Opportunities to Finance Reduced Emissions in Emerging Markets

Portfolio Strategies That Support Decarbonization in the Real Economy

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Executive Summary

Institutional investors focused on managing financial risk by mitigating long-term systemic climate risks are increasingly adopting low-carbon transition strategies that include financing decarbonization in the real economy, i.e., where emissions are generated via the production and distribution of goods and services. This reflects a shift away from simply decarbonizing portfolios, an approach that doesn't necessarily lead to any reduction of emissions within the real economy.

Financing decarbonization efforts in emerging markets is a meaningful way to achieve real economy impact, as the largest source of future emissions growth is anticipated in emerging economies. Not only is a massive scaling up of investment critical in these regions, particularly in building up clean energy at scale, but emerging markets have historically received less investment than developed markets.¹

This paper provides a clearly defined framework for portfolio strategies exploring decarbonization in carbon-intensive sectors within emerging markets, using best-in-class selection, engagement, and direct financing across public and private markets. For illustrative purposes, we explore emerging market opportunities through a thematic index. Institutional asset owners can use our findings to systematically incorporate companies leading on climate action for best-in-class selection or to identify and track companies for engagement. Investors who manage transition risks and identify investment opportunities sooner may be better positioned in the long term to benefit from the transition potential, economic growth, and diversification provided by emerging markets.²

Key Takeaways

- Supporting decarbonization in the real economy is being advocated by investor-led associations, such as the Paris Aligned Investment Initiative and the Glasgow Financial Alliance for Net Zero.
- Emerging and developing economies (EMDEs) have a critical role to play in achieving global decarbonization goals. According to the World Economic Forum, EMDEs accounted for over 95% of the increase in greenhouse gas (GHG) emissions during the past decade.³
- ► The Morningstar Emerging Markets Low Carbon Transition Leaders Index[™] (EM LCTL) provides roughly 13% more exposure to strong performers in terms of transition readiness compared to its broad market parent index, Morningstar Emerging Markets Target Market Exposure Index[™] – a material difference.
- Among the EM LCTL Index constituents, 125 unique companies (24% of 524) are assessed as having strong management of low-carbon transition readiness, and 168 companies are assessed as having average management.

The three highest carbon-intensive sectors on the EM LCTL Index (Materials, Energy and Utilities) include 38 unique companies assessed as demonstrating strong climate action through effective management of their emissions trajectory.

Introduction

Last year (2024) marked the hottest year on record, according to the European Commission's climate monitoring and data service. The Copernicus Climate Change Service also noted in its December announcement that it was the first year when average global temperatures surpassed 1.5 degrees Celsius. The temperature level is significant – this is the global warming limit set in the 2015 Paris Agreement to avoid the most severe impacts of climate change. That global warming trend continued into March 2025,⁴ sustaining a near-unbroken spell of record or near-record-breaking temperatures that have persisted since July 2023.⁵

The continuing warming trend underscores the significant impact of human-induced climate change and has heightened concerns among scientists about the accelerating pace of global warming and its associated impacts. To limit warming and achieve the ambitious Paris Agreement goal of net zero emissions by 2050, a massive scaling up of investment is essential to support accelerating decarbonization efforts.

Why Scale Up Transition Financing in Emerging Markets?

Emerging and developing economies (EMDEs) have a critical role to play in achieving global decarbonization goals. Driven by rapid industrialization, urbanization, and population growth, these economies face growing energy demands and significant contributions to global emissions. According to the World Economic Forum, EMDEs accounted for over 95% of the increase in greenhouse gas (GHG) emissions during the past decade.⁶

Although high-income economies account for most of the past emissions, without sufficient focus on the transformation of their energy systems, EMDEs will account for the largest source of future emissions growth.⁷ However, due to high financing costs, underdeveloped infrastructure, macroeconomic constraints, and a lack of direct investment to fund scalable climate projects, EMDEs will not be able to meet rising demand for energy services in a sustainable way, prolonging reliance on fossil fuels. Further, many of these economies are particularly vulnerable to the adverse effects of climate change.⁸

To limit warming and achieve the ambitious Paris Agreement goal of net zero emissions by 2050, a massive scaling up of investment is essential in EMDEs. This could be used to support accelerating decarbonization efforts, sustainably transform their energy systems by building significant additional generation capacity from renewables, respond to growing climate change vulnerability, and position these economies for sustainable and resilient economic growth.⁹

Institutional investors manage trillions of dollars in assets. By allocating even a fraction of these funds to transition strategies and clean energy-related projects in the real economies of emerging markets, they can significantly close the funding gap.

