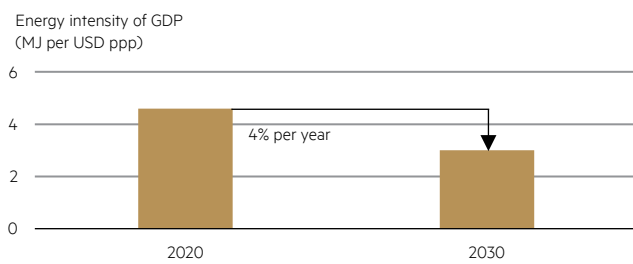
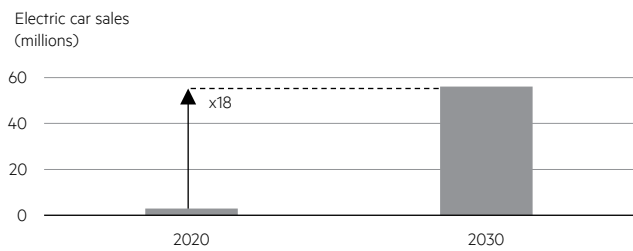
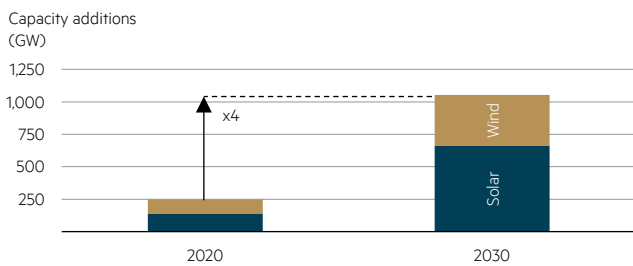


Source: IEA, Net Zero by 2050.

17 Specifically trucks, cars, coaches, railroad pax and freight growth.

2 Energy efficiencies: The energy intensity of the global economy decreases by more than 4% per year between 2020 and 2030 in the Net Zero Scenario – more than double the average rate of the previous decade. This improvement needs to come from all three of the key end-use sectors: industrial (materials efficiency), transport (societal behavioural changes) and buildings (retrofits). To put this into context, the world economy in 2030 is some 40% larger than today but uses 7% less energy.

Key clean technologies ramp up by 2030 in the Net Zero Scenario



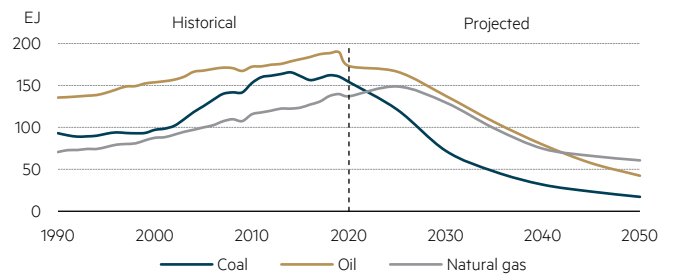
Note: MJ = megajoules; GDP = gross domestic product in purchasing power parity. Source: IEA Net Zero by 2050, May 2021, p. 15.

3 Focus on methane: Emissions reductions from the energy sector are not limited to CO2. According to the Net Zero Scenario, methane emissions from fossil fuel supply falls by 75% over the next ten years as a result of a global, concerted effort to deploy all available abatement measures and technologies. This most notably needs to come from the oil and gas sector where the IEA estimates ~45% of the current methane emissions could be avoided at no net cost. Well-established policy tools such as leak detection and repair requirements and a ban on non-emergency flaring/venting could alone halve the methane emissions from oil and gas operations within a short timeframe.

4 Decarbonisation innovation: While all of the technologies needed to achieve deep emissions cuts to 2030 are currently available, the IEA notes almost half of the emissions reductions achieved in the Net Zero Scenario come from technologies that are still in the demonstration or prototype state today. These include hydrogen-based and other low carbon fuels as well as carbon capture and storage that can decarbonise hard-to-abate sectors such as long-haul transport.

5 No new greenfield fossil fuel projects: Notably, beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in the pathway, and no new coal mines or mine extensions are required. A sharp policy focus on decarbonisation leads to a sharp decline in fossil fuel demand, meaning that the focus for oil and gas producers switches entirely to output – and emissions reductions – from the operation of existing assets. Unabated coal demand declines by 90% to just 1% of total energy use in 2050, and at the same time, gas demand declines by 55% and oil demand declines by 75%.

Coal, oil and natural gas production in the Net Zero Scenario



Source for charts: IEA Net Zero by 2050, May 2021.

Scenario analysis findings: risks, opportunities, impact and resiliency

Based on representative holdings as at 30 June 2021¹⁸

Our analysis of how companies fared under various transition scenarios is summarised in the below heatmap and categorised by level of risk or opportunity.¹⁹ In terms of number of companies assessed, the largest cohort was North American electric and multi-utilities, which comprised a total weighting of 36.3% at the time of the analysis.

Summary

It is clear from our analysis that the transition to a 1.5 to 2°C world according to the Net Zero and Sustainable Development Scenarios, respectively, creates significant opportunities for the GLI strategy. This is most pronounced in the case of electric and multi-utilities, commercial renewable energy developers and railroads which all facilitate the decarbonisation of the energy sector and its end uses (i.e. transportation). While the downside valuation risk of a slow transition is minimal for electric and multi-utilities, we found that this is more marked for commercial renewable energy developers and railroads as efforts to decarbonise electricity and incentivise low carbon transportation do not materialise under the Current Policies Scenario.

