

16 JUNE 2022

---

## ABOUT

Moody's is committed to helping market participants advance strategic resilience, responsible capitalism, and the greening of the economy. Our offerings span across credit, ESG, sustainable finance, and climate risk solutions and help our customers identify risks and opportunities and provide meaningful performance measurements and insights.

[esg.moody's.io/insights-analysis](https://esg.moody's.io/insights-analysis)

---

## AUTHORS

Erika Bruce  
Associate Analyst – Outreach & Research  
Moody's ESG Solutions

Natalie Ambrosio Preudhomme  
AVP – Outreach & Research  
Moody's ESG Solutions

Andrew Grant  
VP – Climate Solutions  
Moody's ESG Solutions

---

## MEDIA CONTACT

Kibui Pyron  
Vice President, Corporate Communications  
Sustainability & ESG  
+1.212.553.0935  
[kibui.pyron@moody's.com](mailto:kibui.pyron@moody's.com)

---

## CONTACT US

Email us at [MESG@moody's.com](mailto:MESG@moody's.com)

---

Climate Solutions – Global

# Transition Risk and Opportunities for Banks: Greenhouse gas emissions and related disclosures lay the foundation for understanding financed emissions

## Summary

The transition to a low-carbon economy presents risks to companies and in turn their lenders, through regulatory developments, technological changes and shifting market preferences. Banks can be adversely impacted by these risks due to magnification of liabilities on their balance sheets at risk of impairment over time. The associated need for financing for the transition also presents opportunities for banks to develop new offerings focused on low-carbon business strategies and investments.

In addition to understanding their counterparties' emissions as a baseline for identifying their financial risk, banks are also facing increasing pressure to accurately assess and disclose their financed emissions. The Partnership for Carbon Accounting Financials (PCAF) is an industry group developing guidelines for financial institutions to assess their financed emissions.

Banks can leverage a multitude of derived metrics such as carbon intensity, which can be assessed based on the volume of operational emissions per the unit of revenue generated. This approach normalizes greenhouse gas (GHG) emissions of high Scope 1-2 emitting sectors by size within sectors. It is important to note that the carbon intensity tells only a portion of the story for GHG emissions, as it does not clearly denote trends in absolute emissions reductions or changes in revenue, which could both affect the metric.

Data on companies' climate governance and risk management complements data on their greenhouse gas emissions by helping banks understand if the company is preparing for the impacts of a transition to a low-carbon economy. In our analysis the electric and gas utilities sector has the highest percentage of assessed companies disclosing the development of a low carbon transition plan (16%), while the oil equipment & services sector only has 4% of assessed companies doing so.

Companies in high emitting industries that are likely to face regulation may benefit from implementing financial levers such as an internal carbon price. In our database approximately 3% of all companies integrate an internal carbon price, but within the top ten heaviest GHG emitting sectors 8% of all assessed companies integrate an internal carbon price. Understanding how companies are leveraging financial cost modeling and other business planning methods provides banks visibility both on the potential financial risks that a company faces and how well it is mitigating those risks.

## Transition risk is multifaceted and presents material risks for banks

The shift to a low carbon economy presents new risks and opportunities for financial institutions. The risks, known as transition risks, include those related to regulation, technological development and market preferences and can increase firms' costs and decrease revenue. These impacts in turn affect cash flow, capital, collateral and risk premia which can eventually result in devaluation and stranded assets, flowing through to affect banks' lending activity and revenue generation. Our recent report series explored how asset managers can [utilize data on firms' greenhouse gas emissions \(GHGs\)](#) as well as [forward looking data such as temperature alignment datasets](#) to understand the risks and opportunities presented by the shift to a low-carbon economy. This report focuses on banks, demonstrating not only how they can access and interpret GHG emissions data, but also opportunities to leverage this data to develop a climate-informed business strategy.

Transition risks can unfold over the next few decades, as countries tighten their policies in line with net zero commitments. However, they can also materialize much more rapidly as technological improvements, energy efficiency mandates and carbon prices are already becoming more prevalent today. Rapidly shifting market sentiment can lead to revaluation before the risk is realized in the economy. In fact, transition risks have the potential to manifest very quickly, impacting bank balance sheets essentially as soon as policy is enacted.