This approach to supporting decarbonization in the real economy is also being advocated by investor-led associations, such as the Paris Aligned Investment Initiative (PAII) and the Glasgow Financial Alliance for Net Zero (GFANZ). Both PAII and GFANZ are coalitions of leading financial institutions – which collectively represent trillions in assets under management – committed to accelerating the decarbonization of the global economy.

The emerging markets asset class typically includes stocks, bonds and currencies from these economies, which differ from those in developed markets in terms of risk, return potential, and primary or secondary market structure. Investing in emerging markets can offer a blend of growth and diversification opportunities. While certain investments can enhance portfolio returns, they may also come with higher volatility and geopolitical and other risks. Investors can balance the relative focus on portfolio-level decarbonization (short-term action); real economy decarbonization (longer-term approach with less immediate impact); or implement both approaches concurrently.

Portfolio-Level Decarbonization vs. Real Economy

Portfolio-level decarbonization is a relatively straightforward calculation. Divesting from high-carbon assets and reallocating capital to low-emission assets to quickly align with net zero targets has an immediate effect on a portfolio's reported carbon footprint. However, this approach does not necessarily lead to any reduction of emissions within the real economy, nor does it address well-identified systemic risks, and can remove capital from where impact is needed most. This practice can also limit the investment universe, reduce an investor's ability to fully diversify the portfolio, and curtail an investor's ability to benefit from companies and sectors transitioning their business model to thrive in a low-carbon economy.

In contrast, decarbonizing the real economy and addressing economy-wide systemic risks is complex and requires a long-term view with patient capital, as transitioning business models and reshaping the global economy to one based on low carbon will take time.

For institutional investors with broad market exposure that want to address the root causes of transition risks, one of the core questions to ask is how they might contribute to real world emissions reduction. Addressing systemic transition risks requires systemic solutions, such as through public advocacy and global policy engagement to influence broader market standards for stronger climate policies in line with the objectives of the Paris Agreement. Systemic solutions can also include carbon pricing, disclosure frameworks, stress testing and scenario analysis, influencing corporate behavior to implement transition and adaptation strategies through investor-led collaboration, and helping to finance the development and adoption of clean energy and adaptive infrastructure.

Furthermore, achieving net zero by 2050 is impossible without financing critical transition strategies to decarbonize energy intensive (i.e., hard-to-abate) sectors. These include integrated oil and gas producers, cement and steel, among other sectors, that need to transition with breakthrough technologies at an accelerated rate to mitigate the worst impacts of global warming.

Portfolio Strategies to Prioritize Decarbonization in Emerging Markets

Exhibit 1 outlines several strategies for institutional asset owners managing multi-asset total portfolio strategies that seek to influence real economy decarbonization in emerging markets. These portfolio

approaches, which mitigate longer-term systemic climate risks, are suggested in lieu of divestment. (This is not an exhaustive list).

Exhibit 1 Decarbonization Strategies in Hard-to-Abate Sectors



Source: Morningstar Sustainalytics.

Best-in-Class Selection

Allocating capital towards industry leaders demonstrating climate action in hard-to-abate sectors offers a significant opportunity for real-economy impact and rewards companies actively transitioning their business models towards alignment with Paris Agreement goals. Prioritizing industry leaders sets a benchmark that creates competitive pressure and incentivizes peer companies to take corrective action and prioritize climate commitments to attract capital and be competitive.

- Carbon-intensive companies can be identified by incorporating scope 3 emissions into evaluations, alongside scope 1 and 2 emissions, to assess emissions across the entire business value chain. Scope 3 emissions refer to indirect emissions that are generated upstream in the supply chain and downstream when the company's products are used. In some industries, scope 3 emissions can be the most material source of emissions contribution.
- Carbon-intensive companies already leading in emissions reporting, setting emissions reduction targets, transitioning their businesses through science-based net zero pathways, and adopting low-carbon strategies and technologies are better prepared to reduce their emissions trajectory

and manage transition risks. Innovative companies that adapt well to shifting market demand and consumer preferences are also better positioned to thrive in a low-carbon economy.

- By choosing climate leaders, investors can better mitigate transition risks, drive financial
 performance over the long term, and meet regulatory requirements, without abandoning key
 sectors. This could be done systematically through an index-based or an active management
 approach.
- For additional insights on how to select stocks and build portfolios that are better prepared for the transition to a low-carbon economy, see Morningstar's report Measuring Transition Risk and Climate Action in Portfolios.