Our analysis shows that the impact of a faster energy transition on airport infrastructure is more ‘middle of the road’ in the sense that the industry does not look to be structurally challenged or exposed to stranded asset risk, but instead could face uncertainties that impact its long-term valuation outlook. Examples of these uncertainties include the economic viability of sustainable aviation fuels, the future of short-haul flying and the extent to which higher carbon taxes change traffic growth. Nevertheless, airport valuations respond positively when assuming a rebound in air travel post COVID-19 and a slow energy transition under the Current Policies Scenario.

The most challenged industries – when it comes to a faster-paced energy transition – are the midstream companies and storage and transportation companies owing to their exposures to oil and natural gas markets. In saying this, the valuation upside for these companies is meaningful should fossil fuels remain firmly in the global energy mix and the energy transition stagnates under the Current Policies Scenario.

The pace and scale of the energy transition has little to no meaningful impact on the valuations of the water utilities, communications infrastructure and toll roads we analysed. This is mostly due to their somewhat limited exposure to the changing energy mix. It is important to note that these industries are exposed to the physical effects of climate change through more extreme and frequent weather events, for example in the case of drought for water utilities and flooding in the case of toll roads. We intend to undertake further analysis on the climate-related physical risks and opportunities for global listed infrastructure companies at a later stage.

¹⁸ A representative fund of the strategy has been used as a proxy for the analysis. As at 30 June 2021.

¹⁹ A more detailed scenario analysis addendum is available upon request.

Scenario analysis heatmap

Categorisation			Scenario				Coverage	
Sector	Sub-sector	Region	Current Policies	Stated Policies	Sustainable Development	Net Zero Emissions	No. of stocks	
Regulated Utilities	Electric and Multi-Utilities	North America					9	
		Europe					1	
		Australia					1	
		Latin America					1	
	Gas Utilities	North America					1	
		Water Utilities	North America					1
			Europe					2
			Latin America					1
Renewable Energy	Renewable Developer	Europe					1	
Transportation infrastructure	Toll Roads	Europe					2	
		Australia					1	
		Latin America					1	
	Railroads	Europe					1	
	Airports	Europe					2	
Midstream infrastructure	Oil & Gas Pipelines	North America					3	
	LNG Terminal	North America					1	
Communications and other infrastructure	Communications	North America					1	
		Europe					1	
	Energy storage	Europe					1	

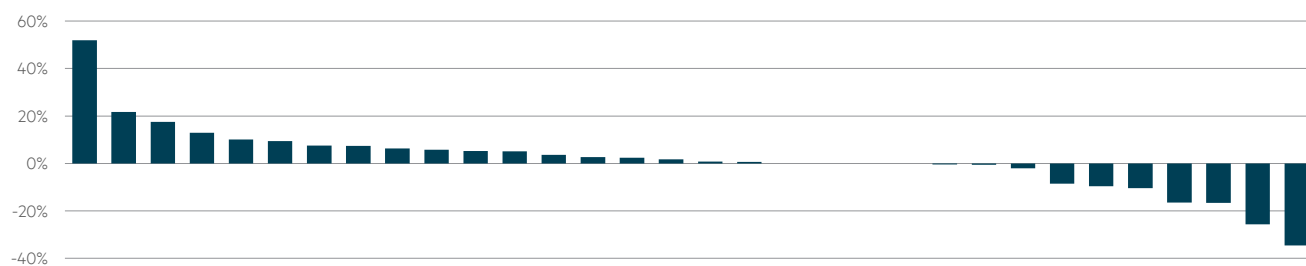
Source: Proprietary analysis using IEA WEO 2020 and IEA Net Zero by 2050 modelling assumptions.

Legend

High risk	<-10%
Moderate risk	-10% to -5%
Low impact	-5% to 5%
Moderate opportunity	+5% to +10%
High opportunity	>+10%

Estimated valuation impact in the Net Zero Scenario

Valuation change (%) relative to MBA GLI base Case



Source: Proprietary analysis using IEA Net Zero by 2050 modelling assumptions. Note that each bar in the chart represents the valuation impact on each company we analysed. We have removed the names of companies from this chart because these findings should not be construed as investment advice or a forecast of future valuation impact.

Regulated utilities

Electric and multi-utilities

The global move to decarbonise creates significant investment opportunities for electric and multi-utilities as they transition electricity generation from fossil fuels to renewables and invest in the grid to support new load and greater complexity. The two key drivers of a regulated utility's return include: (1) the size of its asset base and (2) its allowed return as set by the regulator. As such, the energy transition provides two main opportunities for these businesses. Firstly, regulated investments in renewable generation assets and supporting transmission and distribution (T&D) infrastructure represent opportunities to increase asset base, enabling the utility to earn greater returns. Secondly, the electrification of buildings, transportation and other industrial processes will increase electricity demand, creating greater investment opportunities, but also spreading the cost of this investment over a larger load.

In our scenario analysis, every electric and multi-utility company saw positive valuation impacts from faster paced energy transition assumptions, underscoring the sizeable investment opportunity for these companies in a low carbon world. This is largely driven by an increase and/or acceleration of company investments in T&D infrastructure to support an interconnected and expanded grid, increased renewable energy capacity, the electrification of heat and transportation and/or energy efficiency measures. As regulated utilities, these capital expenditures lead to strong growth in the companies' rate base or regulated asset base, upon which they earn an allowed return. Notably, there was an even greater positive valuation impact as these companies moved from the Sustainable Development Scenario to the Net Zero Scenario – indicating that the faster the energy transition, the more positive the valuation impact.