Banking regulators in various jurisdictions are rolling out climate-risk management rules such as climate-related stress tests that have implications for banks' lending and risk management activities. The European Banking Authority found [in a recent exercise that more than half, 58%, of EU banks' non-SME corporate exposures \(equity portfolio, corporate loans and bonds\) to EU obligors are potentially sensitive to transition risk and are concentrated in specific sectors such as manufacturing and real estate activities](#), ranging in magnitude of exposure. This demonstrates one avenue of this risk, as regulation targeting a specific sector will present more severe risks for portfolios that are relatively concentrated in the affected sector. Exposure to high GHG emitting sectors that are sensitive to regulation, or underprepared, could overextend banks' positions on corporate lending activities and leave banks exposed to financial risk. Banks can be particularly vulnerable to transition risks due to their significant balance sheet leverage. Beyond direct impacts to their balance sheets, [banks are also exposed to reputational risks](#) as market preferences shift, particularly [if their current lending operations do not align with their public emissions reduction commitments](#).

Banks on the forefront of the transition understand that the global energy transition presents not just downside risk but also opportunities. Financial institutions already making commitments to align to the low-carbon economy of the future will be better prepared to capitalize on opportunities to capture green market share. Banks, in particular, stand to benefit from ample financing needs presented by the transition, including for emerging technologies as well as for more established sectors set for growth like renewable energy and electric vehicles. While this presents distinct business opportunities, proactively developing plans to align with the transition to a low-carbon economy can also reduce banks' reputational risk and minimize the impact of upcoming climate-related regulation.

For example, recently, financial sector efforts to contribute to the transition to a low carbon economy and to manage relevant risks have coalesced around net zero commitments. While banks committing to reaching net zero with their portfolios does not in itself eliminate their transition risks, implementing and working toward net zero commitments does provide one route to minimize the risk by proactively preparing for a shifting regulatory landscape and consumer demand. This also improves banks' reputation helping them be seen as contributing to the shift to a low carbon economy. The Glasgow Financial Alliance for Net Zero ([GFANZ](#)) includes [450 banks, insurers, asset owners and managers with \\$130 trillion in assets under management \(AUM\) who have made commitments to decarbonize their portfolios](#). A subset of that group, the Net-Zero Banking Alliance ([NZBA](#)), consists of [113 constituent banks and has \\$68 trillion AUM, equating to 38% of global banking assets](#). Members of the NZBA understand that a global energy transition presents both risks and opportunities to their portfolios. These banks are setting emissions reduction targets for 2030 and 2050, with intermediary 5-year targets. The first step to live up to those targets is to understand their current emissions, including those they finance in their portfolios. This necessitates reliable carbon footprint data across Scopes 1, 2 and 3 for their counterparties, which can be complemented by other indicators that project how a company's emissions may change over time and how its business model may fare in the transition. Carbon footprint data and tangential indicators such as carbon intensity allow banks to evaluate their financed emissions today and to monitor their emissions reductions.