Engagement

All sectors will be impacted by climate change, albeit in varying degrees. Regardless, all sectors will need to manage physical and transition risks. Prioritizing engagement activities as good stewards of capital is important for investors to have a real-economy impact, particularly with carbon-intensive companies that are slow to make progress or are at the early stage of their transition readiness.

- Rather than divest from lagging companies or hard-to-abate sectors, it is important for investors
 to maintain ownership of companies at the early stage of their decarbonization journey. This
 would help them to advocate for net zero transition plans in line with best practice standards and
 to support their capital expenditure (capex). While this may increase portfolio-level emissions in
 the short to medium term, over the long term, maintaining ownership in companies most
 exposed to climate risks enables investors to use their voting power to encourage progress
 through science-based net zero commitments, greater climate disclosure, decarbonization
 practices that lead to real world emissions reductions and adaptation.
- Engagement activities should consider all tools available beyond just proxy voting, including shareholder resolutions and constructive discussions with company management. Engagement could be facilitated through investor-led initiatives and partnering with asset managers through initiatives such as the Climate Action 100+ investor coalition (made up of over 600 global investors across 33 markets), and leveraging engagement services, to name a few.

Directly Financing Transition Projects

Leaving the low-carbon transition to market mechanisms alone has not resulted in the necessary industrial shifts, at the speed needed, to drive decarbonization in carbon-intensive sectors. Barriers to progress, particularly in emerging markets, include a lack of direct investment to fund scalable high-impact climate projects or implement decarbonization technologies, in addition to weak market demand for low-carbon alternatives. Direct financial support is crucial to bridge the investment gap in decarbonizing hard-to-abate sectors. Investors can consider several approaches to finance transition projects.

Evaluating corporate bond issuances: The way companies raise capital through debt, particularly
in sectors that are traditionally high emitters, can indicate their commitment to decarbonization.
Asset owners can play a pivotal role by prioritizing companies issuing bonds that finance lowcarbon transition activities or those issuing labeled green bonds with clear use of proceeds. They
can also use engagement strategies to encourage stronger climate commitments. At the same
time, asset owners can avoid bond issues that do not indicate a clear path to decarbonization.

Investors can also scrutinize whether bond proceeds are being used credibly for transition initiatives, such as carbon capture or renewable energy integration.

- Prioritizing sector-specific approaches: Rather than blanket exclusions, asset owners may
 consider prioritizing high-emitting sectors, like industrials or power generation, with tailored
 decarbonization strategies to enable or accelerate broader decarbonization efforts. This could
 include supporting utilities shifting from coal to renewable power or supporting cement and steel
 companies to adopt carbon capture and storage technology, hydrogen-based production, and
 alternative lower-emitting materials.
- Financing projects in private markets: Asset owners are increasingly allocating capital to private markets, through private equity firms, venture capital funds, or private debt as part of their broader strategies to help finance innovation in climate technologies and low-carbon projects. Private investments can offer higher risk-adjusted returns, greater input on company management and governance practices, and can shape meaningful decarbonization outcomes over the long term that align with net zero commitments.

Investors can also participate in blended finance structures in partnership with other institutional investors and alongside development banks to de-risk and finance capital-intensive climate-related private investments. Or they can make direct investments in capital-intensive renewable energy and infrastructure projects that cannot be easily addressed through public markets, such as building wind farms, solar parks, hydropower plants, and battery storage projects, to name a few.

Exploring an Index Approach - Financing Transition Strategies in Emerging Markets

The following section explores emerging market opportunities through an index. Index methodologies can be designed to systematically incorporate companies leading on climate action for best-in-class selection or to identify and track companies for engagement.

- Parent Index: As a representation of the investable universe in emerging markets, we first evaluated the climate action performance of the Morningstar Emerging Markets Target Market Exposure Index[™] (EM TME), which measures the performance of 1,546 large- and mid-cap stocks in emerging markets, representing the top 85% of the investable universe by float-adjusted market capitalization.
- Low Carbon Transition Ratings: To evaluate climate action, we used Morningstar Sustainalytics' Low Carbon Transition Ratings (LCTR), with data as of January 2025 (see Exhibit 2). These ratings provide investors with a forward-looking assessment of a company's current alignment to a 1.5 C net zero pathway. The ratings are formulated through a comprehensive assessment of the actions that companies are taking to reduce baseline expected emissions. Critically, the ratings look beyond the stated reduction targets that companies have set (including those set with the Science Based Targets initiative, or SBTi).¹⁰ The LCTR provide multiple signals that investors can leverage in their decision-making to better understand transition-related risks and identify climate action leaders and laggards in portfolios. The ratings are expressed as an implied temperature rise (ITR) and are a measure of how much a company's GHG emissions are expected to overshoot or undershoot its fair share budget of projected emissions in an orderly net zero transition scenario.¹¹

Management Score: A key signal that underpins the ITR and indicates the strength of a company's low-carbon transition readiness is the management score, ranging from "very weak" to "very strong". Sustainalytics arrives at the management score by assessing each company's investment plans, practices, and management systems to address transition risks and reduce the emissions trajectory across all three emissions scopes – from own operations (scope 1), use of electricity (scope 2), and dependencies within the value chain (scope 3 upstream and downstream).





