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Navigating Climate Regulations: Risk Management and Investment Opportunities in the Metals and Mining Sector

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This paper provides essential insights for financial institutions seeking to adeptly navigate the complex climate regulatory landscape. As sustainability and transparency grow in importance, financial institutions must understand how climate regulations impact operations and investment strategies. The metals and mining sector, with its high emissions and need for low-carbon technology investments, highlights the financial risks of climate change. The transition to a low-carbon economy also presents opportunities to assess risks and identify investment avenues. Using tools like Climate Credit Analytics, a climate scenario analysis and stress testing tool, institutions can strengthen risk management, help ensure regulatory compliance, and position themselves for a sustainable future. This paper aims to equip professionals with the knowledge and tools to succeed in this dynamic environment.

Navigating Climate Regulatory Complexity: A Call to Action for Financial Institutions

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Climate regulations for financial institutions are continually evolving to address the increasing need for transparency, long-term stability, and sustainability in the finance sector. Key initiatives include:

1. **Disclosure Requirements**: In recent years, the importance of sustainability in financial reporting has gained significant traction, prompting the establishment of frameworks and standards to guide organizations in their disclosure practices. One of the leading entities in this domain is the International Sustainability Standards Board (ISSB). The IFRS Sustainability Disclosure Standards, developed by the ISSB, provide guidelines for organizations to disclose sustainability-related information in a structured and standardized manner. These standards are designed to complement existing financial reporting frameworks, ensuring that sustainability disclosures are integrated into the overall financial reporting process. The framework is comprised of two standards:
    - *IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information*[1] – based on the four core elements set out in the Task Force on Climate-related Financial Disclosures (TCFD): governance, strategy, risk management, and metrics and targets.
    - *IFRS S2 Climate-related Disclosures*[2] - requires entities to disclose information about climate-related risks and opportunities that could reasonably be expected to affect the entity's cash flows, its access to finance or cost of capital over the short, medium or long term. Reporting should also include insight into the two types of climate risk:
        - Transition risk, arising from the costs associated with adapting to climate change and transitioning to a low-carbon economy.
        - Physical risk, arising from climate hazards, such as hurricanes and wildfires, plus longer-term stresses, such as sea-level rises.

2. **Stress Testing**: Various regulatory bodies globally, such as the European Central Bank, Bank of England, Federal Reserve Board, Monetary Authority of Singapore, etc., conduct regular stress tests to assess the resilience of financial institutions to climate-related risks, requiring them to incorporate climate scenarios into their risk management frameworks. These tests aim to enhance the financial sector's understanding and response to climate risks.

3. **Risk Management, Monitoring, and Mitigation**: Financial institutions should integrate climate risk into their regular risk management frameworks, e.g., risk appetite, internal controls, and Internal Capital Adequacy Assessment Process (ICAAP). This includes identifying climate-related risks, measuring their potential financial impacts, and developing strategies to mitigate those risks. Firms are also expected to apply a range of quantitative and qualitative tools and metrics to monitor their exposure to risks arising from climate change in their investment or lending portfolios or throughout their supply chains.

4. **Energy transition financing:** By directing capital toward renewable energy projects and decarbonization efforts, financial institutions can play a transformative role in the global fight against climate change. Governments and regulatory bodies worldwide are implementing policies that encourage or mandate financial institutions to integrate climate considerations into their lending and investment practices. This

[1] IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information, IFRS Foundation 2024. As of 2023 issued.

[2] IFRS S2 Climate-related Disclosures, IFRS Foundation 2024. As of 2023 issued.

includes setting targets for financing renewable energy projects as well as providing incentives, subsidies, or guarantees. Institutions that proactively engage in energy transition financing are better positioned to comply with these regulations and can leverage these opportunities to maximize their impact.

To support alignment with these regulations and guidelines, S&P Global Market Intelligence in partnership with Oliver Wyman developed **Climate Credit Analytics**, a climate scenario analyzer and stress testing tool that combines S&P Global Market Intelligence's best-in-class data and credit analytics capabilities with Oliver Wyman's climate scenario and stress-testing expertise.