## GHG emissions trends and implications for lenders

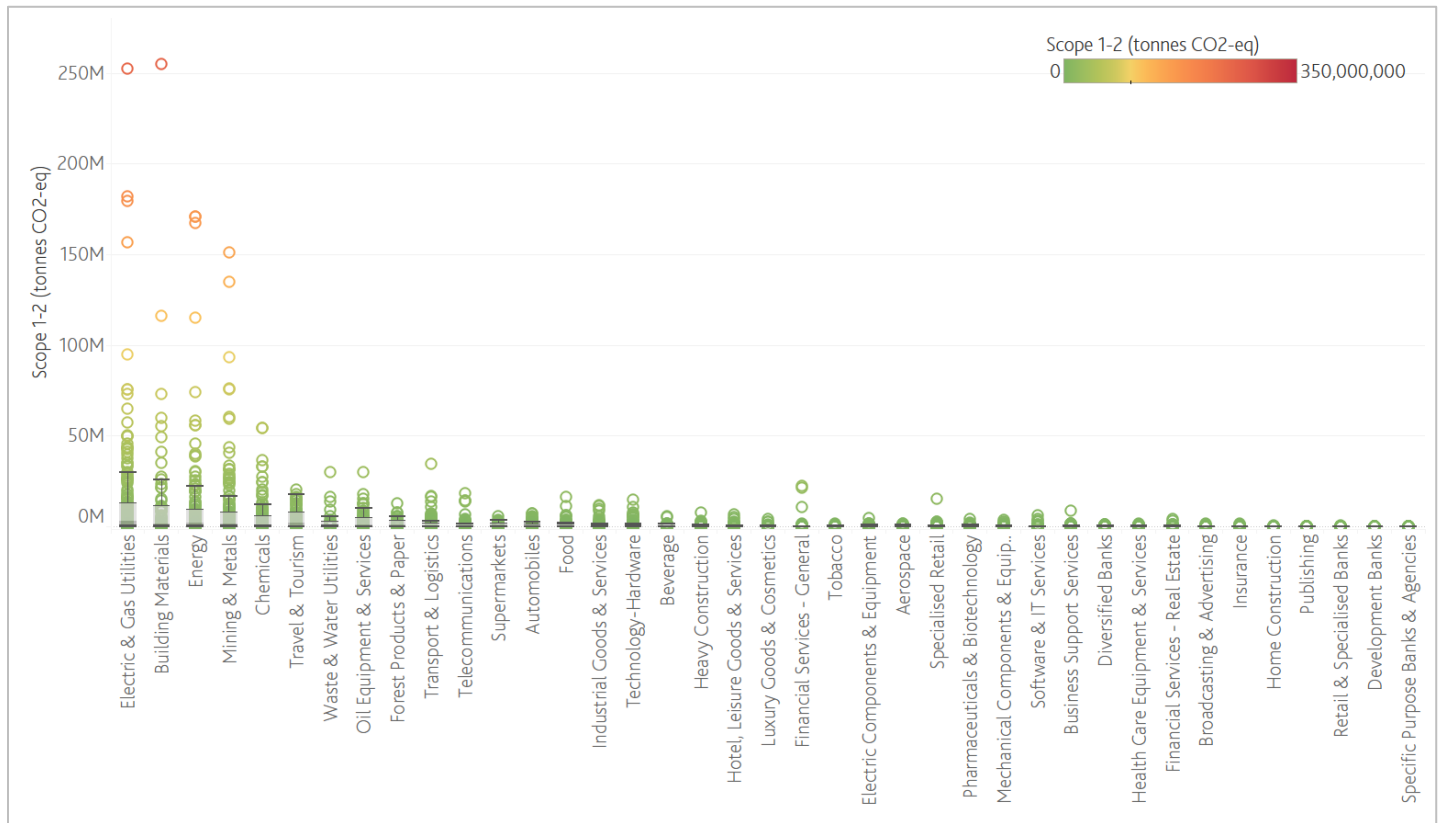
Data on firms' GHG emissions provides a baseline for how they may be affected by the transition to a low-carbon economy as there is often a correlation between high GHG emitters and those companies that will be exposed to the transmission channels of these risks such as policy changes, technological advances or shifting market sentiment. Likewise, understanding how a company's emissions profile has changed in recent years can provide an indication of a firm's trajectory. However, to truly understand how a company is likely to fare during the transition it is essential to understand its precise emissions reductions plans, alongside the contribution of green products to its business model, the positioning of hard-to-abate activities and how these factors relate to its long-term business strategy. While GHG emissions are a helpful starting point, many other factors will affect a firm's transition risk, including how its emissions relate to its costs and revenues and thus translate into financial risk. This report focuses on key considerations for leveraging GHG emissions as a starting point for banks' portfolio decision-making related to transition risks and opportunities, while future research will focus on leveraging forward-looking metrics to complete the picture.

GHGs can be reported in terms of carbon footprint, which refers to emissions from a company's direct and indirect operations. This metric is inconsistent as it only sometimes includes Scope 3 emissions, and thus it's important to be clear on what exactly a metric is capturing if it is used for analysis. Due to the variability in Scope 3 emissions' accuracy and disclosure, it is common for analysis to focus on Scope 1-2 emissions only. Such data can provide an indication of a firm's exposure to energy efficiency or carbon policy changes that would most directly affect its operations and can also highlight opportunities to invest in energy efficiency improvements targeting a firm's operations. However, it would give less insight into the impacts of shifting regulation or consumer preferences on revenues, such as decline in demand due to a carbon price, which would more directly relate to Scope 3 emissions. While Scope 3 emissions are challenging to quantify and thus not yet consistently reported, they make significant contributions to most companies' overall GHG emissions. It has become standard practice for banks to leverage third party data providing estimates of Scope 3 emissions, but this requires a focus on consistency and transparency.