At the other end of the scale, every electric and multi-utility company analysed experienced a negative valuation impact under the Current Policies Scenario. This means that a slow transition could create risks for this industry as a result of lower levels of investments in T&D and renewable energy capacity. For the majority of companies this impact was marginal.

Our analysis suggests that faster energy transition scenarios improve the investment outlook for electric and multi-utilities, enhancing value and creating greater valuation upside. We believe the GLI strategy is well positioned to benefit from the opportunities to be found in electric and multi-utilities.

Gas utilities

Natural gas is a cheap, reliable and readily available source of energy, however, it is still a source of CO₂ emissions when burned, and a source of fugitive methane emissions when transported.

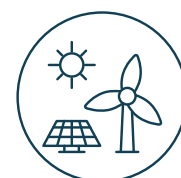
Our scenario analysis considered the climate-related risks and opportunities for Atmos Energy, the only gas utility held in the GLI strategy as at 30 June 2021.²⁰ Under faster transition scenarios, the company generally saw negative valuation impacts, however, across all scenarios the magnitude of this impact was relatively small. There are three main reasons for this small valuation impact: (1) a reduction in natural gas demand across end-use applications, (2) a greater penetration of and demand for low carbon gases such as renewable natural gas (RNG) and hydrogen and (3) increasing stranded asset risks across faster transition scenarios, but also increased potential for the gas network to be re-purposed for low carbon use cases.

According to our analysis, Atmos saw a small positive valuation impact from slower transition scenarios. This is for similar reasons as above, and in particular that we have embedded probability-weighted outcomes within each scenario. There is a netting off effect in both faster and slower transition scenarios.

Our analysis suggests that faster energy transition scenarios have a negative valuation impact on the investment outlook for gas utilities, albeit this impact is small and immaterial. The small impact on value is a function of our approach in valuing these businesses, which incorporates a probabilistic view on the range of outcomes they could see, and the uncertain outlook they have. Notwithstanding this, we continue to recognise that there are certain end-use applications in which natural gas may continue to be useful.

Water utilities

The provision of water and treatment of wastewater is an energy-intensive process that requires long-term strategic thinking to ensure the risks affecting water utilities to provide these services are mitigated. As investors in highly regulated water utilities, changes to the political and regulatory environment are likely to have an impact on the way these companies operate and the risk of non-compliance costs. As such, water utilities need to be prepared for more stringent laws, regulations and standards centred around environmental matters.



²⁰ Please note that the GLI strategy has other gas network exposures through investments in multi-utilities.

Relative to energy and transportation infrastructure companies, however, the rate and pace of the energy transition is somewhat immaterial for water utilities. Instead, the physical effects of climate change are the greatest source of risks and opportunities, specifically in relation to chronic higher temperatures that will likely increase demand and reduce water availability and acute physical risks such as storms and floods.²¹ Changing demographics including increasing populations and rates of urbanisation create additional pressures for water utilities to meet increased water demand in a changing climate.

We believe the water utility companies in the GLI strategy are well positioned to manage transition-related risks and pursue opportunities to lower their direct and indirect emissions. From a materiality perspective, we did not undertake deep-dive quantitative analysis on the impacts of the energy transition on the GLI strategy's water utilities. We plan to do so when we review the physical risks and opportunities at a later stage.

Commercial renewables

Within the global listed infrastructure universe, we believe there are two main ways to gain exposure to the renewable energy thematic, namely through:

- electric utilities that earn regulated returns on their renewable investments
- commercial renewable developers that have highly contracted revenues on their renewable generation.

There are very few listed infrastructure companies we define as being a pure renewables exposure at this point in time. Some 'yieldcos' meet this criteria, however, we currently do not believe they are attractive from a liquidity, valuation and/or ESG/governance perspective.

In contrast, we see a small opportunity set across pure-play commercial renewable developers. Our scenario analysis considered the climate-related risks and opportunities for EDP Renováveis (EDPR), a commercial renewable energy developer held in the GLI strategy as at 30 June 2021. In our analysis, the company's valuations were positively impacted with a substantial valuation upside that increased when moving from the Sustainable Development scenario to the Net Zero scenario. In our view, the company may likely benefit directly from the energy transition as demand for renewable energy increases.

The base case we applied for the company assumes the energy transition is more supportive of renewable energy investment than what is assumed under the Stated Policies Scenario. For this reason, in the analysis, the company's valuation was negatively impacted by the slower energy transitions of the Stated Policies and Current Policies Scenarios. Perhaps not surprisingly our analysis showed – the slower the transition – the greater the negative impact for this commercial renewable energy developer.

Transportation infrastructure

Our scenario analysis shows that toll roads appear relatively unimpacted by transition risks. However, we believe physical risks driven by climate change stand to pose more of a threat over the medium to long term. We found that airport valuations are more negatively impacted by the faster energy transitions but fare positively under an inertia scenario. Getlink, the operator of a major rail link in Europe, sees significant valuation upside under a faster energy transition. The specifics of these findings are detailed below.