This paper aims to connect the outputs of Climate Credit Analytics with the regulatory guidance outlined above through a case study of three companies within the metals and mining sector. This sector was chosen due to a recent study by S&P Global Commodity Insights[3], which highlighted the unique challenges miners encounter in reducing carbon emissions. These challenges stem from the substantial investments needed for low-carbon production processes, combined with already high operating costs. To achieve net zero emissions, mining companies will likely need their customers to pay a premium price, referred to as a "greenium," and may also rely on government support. Climate Credit Analytics takes these sector-specific challenges into account while also leveraging company-specific data, resulting in a detailed analysis that helps users identify and assess climate-related risks embedded in their portfolios.

The Metals and Mining Sector: Unique Climate Risks and Emerging Investment Opportunities

The metals and mining sector faces climate risks mainly from emissions produced during mining activities and, in the case of coal, from emissions produced when the product is burned. However, there are alternative products in the industry, such as precious metals, aluminum, and copper, which are expected to benefit from economic growth and increased consumption in the coming decades. Additionally, minerals critical for energy transition technologies, like nickel and copper for electric vehicles, present significant opportunities. The impact of climate change on individual companies is closely linked to the types of products they mine. For analytical purposes, minerals were categorized into three groups based on their anticipated demand in a climate transition scenario (fossil fuel minerals, energy transition minerals, and other minerals). Coal, which makes up the fossil fuel mineral group, is further divided into thermal coal (used in power generation) and metallurgical coal (used in steelmaking).

Figure 1 outlines the minerals contained in each group and how a transition scenario could impact the revenues and costs of companies that mine them. Companies mining group B and C minerals are expected to see both their revenues and costs increase, while those mining coal are likely to experience significant revenue declines. The impact on costs for coal-mining companies depends on the coal's downstream use and the region in which they operate, as developed countries in the Western Hemisphere are expected to phase out thermal coal more quickly than other regions. Emissions-weighted average carbon prices are also calculated for these regions to assess differences in thermal coal production costs.

[3] Path to net-zero: Miners need premium on low-emissions products to cover costs, S&P Global Commodity Insights. As of: 19 September 2024.

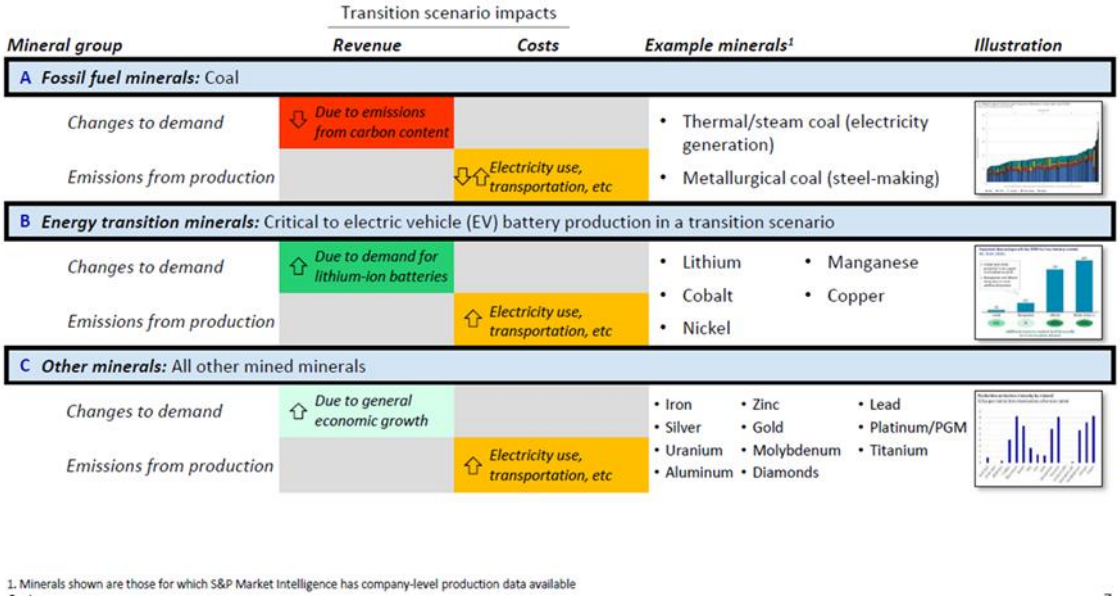


Figure 1. Metals and mining product groups. Source: S&P Global Market Intelligence & Oliver Wyman. Source: S&P Global Market Intelligence & Oliver Wyman

The scenario analysis component of this study utilized Phase IV of the framework from the Network for Greening the Financial System (NGFS)[4]. Specifically, the REMIND integrated assessment model was applied, examining three scenarios:

- Current Policies: A scenario in which only currently implemented climate policies are preserved.
- Below 2°C: A scenario that keeps warming below 2°C with 67% probability by gradually increasing the stringency of climate policies.
- Net Zero 2050: A scenario that limits warming to 1.5°C through rigorous climate policies and innovation, reaching global net zero CO2 emissions by 2050.