Banks with diverse large corporate clients in many sectors are likely to have varying degrees of emissions in their lending activities, based on the wide range of activities they finance. While it is important for banks to evaluate the highest emitters in their portfolios, understanding trends by sector can also help identify relatively high and low performers in each industry, allowing for adjusted lending strategies and engagement.

**Figure 1 Scope 1-2 GHG emissions (tonnes CO<sub>2</sub>-eq<sup>1</sup>) for each company by sector**

Sector order is determined based on average GHG emissions, with the highest average emitting sectors starting on the left



Source: Moody's Corporation

Moody's has collected GHG emissions data for over 11,000 companies based on their disclosures where available<sup>2</sup> and following the [GHG Protocol](#), which has emerged as the global standard for companies to report their Scope 1-3 emissions capturing operations and value chains. We assessed which sectors have the highest average Scope 1-2 GHG emissions and the distribution of company emissions within each sector.<sup>3</sup> The top five emitting sectors in our analysis are electric & gas utilities, building materials, energy, mining & metals and chemicals (see Figure 1). The electric & gas utilities sector has the highest average Scope 1-2 GHG emissions out of all sectors, with company GHG emissions up to 342,127,800 tonnes CO<sub>2</sub>-eq. It also has the largest variation in emissions between companies within the sector due to variation in the size of firms and the mixture of renewable and fossil fuel utility companies in the sector. The specific purpose banks & agencies sector has the lowest average Scope 1-2 GHG emissions with company emissions ranging from 1.5 to 46,315 tonnes CO<sub>2</sub>-eq. However, the majority of banks' emissions come from the emissions in their portfolios categorized as [Scope 3 category 15 GHG emissions](#), and thus wouldn't be captured in this analysis of Scope 1-2 emissions.

The sector with the sixth highest average Scope 1-2 GHG emissions is travel & tourism with an average of 2,992,540 tonnes CO<sub>2</sub>-eq GHG emissions. The sector average is nearly a quarter of the average Scope 1-2 GHG emissions for the electric & gas utilities

<sup>1</sup> A carbon dioxide equivalent, or CO<sub>2</sub>-eq, is "the amount of carbon dioxide (CO<sub>2</sub>) emission that would cause the same integrated radiative forcing or temperature change, over a given time horizon, as an emitted amount of a greenhouse gas (GHG) or a mixture of GHGs. There are a number of ways to compute such equivalent emissions and choose appropriate time horizons. Most typically, the CO<sub>2</sub>-equivalent emission is obtained by multiplying the emission of a GHG by its global warming potential (GWP) for a 100-year time horizon." [UN IPCC, 2018: Annex I: Glossary.](#)

<sup>2</sup> Where reported data is not available, we estimate emissions in line with the GHG Protocol and CDP methodology.

<sup>3</sup> In our analysis we used GHG emissions, disclosed and estimated, from the reporting year of 2020 due to it being the most recent and accurate reporting year for company GHG emissions.

sector. This is a significant amount of emissions for an industry that is not traditionally the focus of much public pressure to decarbonize.

The travel & tourism industry is diverse, including a range of companies from airlines to service-based, asset-light companies with lower emissions. Thus, it provides an example of the risks banks may face from industries with diverse business models, some of which may not traditionally be seen as carbon intensive at a glance and others which may be seen as very hard to abate. For example, [banks that have disclosed financed emissions in their portfolio have begun with the electric & gas utilities and energy sectors](#) before disclosing financial exposure to other high emitting sectors. This shows the limitations of a strategy that may exclude companies from certain sectors where there could be value in identifying the source of financed emissions and engaging on a company-by-company basis rather than relying heavily on an industry approach which may be more useful as a starting point.