Source: Morningstar Sustainalytics

LCTR Indicators: The management score assessment is based on over 85 indicators, with each company (on average) being evaluated on 20 to 30 indicators depending on their subindustry relevance. Each indicator is scored based on detailed assessment criteria, which give each company a set of raw indicator scores from 0 (weak) to 100 (strong). These raw indicator scores are then weighted according to the relative subindustry weightings and distribution of emissions by scope for that individual company.

We also evaluated the climate action performance of the Morningstar Emerging Markets Low Carbon Transition Leaders Index[™] (EM LCTL), which was built as a sub-set of the EM TME Index and is designed to provide diversified, broad market exposure to companies outperforming their sector peers in their commitment to climate action. Eligible companies from the mid- and large-cap parent index are grouped by sector and ranked according to their composite Low Carbon Transition Leaders score. The LCT Leaders score is based on a combination of a company's current carbon intensity and its low-carbon transition management score, as measured by the LCTR methodology. The EM LCTL Index targets the best-scoring 50% of companies from each sector (by market cap). The index also seeks to emphasize companies that report carbon emissions and are reducing their carbon intensity, as well as those whose business activities contribute positively to the environment (as assessed through an analysis of revenues derived from sustainable products and services in Sustainalytics' Impact Metrics). Using the LCTR methodology, we identified the following:

- 125 unique companies (24% of 524) listed on the EM LCTL Index assessed as having strong management of low-carbon transition readiness.
- 168 companies (32%) assessed as having average management; that is, companies demonstrating some activities in pursuit of reducing GHG emissions but not yet considered in line with best practices, nor sufficient to manage their emissions trajectory towards alignment to a net zero pathway.

Strong performers could be considered for best-in-class selection and average performers could be considered priorities for engagement.

In comparing the parent index (EM TME) and its thematic subset (EM LCTL), the data indicates that the EM LCTL Index includes nearly double the percentage of companies assessed as having strong management of low-carbon transition readiness compared to its parent (24% vs 13%). Moreover, from an index weight perspective, the exposure to strong performers increases by roughly 13% – a material improvement (see Exhibit 10 in the Appendix). Of note, the EM LCTL Index, which launched in early 2024, outperformed its parent index by 1.54% by year end.¹² The EM LCTL Index is better positioned to provide greater exposure to strong performers as part of a best-in-class portfolio strategy, while also identifying opportunities for engagement.

Outperformers in Transition Readiness Within Hard-to-Abate Sectors

To take a more nuanced approach, we isolated climate action activities in the highest carbon-intensive sectors¹³ on the EM LCTL Index. (Sectors are defined by the Morningstar Global Equity Classification Structure).

By focusing on the three highest carbon-intensive sectors (Materials, Energy, Utilities), among 11 sectors, we identified 38 unique companies (31% of 121) assessed as having strong management of low-carbon transition readiness, representing roughly 5.2% of the index weight (see Exhibit 3).

Exhibit 3 List of 38 Companies Assessed as Having Strong Transition Readiness in Carbon Intensive Sectors