These are readily available within the tool alongside regulatory stress test scenarios. Users are also given the flexibility to override scenario variables for more in-depth sensitivity analysis. Figure 2 illustrates the path to 2050 of key variables under each scenario. Once again, these indicate that pure coal miners are likely to underperform across most scenarios due to significant declines in both coal prices and volumes. In contrast, miners of energy transition minerals and other commodities are expected to experience demand growth, driven by the adoption of electric vehicles and overall economic expansion tied to GDP. However, all companies will face pressure on their profit margins due to rising carbon taxes, as illustrated by the Carbon Price variable.

[4] For more information on the models and scenarios published by NGFS, please visit https://www.ngfs.net/ngfs-scenarios-portal/.

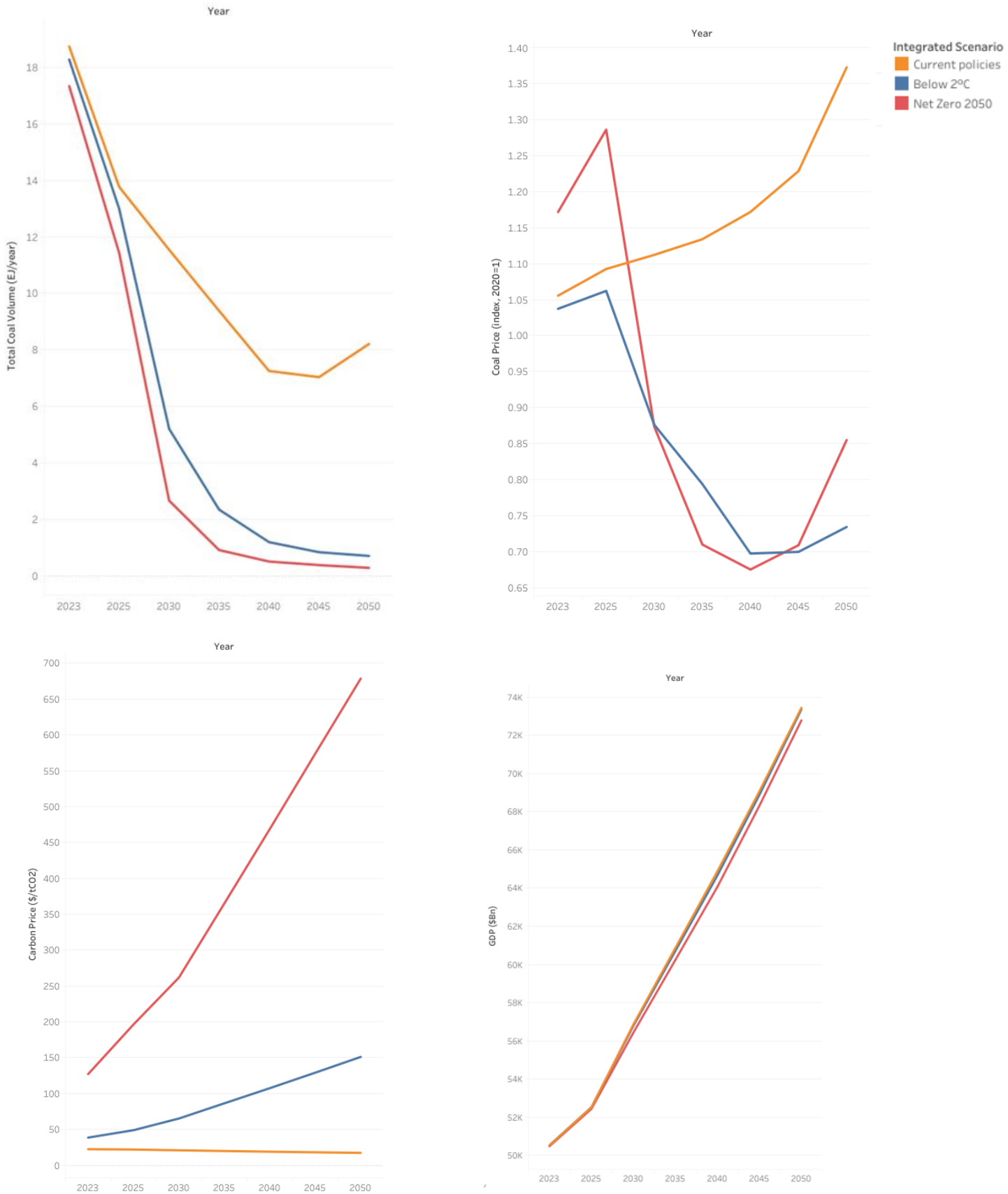


Figure 2. Sample of NGFS scenario variables. Source: Climate Credit Analytics, data as of 29 October 2024.

Climate Credit Analytics integrates these climate scenarios with company-specific data, including actual and historical financials, emissions data (scope 1, 2, and 3), emission transition plans, and industry specificities like the types of minerals extracted. It also offers flexibility for user input, enabling detailed, bottom-up analysis. While these variables help quantify transition risk, the model also incorporates the financial impact of physical risk, calculated based on the company's asset types and their geolocation. These inputs are used to project climate-impacted financial statements through 2050 and their effect on the company's creditworthiness, employing S&P Global Market Intelligence's proprietary credit models. The table below illustrates how transition and physical risks affect the credit risk score[5] for each company[6] included in this study, based on the selected scenarios.