Airports

Under the faster transition scenarios, short haul-flying does not see sudden and immediate impacts but there is potential long tail risk from 2035 onwards. According to the Sustainable Development and Net Zero Scenarios, we find that aviation demand continues to grow but this is relatively muted within the EU due to capital expenditure being apportioned to high-speed rail (HSR) as a substitute to short-haul flying. A slower transition than our base case would see a return to pre-COVID-19 aviation traffic levels and trend growth (or higher), greater policy inertia with regards to aviation taxes or carbon prices and little to no structural impacts from behavioural shifts such as flight shaming, greater adoption of high-speed rail or videoconferencing.

Toll roads

The impact of the energy transition to the bottom line of toll road companies is expected to be minimal, since traffic demand is a key driver of value, as opposed to capex, which is typically value neutral.²² Under a faster transition, toll roads that bear demand risk and have inflation-linked tolls (category 3 roads) are expected to be minimally impacted from a valuation perspective, given the limited impact on overall demand when measured by vehicle kilometres travelled. Under a slower transition, category 3 roads are again expected to be minimally impacted from a valuation perspective. Flexible priced assets, such as managed lanes (category 5 roads), however, are likely to benefit more from the double impact of higher traffic and higher tolls.

21 For example, Severn Trent's [TCFD Report](#), p. 7, September 2021.

22 Concession extensions or tariff increases are typically negotiated with the grantor in exchange for carrying out additional capex works, such that a fair return on investment is achieved.

Railroads²³

Like toll roads and airports, volumes are the key driver for climate scenario analysis of rail roads.²⁴ The impact of the energy transition on railroad traffic growth is expected to be similar to that of airport traffic growth, but in the opposite direction. This is primarily due to the substitutability of air travel and rail travel in the markets where we are invested. In the case of Getlink's Eurotunnel asset, given the long concession length (out to 2086), we estimate this impact to be highest out to 2030, followed by a reduced impact between 2030 and 2050, and negligible impact post 2050, as emission reduction targets are generally achieved or approached.

This applies to both its car and truck shuttle services, which compete with ferries across the Dover straits, as well as its passenger rail service Eurostar, which competes with European airports and airlines that service short-haul flights. Getlink is in a unique position of offering the lowest carbon emitting transport solution for people travelling between the UK and France at a time when policy/regulations, consumer sentiment and investors are increasingly advocating for a carbon-constrained world and promoting 'greener' transport solutions.

Midstream infrastructure

A faster paced energy transition presents some long-term challenges for midstream companies, for example, under the Net Zero Scenario, gas demand declines 55% and oil declines 75% by 2050 relative to 2020 levels. Concerted efforts to decarbonise and move away from fossil fuels in favour of low-to-zero carbon energy sources could create both opportunities and risks for these companies. Market and technology changes could lead to reduced demand for traditional midstream services and increase customer credit risk and operational costs. Reputational impacts could also lead to increased cost of capital and financing challenges for new projects.

To counter these potential risks, we believe the midstream companies held in the GLI strategy have opportunities to diversify their business models to facilitate an orderly energy transition – including the repurposing of their pipelines for cleaner fuels, developing carbon capture opportunities and the expansion of renewable energy development. Most companies in this space are actively expanding their natural gas business segments to provide flexible, reliable and low emissions 'bridging' alternatives to more carbon-intensive fossil fuels. The analysis demonstrated that US LNG exports can remain robust under the faster transition scenarios. This is driven by the increasing need for gas to help decarbonisation efforts among emerging economies. That said, the Net Zero Scenario still sees a material negative valuation impact.

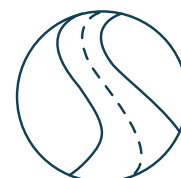
A slower energy transition is mildly supportive of midstream valuations as it generally prolongs the global reliance on fossil fuels – supporting both higher commodity prices and volume throughput. The Current Policies Scenario supports greater investment in the space to increase pipeline capacity and maintain existing facilities. That said, the magnitude of upside in these scenarios are generally modest relative to the material downside risks in faster energy transition scenarios due to the asymmetric nature of the risks.

We continue to see long-term value in certain midstream assets that are strategically positioned and have highly regulated/contracted earnings which minimises commodity price risks. We believe that natural gas will continue to play a supporting role to renewables for the foreseeable future by providing an affordable and reliable source of energy as the energy transition continues to accelerate globally. Competing technologies for natural gas are currently not being developed fast enough, so there are considerable benefits associated with the coal-to-gas switch (when assuming methane emissions are mitigated) as greener fuels are commercialised.

Nevertheless, we remain cautious around the long-term future of natural gas and actively engage with the midstream, storage and transportation companies in the portfolio on energy mix diversification and methane emissions management. We are aware of the sensitivity of midstream infrastructure to faster energy transition scenarios and therefore the share price valuation upside that we have determined compensates for this risk.

Communications infrastructure

In our scenario analysis, both communications infrastructure companies we analysed were positively impacted by a faster transition. Under a faster transition, there is increasing support from both a policy and societal perspective globally for ubiquitous wireless communications coverage to support new technologies, devices and trends that have positive environmental impacts. This may imply greater support from policy requirements and/or incentives and contribute to faster increases in demand by tower companies' customers. This is reflected by an acceleration in tenancy growth, or growth in Points of Presence (PoPs), translating into greater revenue.



²³ Getlink is the only rail holding in the GLI strategy as at 30 June 2021. North American and Japanese rail companies are excluded from the GLI Focus List.