There are opportunities for banks to contribute to the low-carbon transition by prioritizing companies that are utilizing market best practices for emissions reporting and taking the next steps to manage their emissions and adjust their business models. For example, the travel & tourism sector and other high emitters present risks to banks but also opportunities to engage with the sector to finance decarbonization plans and build up regional capacity for renewable energy infrastructure.

### There is increasing effort to develop consistent financed emissions reporting

Banks and asset managers [finance over 700 times more GHG emissions in comparison to their Scope 1-2 GHG emissions](#) through investment and lending practices – these emissions are categorized as “financed emissions” and fall under [Scope 3 category 15 emissions for banks as defined by the GHG Protocol](#). Only a handful of banks, [15%, are reporting their Scope 3 emissions according to a study carried out by the European Central Bank](#). A [report from the Center for American Progress and the Sierra Club](#) found that the 18 largest US banks and asset managers alone would be the fifth-biggest emitter in the world, based on their financed emissions. Banks are facing increased pressure from regulators but also from the [global investor community to understand and report their financed emissions](#).

Thus, getting a full view on their total emissions requires that banks identify their contribution to financed emissions in their portfolios. While understanding the emissions of their counterparties is a starting point, this also requires potentially complex analysis to identify which portion of a company’s emissions that bank is responsible for due to its financing. The Partnership for Carbon Accounting Financials ([PCAF](#)) is an industry-led initiative to develop an accounting and reporting approach for financed emissions, responding to the demand for standardization and transparency in financed emissions.

It provides methodologies for accounting for emissions in the real economy in banks’ portfolios, with asset class-specific guidelines, outlining several relevant portfolio-level metrics for different purposes (Table 1). Banks can use data on the GHG emissions of companies in their portfolios to derive metrics to assess and communicate their aggregated portfolio contribution to emissions. This is particularly important for banks’ portfolios as banks have the most available capital to facilitate the transition and take advantage of its opportunities, while currently receiving increasing scrutiny for their financing of high GHG emitters.

Though the data is far from perfect, the standardized approach will bring comparability over time and as of June 2022 over 270 institutions have already committed to using PCAF practices. PCAF is one of many market-based initiatives that lean on collective knowledge and industry GHG accounting best practices to provide standardized data and methodological approaches. Further development in the comparable assessment and disclosure of financed emissions will help to fill data gaps identified by global prudential regulators and market participants.

**Table 1 Metrics for using data on GHGs to understand financed emissions**

METRIC	PURPOSE	DESCRIPTION
Absolute emissions	To understand the climate impact of loans and investments and set a baseline for climate action	The total GHG emissions of an asset class or portfolio
Economic emissions intensity	To understand how the emissions intensity of different portfolios (or parts of portfolios) compare to each other per monetary unit	Absolute emissions divided by the loan and investment volume, expressed as tCO <sub>2</sub> e/€M invested
Physical emissions intensity	To understand the efficiency of a portfolio (or parts of a portfolio) in terms of total carbon emissions per unit of a common output	Absolute emissions divided by an output value, expressed as tCO <sub>2</sub> e/MWh, tCO <sub>2</sub> e/tonne product produced
Weighted average carbon intensity (WACI)	To understand exposure to carbon-intensive companies	Portfolio's exposure to carbon-intensive companies, expressed as tCO <sub>2</sub> e/€M company revenue

Sources: adapted from Partnership for Carbon Accounting Financials (PCAF), November 2020.

Banks can contribute significantly to the transition through accounting, reporting and reduction of their financed emissions. However, as described above accounting for these emissions is complex and a work in progress. Banks can thus benefit from taking initial steps to understand the emissions of companies in their portfolios, and over time develop a thorough accounting mechanism that aligns to international market standards. Leveraging GHG emissions data is an entry point for banks as they begin to develop lending strategies for the low-carbon transition and overtime identify strategies that promote GHG reductions in the real economy, rather than solely reweighting of portfolios.