Entity Name	Country	GECS Sector	Subindustry	Strong Management Score (above 55/100)
Turkiye Petrol Rafinerileri AS	Turkey	Energy	Oil & Gas Refining and Marketing	Yes
PTT Public Co., Ltd.	Thailand	Energy	Integrated Oil & Gas	Yes
PTT Exploration & Production Plc	Thailand	Energy	Oil & Gas Exploration and Production	Yes
Ecopetrol SA	Colombia	Energy	Integrated Oil & Gas	Yes
Gold Fields Ltd.	South Africa	Materials	Gold	Yes
Harmony Gold Mining Co. Ltd.	South Africa	Materials	Gold	Yes
Anglo American Platinum Ltd.	South Africa	Materials	Precious Metals Mining	Yes
Impala Platinum Holdings Ltd.	South Africa	Materials	Precious Metals Mining	Yes
Sibanye Stillwater Ltd.	South Africa	Materials	Precious Metals Mining	Yes
Kumba Iron Ore Ltd.	South Africa	Materials	Steel	Yes
UPL Ltd.	India	Materials	Agricultural Chemicals	Yes
Press Metal Aluminium Holdings Bhd.	Malaysia	Materials	Aluminum	Yes
PETRONAS Chemicals Group Bhd.	Malaysia	Materials	Commodity Chemicals	Yes
HANWHA SOLUTIONS CORP.	South Korea	Materials	Commodity Chemicals	Yes
LG Chem Ltd.	South Korea	Materials	Commodity Chemicals	Yes
Indorama Ventures Public Co. Ltd.	Thailand	Materials	Commodity Chemicals	Yes
PTT Global Chemical Plc	Thailand	Materials	Commodity Chemicals	Yes
Grasim Industries Ltd.	India	Materials	Construction Materials	Yes
ACC Ltd.	India	Materials	Construction Materials	Yes
TCC Group Holdings CO., LTD.	Taiwan	Materials	Construction Materials	Yes
JSW Steel Ltd.	India	Materials	Steel	Yes
Sociedad Quimica y Minera de Chile SA	Chile	Materials	Agricultural Chemicals	Yes
Braskem SA	Brazil	Materials	Commodity Chemicals	Yes
CEMEX SAB de CV	Mexico	Materials	Construction Materials	Yes
Klabin SA	Brazil	Materials	Paper Packaging	Yes
Suzano SA	Brazil	Materials	Paper and Pulp	Yes
Adani Energy Solutions Ltd.	India	Utilities	Electric Utilities	Yes
Tenaga Nasional Bhd.	Malaysia	Utilities	Electric Utilities	Yes
Korea Electric Power Corp.	South Korea	Utilities	Electric Utilities	Yes
ENN Energy Holdings Ltd.	China	Utilities	Gas Utilities	Yes
ACEN Corp.	Philippines	Utilities	Independent Power Production and Traders	Yes
Global Power Synergy PCL	Thailand	Utilities	Independent Power Production and Traders	Yes
Energy Absolute Public Co. Ltd.	Thailand	Utilities	Renewable Power Production	Yes
Centrais Elétricas Brasileiras SA	Brazil	Utilities	Electric Utilities	Yes
CPFL Energia SA	Brazil	Utilities	Electric Utilities	Yes
Enel Américas SA	Chile	Utilities	Electric Utilities	Yes
Enel Chile SA	Chile	Utilities	Electric Utilities	Yes
Companhia Energética de Minas Gerais SA	Brazil	Utilities	Multi-I Itilities	Ves
oompannia Energenca de Minas Gerdis SA	BIULII	ounted	Mart Otheo	100

Source: Morningstar Sustainalytics. Data as of January 2025.

In the next section, we outline best practices in transition readiness and highlight two case study examples of strong performing companies within carbon-intensive subindustries of the EM LCTL Index.

Best Practices in Transition Readiness

Companies demonstrating strong performance in managing climate risks and transforming their business to reduce their emissions trajectory typically follow several best practices for climate action. Leading companies often demonstrate a higher degree of disclosure on their transition plans and on how they are aligning their own governance and operational processes to meet low-carbon transition objectives, making it easier to assess their activities.¹⁴

Our analysis of transition readiness in the preceding index overview is centered on best practices for climate action, as assessed by the Low Carbon Transition Ratings. The ratings' comprehensive methodology assesses company performance through metrics and indicators that are in line with best practices for credible transition plan disclosures, as defined by the following leading global standard-setting frameworks:

- United Kingdom's Transition Plan Taskforce Disclosure Principles.
- The International Financial Reporting Standards (IFRS) S2 Climate-related Disclosures standard developed by the International Sustainability Standards Board (ISSB).
- Task Force on Climate-Related Financial Disclosures (TCFD) recommendations, which are incorporated into IFRS' S2 Climate-related Disclosures standard.

Exhibit 4 highlights the four most important themes that cut across these leading frameworks and illustrates the types of metrics and indicators in the LCTR methodology that assess transition readiness across all subindustries. (There are subindustry-specific metrics and indicators as well; however, for simplicity, these are not reflected here).