²⁴ We assume revenue per passenger (i.e. yield), opex or capex are not material drivers of valuation in the climate scenario analysis.

A faster transition may also imply greater or accelerated emission reductions targets or requirements for tower companies, and therefore initial costs to meet such requirements. However, these costs are likely to be largely offset in the long term by enabling greater corresponding reductions in ongoing operating expenses due to higher energy efficiency, lower costs and greater grid reliability of renewable energies (compared with fossil fuels, which may also be subject to a carbon tax). Overall, these factors contribute to the more positive valuation impact under a faster transition scenario.

Both companies experienced a small negative valuation impact under the Current Policies Scenario. This reflects that a slow transition marked by climate change inertia may see reduced policy and societal support for digitisation to bring positive environmental impacts, thereby limiting the realisation of the growth potential for tower companies. In addition, companies may experience higher operating costs from energy/electricity, with potential grid congestion and low energy efficiency.

Energy storage

Although storage infrastructure does not directly produce or use energy products, storage companies remain a key component of the value chain and hence may act as enabler of or impediment to the transition to a low carbon economy. Storage infrastructure companies are exposed to the energy transition because the market dynamics of the products stored determine the demand for storage infrastructure. Over time, efforts to decarbonise by shifting away from fossil fuels and towards low carbon products could reduce the need for storage of oil and gas, but increase that for biofuels, hydrogen and CO₂. Furthermore, market and technology changes may increase stranded asset risks, operational costs, and costs of financing, and reduce future re-contracting rates, investment opportunities and return on capital investments.

Under faster transition scenarios, global demand for all products except bioenergy declines. For instance, the demand for oil declines by 2.3% annually from 2020 to 2030 in the Net Zero Scenario. This reduces the need for product storage and results in lower occupancy rates of Vopak's assets and low growth in revenues compared with the base case. Partially offsetting this is an increase in the demand for biofuels seen under a faster transition scenario, giving rise to higher revenues and opportunities for investment in new storage capacity.



A slower energy transition marked by climate inertia generally prolongs the global use of fossil fuels, supporting sustained demand for storage infrastructure and also investments to maintain and increase storage capacity. This gives rise to a positive valuation effect for the investee company under the Current Policies Scenario.

We continue to see long-term value in strategically positioned, high quality storage infrastructure assets and we actively engage with the investee company on portfolio positioning amid changing energy and feedstock systems. It is worth noting that these impacts are moderated by the presence of long-term contracts with customers, minimising exposure to changes in production and consumption.

Part Three: Risk management

Our approach to climate change-related risk mitigation

As investors in long-dated assets that provide essential services to society, climate change mitigation and adaption are treated as material factors in company research, portfolio construction, engagements and proxy voting activities. Climate change-related risks could impact the long-term sustainability of cashflows, and ultimately, returns to shareholders. For this reason, we need to see a genuine business commitment to evolving, adapting, and building resilience while actively reducing emissions in line with the goals of the Paris Agreement. Our commitment to managing climate change-related risk is formalised through the Maple-Brown Abbott [Climate Change Policy](#) and through our membership of various responsible investment initiatives.²⁵

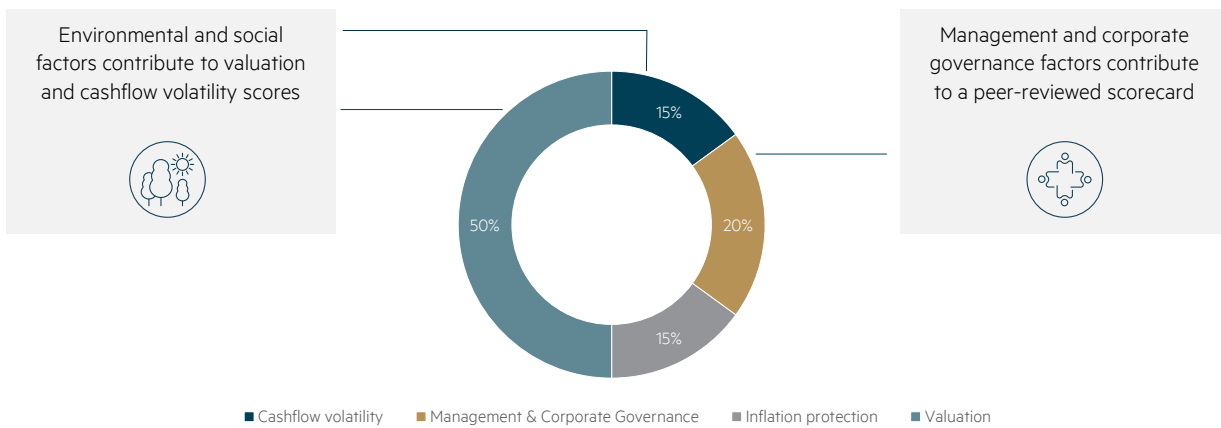
We account for and promote climate change risk mitigation by:

1. Integrating climate change mitigation²⁶ factors throughout the investment process

Our stock ranking process includes a 20% weighting to the quality and strength of management and corporate governance, while environmental risks and opportunities (which include climate change mitigation, transition and adaption) are incorporated into our 50% weighting to company valuation and the 15% weighting to cashflow volatility.²⁷

Climate change factors are assessed in all company research reports during the stock initiation process and factored into any sell decisions. Third-party data providers, specialist broker research and resources available through responsible investment initiatives²⁸ are examples of inputs we use to guide our assessment of investee companies' climate change-related measures.