		Year						
Company Name	Integrated Sce..	2023	2025	2030	2035	2040	2045	2050
Company A	Current policies	bbb-	bbb	bbb-	bbb-	bbb-	ccc+	ccc+
	Below 2°C	bbb-	bbb	bbb-	ccc+	ccc+	ccc+	ccc+
	Net Zero 2050	bbb-	bbb	ccc+	ccc+	ccc+	ccc+	ccc+
Company B	Current policies	bb	bb-	bb-	b+	b+	b	b-
	Below 2°C	bb	bb-	bb-	b+	b+	b	b
	Net Zero 2050	bb	bb-	bb-	b+	b	b	b-
Company C	Current policies	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+
	Below 2°C	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+
	Net Zero 2050	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+	bbb+

Score: bbb+, bbb, bbb-, bb, bb-, b+, b, b-, ccc+

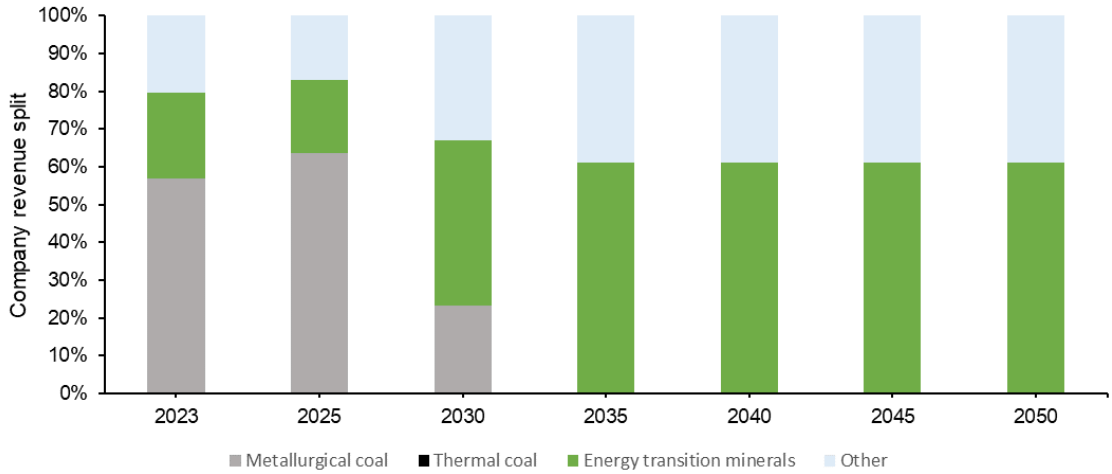
Figure 3. Stressed credit scores under each climate scenario. Source: Climate Credit Analytics, data as of 29 October 2024.

Company C is not impacted by climate risk and maintains a stable credit profile across all scenarios. In contrast, Companies A and B experience a decline in creditworthiness in all three scenarios, with the most significant drop occurring under the Net Zero 2050 scenario. Figure 4 shows the proportion of current and projected revenues generated per mineral group under Net Zero 2050. Company A faces the most substantial decline in creditworthiness and relies heavily on fossil fuel mining, generating over 50% of its revenues in 2023 from this mineral group. In comparison, Company C derives less than 20% of its baseline revenues from fossil fuels. Surprisingly, despite not generating any revenue from fossil fuels, Company B still faces credit risk deterioration.