Theme	Description of Best Practice	LCTR Metrics and Indicators
Strategic Ambition	 Disclosure of the strategic ambition of an entity's transition plan, comprising of the objectives, targets, and priorities for responding and contributing to the goal of net zero emissions by 2050. Disclosure of how the entity plans to pursue these objectives and priorities, including how the entity aims to support its suppliers in reducing their GHG emissions. 	 GHG Risk Management (strategy) GHG Reduction Programme (for the entity's operations) GHG Reduction Programme – SC (for the entity's supply chain)
Implementation Strategy	 Disclosure of the actions the entity is taking within its business operations, products and services, and policies and conditions to achieve its strategic ambition, as well as the resulting implications for its financial position, financial performance, and cash flows. 	 GHG Risk Management (implementation plan) GHG Reduction Programme (for the entity's operations) GHG Reduction Programme – SC (for the entity's supply chain) Renewable Energy Use Renewable Energy Programme Sustainable Products & Services Product GHG Risk Management Low Carbon Transition Resilience Programme Investment Alignment
Metrics and Targets	 Disclosure of the metrics and targets the entity is using to drive and monitor progress towards its strategic ambition. 	 GHG Reduction Targets GHG Reduction Targets – SC GHG Reduction Programme GHG Reduction Programme – SC Scope of GHG reporting Carbon intensity and Carbon intensity trend GHG Intensity - Scope 3 Category 11
Governance	 Disclosure of how the entity is embedding its transition plan within its governance structures and organizational arrangements to achieve the strategic ambition of its transition plan. 	GHG Risk Management GHG Performance Incentive Plan Carbon Leadership Talent Low Carbon Transition Workforce Programme Carbon Price Integration

Exhibit 4 Standard Best Practices for Demonstrating Low-Carbon Transition Readiness

Source: Morningstar Sustainalytics. Data as of January 2025.

Demonstrating Best Practice in Transition Readiness

Using the LCTR assessment methodology and a subindustry analysis, we identified two companies listed on the EM LCTL Index operating in carbon-intensive subindustries that demonstrate best practices in transition readiness. See Exhibit 5 for a summary of Enel Chile SA and TCC Group Holdings Co. Ltd.

Exhibit 5 Snapshot of Two Companies Listed on the Morningstar Emerging Markets Low Carbon Transition Leaders Index™

Emerging Market Company:	Enel Chile SA	TCC Group Holdings Co., Ltd		
Hard-to-Abate Subindustry (within the EM TME Index)	Electric Utilities (Utilities Sector)	Construction Materials (Materials Sector)		
ITR (Implied Temperature Rise)	2.0°C - Moderately Misaligned	2.2°C - Significantly Misaligned		
ITR Subindustry Rank	39 th percentile (10 out of 24 companies)	36th percentile (6 out of 15 companies)		
Management Score	62.4/ 100 - Strong	60.1/100 - Strong		
Management Score Subindustry Rank	4th percentile (2 out of 24 companies)	14 th percentile (3 out of 15 companies)		
Value-at-Risk (Relative to EVIC)	10%	50%		
Select Best Practices Across 4 Themes: Strategic Ambition, Implementation Strategy, Metrics and Targets, and Governance				
GHG Risk Management (strategy and implementation)	\checkmark	\checkmark		
GHG Reduction Programme (Includes Reduction Targets and GHG reporting Across Scopes 123)	\checkmark	\checkmark		
Renewable Energy Use and Investment Programme	\checkmark	\checkmark		
Low Carbon Transition Investment Planning Programme (e.g. green financing)		\checkmark		
GHG Performance Incentive Plan		\checkmark		
Carbon Leadership Talent	\sim			
Carbon Price Integration				

Source: Morningstar Sustainalytics. Data as of January 2025.

Company Spotlight: Enel Chile SA

In the Electric Utilities subindustry, Enel Chile SA stands out as an ESG leader as it demonstrates strong management of both material ESG issues and low-carbon transition readiness. Headquartered in Santiago, Enel Chile is an electricity utility company that is engaged, through its subsidiaries and affiliates, in the generation, transmission, and distribution of electricity in Chile. Enel Chile operates as a subsidiary of the Enel Group. Its ownership structure reflects a significant majority stake by Enel S.p.A., an Italian multinational energy corporation, with the balance held by a diverse group of investors.

Enel Chile is not currently aligned to a 1.5 C net zero pathway. The company's exposure is significantly misaligned (the ITR is 2.2 C), which reflects that without any management or investment, the company would be expected to overshoot its net zero emissions budget by 165,329,493 metric tons CO2e or 231.2%. However, the company's management of low-carbon transition issues is considered strong (62.4/100), and it is expected that it will decrease its total emissions by 24.9% compared to its baseline projection, making it moderately misaligned (2.0 C). The company's management score places it in the 4th percentile (2 out of 24 companies within the Electric Utilities subindustry on the EM TME Index). Its temperature alignment places it in the 39th percentile, marking it as a leader in both respects in its subindustry. In addition, its carbon emissions intensity trend is already well below its subindustry benchmark.