How climate change is factored into our company valuation and scoring process



²⁵ Such as the Principles for Responsible Investment, the Net Zero Asset Managers Initiative (NZAMI), the CA100+ and the Transition Pathway Initiative (TPI).

²⁶ Such as emissions targets, investment in renewables, decommissioning timelines of coal-fired power generation.

²⁷ Inflation protection comprises the remaining 15% weighting.

²⁸ See footnote 1.

2. Measuring and managing the GHG emissions intensity of the strategy

As a signatory to the Net Zero Asset Managers Initiative (NZAMI), we have made a commitment to reduce the GHG emissions of the GLI strategy to net zero by 2050. Reducing the GHG emissions of the strategy over time will help mitigate the negative environmental impacts of investee companies and assist with the transition to a low carbon future by directing capital towards more environmentally sustainable activities.

3. Undertaking engagement with companies on climate change mitigation matters

We undertake ESG engagements with a minimum of 10 investee companies each calendar year. Depending on the number of stocks held, this number as a percentage of the asset held will vary but will never be less than 40% of investee companies by position weight.²⁹ Climate change is treated as a material priority in all company engagements with global listed infrastructure companies. We report and publish details of our engagement and stewardship activities annually and are guided by the [Maple-Brown Abbott Engagement Policy](#).

4. Using proxy voting decisions to promote climate change mitigation and adaption outcomes

We employ shareholder rights to influence better climate change mitigation outcomes among investee companies. Votes are cast on all proxy resolutions at shareholder meetings for shares that are directly held on behalf of clients. Reporting on proxy voting decisions and outcomes is published annually with activities guided by the [Maple-Brown Abbott Proxy Voting Policy](#).

Climate change mitigation

Our overarching climate change mitigation objective is to:

- manage and account for the climate-related risks associated with the energy transition, such as stranded asset risk and carbon pricing
- pursue opportunities that could facilitate the energy transition, such as renewable energy generation and grid infrastructure upgrades
- drive investee companies' decarbonisation progress and performance
- encourage best practices among investee companies in areas such as emissions reporting, target setting and executive accountability.

Measures we take to achieve our climate change mitigation objectives:

- We do not invest in companies actively investing capital expenditure in greenfield thermal coal fired-power generation plants or companies whose primary revenue driver is derived from the extraction and/or the production of fossil fuels.
- Companies with low GHG emissions intensive business models and/or companies with transitioning and decarbonising business strategies aligned with the long-term temperature goal of the Paris Agreement are actively preferred in the stock selection process.
- Routine measurement is undertaken of the scope 1 and scope 2 GHG emissions of investee companies; GHG intensity of investee companies;³⁰ weighted average carbon intensity (WACI) of the strategy; capital expenditure invested by investee companies in solutions that contribute towards climate change mitigation; strategy exposure to coal-fired power, natural gas, and renewable energy generation³¹ and the percentage of investee companies with net zero targets.
- Active engagement with companies is undertaken to encourage, for example, the timely decommissioning of coal-fired power generation, establishment of emissions reduction targets, measures to support a just transition and executive accountability through measures such as variable remuneration. This also extends to proxy voting activities.

²⁹ A representative fund of the strategy has been used as a proxy for this analysis.

³⁰ This metric accounts for company revenue.

³¹ As a percentage of company revenue and adjusted for representative fund-specific weights.

Part Four: Targets and metrics

Assessing companies' emissions targets and metrics

While meaningful progress to reduce emissions has been made by companies across our investment universe, we believe significant work is needed to facilitate and support a low carbon world in line with the long-term temperature goal of the Paris Agreement. Over 2020/21, we saw a swathe of net zero emissions targets and commitments announced by companies across the global listed infrastructure universe. As the charts show, approximately 77% of companies within the GLI strategy³² by stock weight have net zero targets by 2050. Of the remainder, 18% have no meaningful targets in place and 5% have meaningful interim emissions reduction targets.³³ It is becoming increasingly clear that the global listed infrastructure universe is moving towards this net zero 'norm'.

While the trend to set net zero targets is a welcome development, we also take these announcements with a healthy level of skepticism owing to the rising risk of 'greenwashing'. The main question we ask ourselves and companies is: is this statement of intent genuine, viable, detailed and ambitious enough? We fully support and encourage company efforts to decarbonise but doing so cannot simply be a marketing exercise with limited scope and meaning.

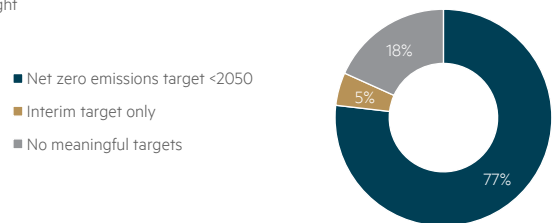
Aside from contributing to sub-par environmental outcomes, any disconnect between statement and intent is a risk in itself. For us, it is important to gauge the materiality of emissions reduction targets because they can mean different things and range from inconsequential to highly ambitious. For example:

- **alignment** – ambitiousness of the target in line with the long-term temperature goal of the Paris Agreement, time frames and unit of measurement
- **coverage** – whether a target covers all business operations, subsidiaries, geographies and the validity of the baseline year
- **scopes** – which emissions scopes are captured and whether the target is limited to CO2 or other greenhouse gas emissions, such as methane emissions
- **real emissions versus offsets** – the extent to which real economy emissions are being managed downwards, whether offset measures are heavily relied on and/or 'emissions avoided' are factored in
- **accreditation and standards** – if accreditation has been achieved, for example, through the SBTi and the reporting methodology is aligned to reporting frameworks such as the GHG Protocol

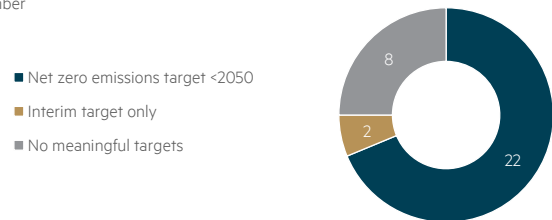
- **progress and performance** – if the company has a demonstrable track record of emissions reduction over time prior to any emissions reduction announcements.
- **detailed implementation** – whether the target is backed up by a detailed plan with a meaningful interim target and the extent to which executive management is accountable and incentivised to achieve the stated objectives.

Portfolio stocks with emissions reduction targets 30 June 2021

By weight



By number



Source: ISS DataDesk as at 30 June 2021.

The challenge with a lack of standardisation

The biggest challenge we face is that there are no globally accepted standards or requirements for companies when setting net zero targets. The Science-based Targets Initiative (SBTi) is fast becoming a promising avenue to add more rigour to the process. However, the pace of take up is slow relative to the pace at which company targets are being set. This means there is a large swathe of companies without some form of external and independent accreditation.³⁴

For this reason, in October 2021, Maple-Brown Abbott joined 733 other investors to call on governments to raise their climate ambition and implement mandatory climate-related disclosure requirements that are consistent, comparable and decision-useful.

³² Stocks are those held in a representative fund of the strategy (which has been used as a proxy for this analysis). While EDPR does not have a net zero target, the company is inherently net zero emissions by nature of its business model – by developing renewable energy projects to displace fossil fuel energy sources. Therefore, the company has been categorised as being net zero. Analysis based on desktop and broker research.

³³ We define "no meaningful targets" as a situation where a company does not have medium and long-term targets seeking to reduce emissions in line with the IEA Sustainable Development and Net Zero scenarios. These companies are the subject of focused engagement activity.

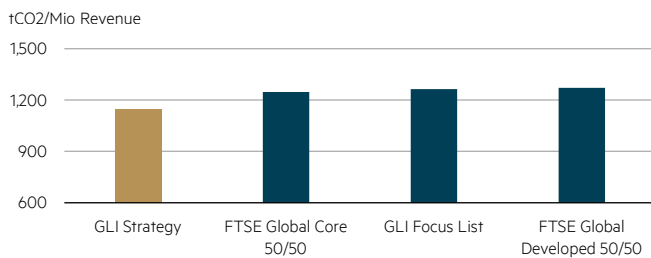
³⁴ See for example, Science-based Targets Initiative, 'Taking the Temperature: Assessing and Scaling-up Climate Ambition in the G7 Business Sector', June 2021, p. 9.

Assessing the GLI strategy's emissions

As at 30 June 2021, the GLI strategy remains below the FTSE Global Core Infra 50/50, FTSE Developed Core 50/50 and the GLI Focus List in relation to the weighted average carbon intensity (WACI), CO2e intensity, relative CO2e intensity, and scopes 1, 2, 3 absolute emissions. We expect these metrics to improve over time as the GLI strategy's more emissions-intensive positions in electric and multi-utilities decarbonise by decommissioning coal-fired power generation and invest in renewable energy capacity. Every electric and multi-utility company in the GLI strategy has some form of a net zero target by at least 2050.

With this in mind, our focus is on the transition potential of a company rather than emissions at a point in time. Energy infrastructure companies are inherently carbon-intensive, but over the long term they are vital for future economic growth, the provision of essential services and the facilitation of the transition to a low carbon economy.

Weighted average carbon intensity (WACI) USD – 30 June 2021



Source: A representative fund of the strategy has been used as a proxy for the analysis (USD). Proprietary analysis using ISS Datadest data. The WACI (tCO2e/\$M Sales) is achieved by calculating the carbon intensity (Scope 1 + 2 GHG Emissions/\$M Sales) for each company held and calculating the weighted average by portfolio or index weight.

The Net Zero Asset Managers Initiative

In October 2021, the GLI strategy joined the Net Zero Asset Managers Initiative. The initiative is backed by 220 global investors managing over \$57.4 trillion in assets representing approximately 50% of total global assets under management.

In becoming a signatory, we have made a commitment to align the GLI investment strategy with net zero emissions by 2050, and over 2021/22, set an interim emissions target to assist with this long-term trajectory. While this is an exciting development, in many ways, we see this as a way of formalising our current approach to managing climate risks and opportunities and engaging with companies on decarbonisation.

We believe we have a role to play in actively scrutinising net zero targets due to the risks of greenwashing and a lack of standardisation. In joining the initiative, we are taking the opportunity to establish a formalised transition strategy while leveraging off best practice tools and resources to overcome these challenges. We want to take a proactive stance towards the role of global listed infrastructure in a low carbon world and deliver better investment outcomes for our clients.