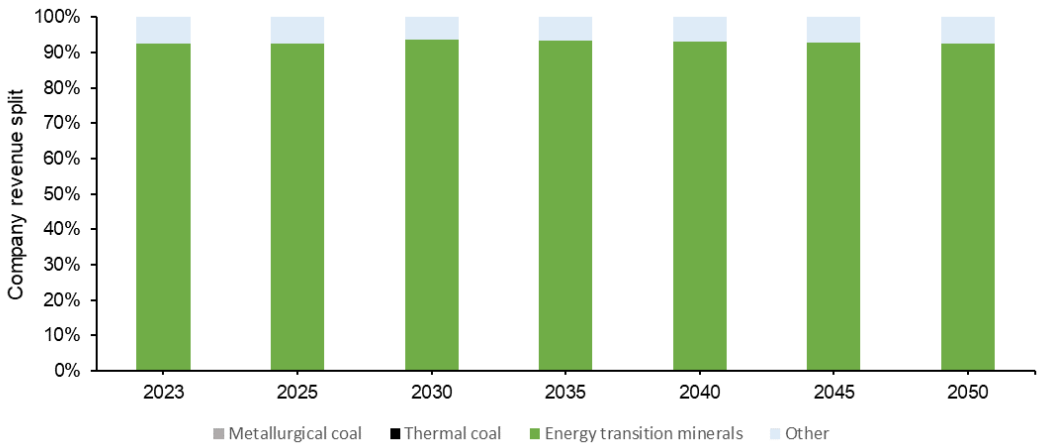
[5] S&P Global Ratings does not contribute to or participate in the creation of credit scores generated by S&P Global Market Intelligence. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence credit model scores from the credit ratings issued by S&P Global Ratings.

[6] All three companies selected for the study are publicly listed and have mining operations across several continents.

Company A:



Company B:



Company C:

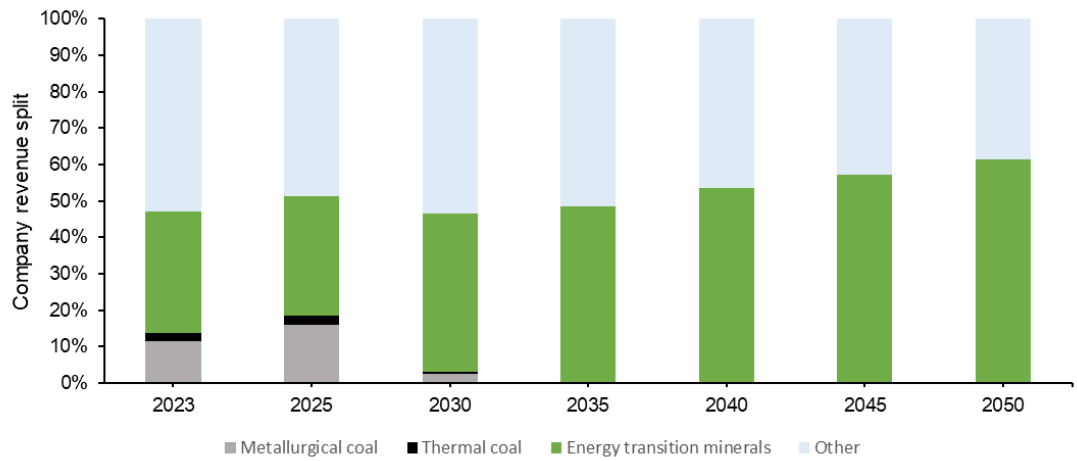


Figure 4. Current and estimated company revenue split under the Net Zero 2050 scenario. Source: Climate Credit Analytics, data as of 29 October 2024.

To clarify these outcomes, the model offers insight into projected financial statements and key drivers influencing financial figures, such as price, volume, unit cost, capital expenditure, and asset value. These factors support IFRS S2 reporting requirements and provide essential financial metrics for identifying funding gaps and opportunities related to energy transition financing.

Figure 5 illustrates the estimated Total Revenues, EBITDA margins, and Net Profit Margins for each company and scenario.