Exhibit 6 Enel Chile's Strong Management of Low-Carbon Transition Issues



Expected Emissions Projections

Source: Morningstar Sustainalytics. Data as of January 2025.

Enel Chile's scope 1 emissions comprise the greatest proportion (79.2%) relative to the proportion of GHG emissions across all scopes (1, 2, 3 upstream and downstream). We consider the company's management of projected scope 1 emissions (65.1/100) to be strong, as it is expected to reduce its carbon emissions from its baseline by about 30.3% through a combination of investments aligned with decarbonization.

Exhibit 7 Enel Chile's Strong Management of Projected Scope 1 Emissions

Scope Weight in Implied Temperature Rise

	Scope 1	79.2%
	Scope 2	0.0%
(N	Scope 3 - Upstream	2.2%
	Scope 3 - Downstream	18.6%

	Scope	Exposure Alignment (%)	Management	Managed Emissions (%)	Net-Zero Alignment
>	Scope 1	255.8%	65.1 Strong	30.3%	Moderately Misaligned
>	🚯 Scope 2	152.8%	56.7 Strong	13.5%	Moderately Misaligned
>	Scope 3 - Upstream	283.6%	52.2 Average	4.3%	Significantly Misaligned
>	Scope 3 - Downstream	152.8%	52.2 Average	4.3%	Moderately Misaligned

Source: Morningstar Sustainalytics. Data as of January 2025.

The strong management assessment of Enel Chile is based on several factors, including the company's demonstration of key best practices. These include a strong GHG reduction program outlining its strategic ambitions, including a commitment to time-bound GHG reduction targets. For instance, its 2024-2026 Sustainability Plan states a commitment to achieve "zero emissions by 2040," across all scopes, while promoting electrification for new energy uses. The company transparently discloses emissions associated with its business activities, including both direct (scope 1) and indirect (scope 2 and 3) emissions.

Enel Chile also has a strong GHG risk management program. The company's management integrates transition risk into wider business processes and procedures and takes climate scenario analysis and adaptation and mitigation plans into account in its business strategy and financial planning, including capex spend. It has also demonstrated adoption of key technologies (e.g., making investments in renewables, storage, and hybrid plants). The company also reports it is developing new technologies, such as green hydrogen, to diversify its energy portfolio (the first green hydrogen plant in Latin America) and upgrading to a smart grid to allow it to manage energy demand more sustainably and efficiently. Enel Chile does not generate any power from coal plants and expects to reach 79% use of renewable sources in its net installed capacity by 2026.

In terms of governance, Enel Chile demonstrates best practice in several ways: its board contains at least one director who has experience with climate-related matters; the board consults with key internal stakeholders to inform their understanding of business model transformation; and it assigns climate-related responsibilities to management-level positions. Notably, however, the company does not demonstrate evidence of a performance incentive plan linked to achieving the strategic ambition of its transition plan; nor is there evidence that it integrates an internal carbon price into its decision-making process.

Based on Sustainalytics' assessment of policy risk under an orderly net zero transition scenario, Enel Chile could face a loss in value equivalent to 10% of its enterprise value including cash (EVIC), which is considered relatively low. This assessment is based on the quantity and location of the company's expected emissions, and the projected carbon pricing schemes that those emissions would be subject to under an orderly net zero scenario. Enel Chile ranks in the top 25th percentile based on its value at risk,¹⁵ indicating it has less value at risk relative to other electric utility companies assessed by the LCTR. In other words, based on Enel Chile's management of its projected emissions, it is better positioned to absorb the potential losses from transition risks.

Company Spotlight: TCC Group Holdings Co. Ltd.

In the Construction Materials subindustry, TCC Group Holdings (TCC) stands out as a strong ESG leader as it demonstrates strong management of both material ESG issues and low-carbon transition readiness. Headquartered in Taipei, Taiwan, TCC has three main business segments: cement, electricity and energy, and other. The cement segment, which generates the bulk of its revenue, involves the production, processing and sale of cement goods. Geographically, most of TCC's revenue comes from Taiwan and the rest from Asia and Europe. The company has a diversified ownership structure with a significant portion of shares held by institutional investors as well as the public and notable stakes held by specific corporations and family entities.