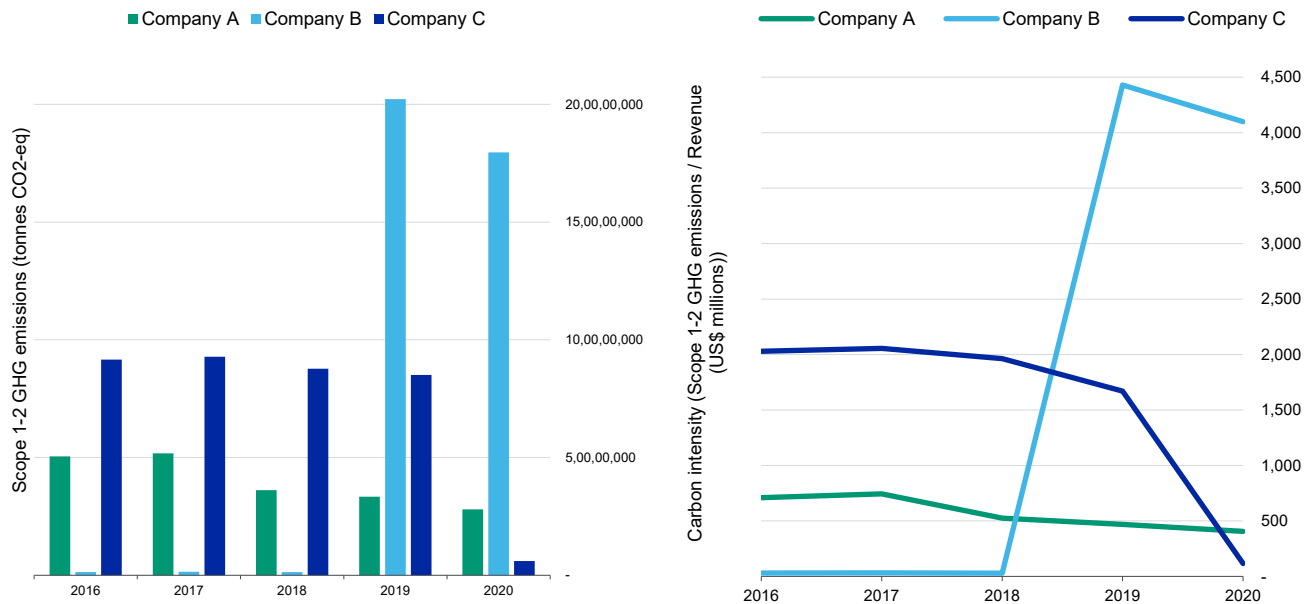
Banks have the opportunity to engage with sectors and lenders on how to decrease their GHG emissions while still having a viable business strategy. Banks can also offer green financing strategies to the most exposed sectors such as green retail loans, green mortgages and sustainability-linked lines of credit that link financing to sustainability strategies. Green financing strategies will likely decrease transition risk for banks and is also a tangible way for them to contribute to the low-carbon transition.

### Leveraging carbon intensity over time to inform company engagement

Banks can leverage different metrics at the sector and company level to identify trends to inform their investment and lending strategies as well as informing more granular due diligence on potential lending clients. For example, one metric is [carbon intensity which can be assessed based on the volume of operating emissions per the amount of sales or revenue generated](#). This approach normalizes GHG emissions of high Scope 1-2 emitting sectors and financial institutions. This is one of the most widely used carbon intensity metrics but has [limitations in practice for asset classes such as bonds](#), where different types of bonds use different GHG accounting mechanisms so comparability and double counting are concerns in carbon intensity metrics for different bonds. Another carbon intensity metric is physical carbon intensity, which banks use to perform sector-specific deep-dive analyses. It is measured in tonnes of CO<sub>2</sub>-eq per unit of production. Banks can use the change in businesses' carbon intensity over time to assess performance on decreasing GHG emissions in relation to increase in revenue, or business growth.

In this analysis we look at the carbon intensity for three companies in the electric & gas utilities sector based on operational emissions over revenue, to provide an example of the implications of using such derived metrics for portfolio decision-making. [The carbon intensity metric is used by a number of banks to differentiate between companies within a carbon intensive sector](#). The metric helps provide a jumping off point for engagement with companies, can be tracked over time to identify progress and [can be used as a way to link financing to sustainability in sustainability-linked products](#). It is important to note that the carbon intensity only tells a portion of the story for GHG emissions as it does not demonstrate a change in a company's GHG emissions accounting practices over time, absolute emissions changes, or a change in revenue, all of which could all affect the metric. It can also be volatile without a company-specific cause, as it has a broad range of drivers, such as shifting market prices. For example, if oil prices double, an oil company's carbon intensity could be cut in half without any changes from the company on its GHG emissions. Thus, rather than directly informing lending strategy, this metric can be used to identify companies that may warrant further investigation, either due to positive or negative trends in carbon intensity. Likewise, understanding its limitations and the different drivers of carbon intensity is essential for an analyst striving to make sense of different corporate reporting metrics and determine what a company's true emissions reduction pathway looks like.