The limitations of emissions analysis

While emissions analysis (such as carbon intensity) is an important tool to assist with understanding climate-related risks, it is inherently backward-looking and reliant on company disclosures that may lack the necessary detail to reach an informed view. Moreover, from an opportunities perspective, emissions analysis does not provide any insight into the growth and valuation trajectory of a company. In this sense, emissions data used by screening tools and third-party ratings will only take an investor so far when it comes to risk and opportunity assessments and further tools are needed.

As active investors, we utilise an array of research tools and sources to provide a more fulsome picture of the forward-looking transition trajectory of a company. For example, we may:

- dissect a company's net zero claim and implementation plan
- review regulatory submissions and decisions
- read legal judgments and arguments
- weigh up the constructiveness of policy and regulation
- consider the track record of the company
- assess capital expenditure plans and cost allocation
- examine executive accountability and oversight
- engage with companies directly
- stay abreast of media controversies.

Our plan looking ahead

The scenario analysis detailed in this report offers a snapshot of our analysis undertaken at the end of June 2021 and remains an ongoing process of testing and learning. We continue to refer to updated scenario modelling, stay abreast of the changing policy and regulatory environment and monitor how companies themselves are responding.

As companies embark on their journey of setting emissions reduction targets, active investors can play an important role by reading the fine print, engaging with companies and scrutinising claims (where warranted). Climate change engagement remains an ongoing priority for the GLI team, particularly in relation to companies in the energy and utilities sectors where the risks and opportunities are more acute. As a signatory to investor climate action groups such as CA100+, we will continue to combine our voice with other investors to drive better practice on these issues.

From an investment perspective, we believe that facilitating the transition to a net zero economy and managing climate-related risks and opportunities renders better long-term investment outcomes. By joining the NZAMI, we have formalised our commitment to align the GLI strategy with net zero emissions by 2050. We therefore have a vested interest to make sure investee companies see through with their emissions reduction commitments and decarbonise in line with net zero.

Much of our emissions focus over 2022 will be guided by the commitments we made when joining the NZAMI, specifically to establish an interim emissions target and produce our first reporting aligned to the requirements of the initiative.

Our next iteration of our TCFD-aligned reporting will assess the risks and opportunities of the physical effects of climate change.

About us

As one of Australia's first boutique investment managers, Maple-Brown Abbott Limited has evolved into a business focusing on managing Australian equity, Asian equity, global emerging markets, global listed infrastructure, and multi-asset strategies. Operating for nearly 40 years, we manage investment portfolios for institutional, high net-worth and retail clients in Australia. We also have clients across the world including in North America, Europe and Asia. We are privately owned with around 60 staff in Sydney and over A\$11.7 billion in assets under management as at 30 September 2021.

The Maple-Brown Abbott Global Listed Infrastructure (GLI) business was established in 2012 in conjunction with Maple-Brown Abbott Limited and is majority owned by the Maple-Brown Abbott Global Listed Infrastructure founding Principals and staff. The GLI team has extensive infrastructure and asset management experience, with the founding Principals working together for a number of years prior to Maple-Brown Abbott. Today, the GLI team comprises three principals, two Investment Analysts, a dedicated ESG Analyst, a Senior Research Associate, a Research Associate, and an Associate. The team manages approximately A\$6 billion on behalf of clients across North America, Europe, the Middle East and Asia Pacific regions.

The Maple-Brown Abbott Global Listed Infrastructure strategy invests in listed infrastructure equities with a focus on sustainability and environmental, social, and governance (ESG) factors. The strategy invests in companies that provide essential services to society and typically have a market capitalisation greater than US\$500 million. We see it as our fiduciary responsibility to consider the financial and non-financial issues which may impact the performance of our clients' assets. We actively engage with companies and use proxy voting decisions to help drive more sustainable long-term outcomes for investors. In doing so, we assess a company's environmental, social and governance (ESG) risks and opportunities as part of our detailed industry and company research at each step of the investment process.



TCFD mapping

Section	Disclosure	Reference
Governance	Describe the Board's oversight of climate-related risks and opportunities	Maple-Brown Abbott GLI TCFD Report (page 5) Maple-Brown Abbott Limited Climate Change Report (page 3) Maple-Brown Abbott Climate Change Policy (pages 1–2)
	Describe management's role in assessing and managing climate-related risks and opportunities	Maple-Brown Abbott GLI TCFD Report (pages 6–7) Maple-Brown Abbott Climate Change Policy (pages 1–2)
Strategy	Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	Maple-Brown Abbott GLI TCFD Report (pages 13–21)
	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Maple-Brown Abbott GLI TCFD Scenario Analysis Addendum*
	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	Paper: The impacts of the energy transition on infrastructure needs in North America Paper: Managing methane a key to tackling climate change
Risk management	Describe the organisation's processes for identifying and assessing climate-related risks.	Maple-Brown Abbott GLI TCFD Report (pages 22–23)
	Describe the organisation's processes for managing climate-related risks.	Report: Maple-Brown Abbott 2020/2021 Engagement & Stewardship Report (pages 4–6) Overview: Our approach to Engagement Maple-Brown Abbott Limited Climate Change Report (page 4)
	Describe how the processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	Maple-Brown Abbott GLI TCFD Report (page 5) Maple-Brown Abbott Limited Climate Change Report (page 3) Maple-Brown Abbott Climate Change Policy (pages 1–2)
Metrics and target	Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Maple-Brown Abbott GLI TCFD Report (pages 23–26)

*Available upon request.

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