TCC is not currently aligned to a 1.5 C net zero pathway. The company's exposure is significantly misaligned (the ITR is 2.5 C), which reflects that without any management or investment, the company would be expected to overshoot its emissions budget by 874,462,214 metric tons CO2e or 309.0%. However, we assess TCC's management of low-carbon transition issues as strong (60.1/100). Its management actions are expected to decrease its total emissions by 20.1% compared to its baseline projection, bringing the temperature alignment down somewhat to 2.2 C. TCC's management score places it in the 14th percentile (3 out of 15 companies within the Construction Materials subindustry on the EM TME Index). Its temperature alignment places it in the 36th percentile, marking TCC as a leader in both respects within its subindustry, similar to Enel Chile SA. In addition, TCC's carbon emissions intensity trend is well below its subindustry benchmark.

Exhibit 8 TCC's Management of Low-Carbon Transition Issues is Considered Strong



Expected Emissions Projections

Source: Morningstar Sustainalytics. Data as of January 2025.

TCC's scope 1 emissions represent the greatest proportion (95.8%) of its GHG emissions, relative to the proportion of emissions across all scopes (1, 2, 3 upstream and downstream). This means that emissions generated from its own operations face the greatest exposure to transition risks. However, we assess the company's management of projected scope 1 emissions (59.5/100) as strong, as it is expected to reduce its carbon emissions from its baseline by about 19% through a combination of investments aligned with decarbonization.

Exhibit 9 TCC's Management of Projected Scope 1 Emissions is Strong

Scope Weight in Implied Temperature Rise



Scope	Exposure Alignment (%)	Management	Managed Emissions (%)	Net-Zero Alignment
Scope 1	331.6%	59.5 Strong	19.0%	Significantly Misaligned
Scope 2	85.1%	73.7 Strong	47.4%	Aligned
Scope 3 - Upstream	296.8%	75.9 Very Strong	51.8%	Moderately Misaligned
Scope 3 - Downstream	98.4%	75.9 Very Strong	51.8%	Aligned

Source: Morningstar Sustainalytics. Data as of January 2025.

Among the factors driving TCC's strong management assessment are its demonstrated best practices. These practices include a comprehensive GHG reduction program outlining its strategic ambitions, including a strong time-bound commitment to reduce its GHG emissions. In early 2025, TCC's commitment to a 1.5 C net zero pathway was officially approved by the SBTi, making it the first cement company in East Asia to achieve this approval. Its net zero pathway scope covers TCC's global cement business, including cement plants across Taiwan, Mainland China, Turkey, Portugal, and others.

The company transparently discloses emissions associated with its business activities, including both direct (scope 1) and indirect (scope 2 and 3) emissions.

It also has a very strong GHG risk management program. TCC's carbon reduction and sustainability initiatives include several investment strategies. For instance, the company reports investing in alternative raw materials for clinker production to lower its clinker-to-cement ratio, as lowering the ratio is a key area for carbon reduction in the cement industry. It is also actively engaged in the development of alternative materials and fuels to reduce emissions in the cement and concrete production process,

and it is investing in renewable energy storage solutions and renewable energy sources, including wind, solar, geothermal, and marine energy, to name a few.

To help finance its initiatives, TCC has engaged in green financing. In 2023, TCC issued a USD 420 million certified Green Euro-Convertible Bond, becoming the first Taiwanese enterprise to do so. The proceeds from this bond are earmarked for various sustainability and decarbonization projects.

In terms of governance, TCC's board of directors consists of at least one board member who has experience with climate-related matters, in addition to a dedicated senior executive, and climate-related responsibilities are assigned to management-level positions.

In contrast to Enel Chile, described above, TCC demonstrates evidence of linking performance incentive plans – at the board level, for the CEO, and for relevant business units – to emissions reductions through key performance indicators.

Based on Sustainalytics' assessment of policy risk under an orderly net zero transition scenario, TCC could face a loss in value equivalent to 50% of its EVIC, reflecting a much higher potential loss compared to Enel Chile. This higher potential loss reflects that managing transition risks in a hard-to-abate subindustry is a material issue.

TCC's absolute value at risk ranks in the 86th percentile, indicating it has more absolute risk relative to other construction materials companies assessed by the LCTR. Notably, the fact that TCC is demonstrating a strong commitment to, and management of, transition readiness is a signal that it acknowledges transition risks and is working towards transforming its business model to mitigate and better absorb the potential losses. In contrast to Enel Chile, TCC reports that it integrates an internal carbon price into risk management decision-making. It is also transparent about its carbon pricing scheme.

Appendix

Exhibit 10 Comparing the EM TME Parent Index and the EM LCTL Index



Exhibit 11 Comparing Strong Performers in the Top Three Carbon-Intensive Sectors on the EM TME Index versus the EM LCTL Index



Source: Morningstar Sustainalytics. Data as of January 2025.

Endnotes

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