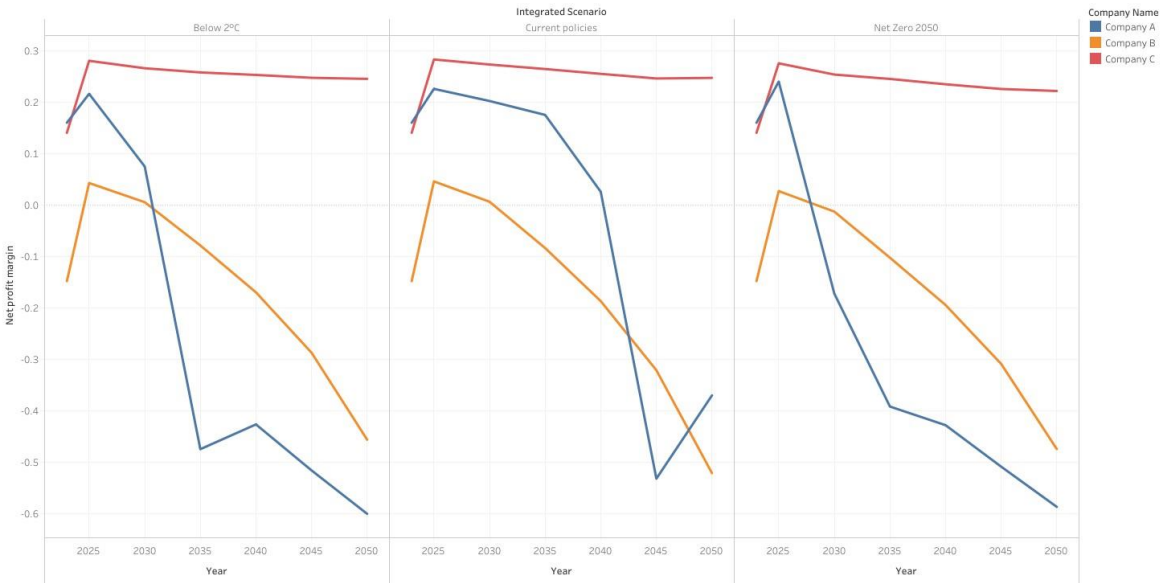


Figure 5. Key financial ratios forecasted under each scenario. Source: Climate Credit Analytics, data as of 29 October 2024.

Company C reports the highest baseline Total Revenue at $56 billion, along with the best baseline score of bbb+. Its revenues are expected to grow steadily as it transitions away from fossil fuels, largely due to its share of Group C minerals, which are projected to rise in price alongside GDP growth. In contrast, Company B, which primarily mines Group B minerals, anticipates price increases driven by electric vehicle demand, but these will be less significant – as a result its Total Revenue growth is more modest. As noted earlier, coal miners, like Company A, are expected to experience declining revenues.

All companies are projected to experience margin pressures due to rising carbon taxes and costs related to physical risks, as illustrated by the EBITDA margin graph. Company C stands out as the best positioned to manage these increased costs, thanks to its nearly exponential growth in Total Revenue. The figure also highlights shifts in Net Profit Margin, which are influenced by each company's capital expenditure requirements and, consequently, their interest expenses. To sustain market share and/or transition away from fossil fuels, companies will need to make significant investments in greener technologies, which will likely lead to higher levels of debt. This, in turn, will further impact their profitability. Without a “greenium” or government support, even miners focused on energy transition minerals may face challenges ahead – a prime example of this being Company B.

Leveraging Climate Credit Analytics: Navigating the Future of Climate Risk and Investment

Navigating the evolving landscape of climate regulatory requirements is crucial for all financial institutions, especially those with exposure to the metals and mining sector, which faces challenges in meeting both market demands and sustainability goals. By integrating comprehensive tools like Climate Credit Analytics into their existing risk frameworks, organizations can better position themselves to thrive in a low-carbon economy while ensuring compliance with emerging regulations. The tool not only enhances understanding of climate-related financial impacts but also supports strategic decision-making for risk management and investment opportunities by:

- Quantifying the complexities of both transition and physical risk
- Enabling scenario analysis using NGFS and regulatory scenarios
- Capturing sector specific nuances by leveraging best-in-class data on carbon emissions, physical asset location, regional policies, and changes in business models

To learn more about S&P Global Market Intelligence's suite of climate-related products, visit our website or speak to our specialists.