**Figure 2** Scope 1-2 GHG emissions and carbon intensity for three companies among the top 10 revenue generating electric & gas utilities globally between 2016 – 2020.



Source: Moody's Corporation

Figure 2 shows the change in three companies' carbon intensities over a 5-year lookback period (on the right) in relation to Scope 1-2 GHG emissions (on the left) during the same period. Two of the three companies, Company B and Company C, demonstrated significant change in both carbon intensities and Scope 1-2 GHG emissions during this time period. Understanding what drives these jumps demonstrates how carbon intensity can serve as an entry point, guiding more thorough research that unpacks if a company's emissions are changing or if other factors are affecting its emissions to revenue ratio. Likewise, pairing GHG emissions data, with carbon intensity data further narrows down what may be driving patterns. In this analysis, the GHG emissions tracks closely to the carbon intensity, suggesting emissions may be the driving factor in carbon intensity shifts.

Further due diligence backs up this observation. For example, Company B experienced a change in carbon emission credit policy and emissions reporting when it changed its definitions of Scope 1 versus Scope 3 emissions for its 2019 reporting cycle. Previously, the company disclosed emissions in the form of physical emissions intensity and did not include emissions associated with purchased energy generation because the company is primarily a transmission company and not producing the total sum of energy within its operations. This GHG accounting practice changed in 2019, once the firm integrated the emissions of energy generation and energy transmission into its Scope 1-2 emissions disclosure practice instead of Scope 3. There was a significant jump of Scope 1-2 GHG emissions, from 1.4 million tonnes CO<sub>2</sub>-eq in 2018 to over 202 million tonnes CO<sub>2</sub>-eq in 2019. The associated change in carbon intensity is apparent in Figure 2.

Company C has a significant change in reported Scope 1-2 GHG emissions between 2019 and 2020, when the reported Scope 1-2 emissions fall from over 85 million tonnes CO<sub>2</sub>-eq in 2019 to just over 6 million tonnes CO<sub>2</sub>-eq in 2020. This is due to a corporate structure change in mid-2019 where the fuel and thermal generation business was transferred to an independent entity while the transmission and retail businesses and nuclear and renewable energy assets were retained by the company.

Company A, in contrast to Companies B and C, had a steady reduction in absolute GHG emissions from 51 million to 28 million tonnes CO<sub>2</sub>-eq while reducing its carbon intensity over the same time period from 709 to 406 tonnes CO<sub>2</sub>-eq/US\$ 1 million in revenue. Company A made a commitment in early 2018 to reduce CO<sub>2</sub> emissions by 40% compared to 2017 levels and aimed to meet 30 million tonnes CO<sub>2</sub>-eq by 2030, which was met in 2020. The company also had its GHG emissions reduction plan validated in December 2020 by the Science Based Targets Initiative ([SBTi](#)) with alignment to a well-below 2.0°C pathway. In this instance the steady reduction in carbon intensity is likely driven by this steady reduction in emissions.

Scope 1-2 GHG emissions reported from companies only can tell a portion of the story and gives banks an entry point to leverage further due diligence on potential clients. The dramatic swings, as observed in Figure 2, in a potential lender's carbon intensity and

GHG emissions over a short period can signal to banks an area of further due diligence and provide more granular insight than the data that may be reported. In this analysis some of the carbon intensity shifts were found to be largely driven by change in emissions accounting. However, in other cases if the GHG emissions remain constant, while the carbon intensity shows significant changes, this may direct an analyst to research potential drivers of revenue changes, such as price shifts, efficiency changes or others. Comparing GHG emissions over time alongside carbon intensity metrics helps to narrow down the drivers of observed trends.

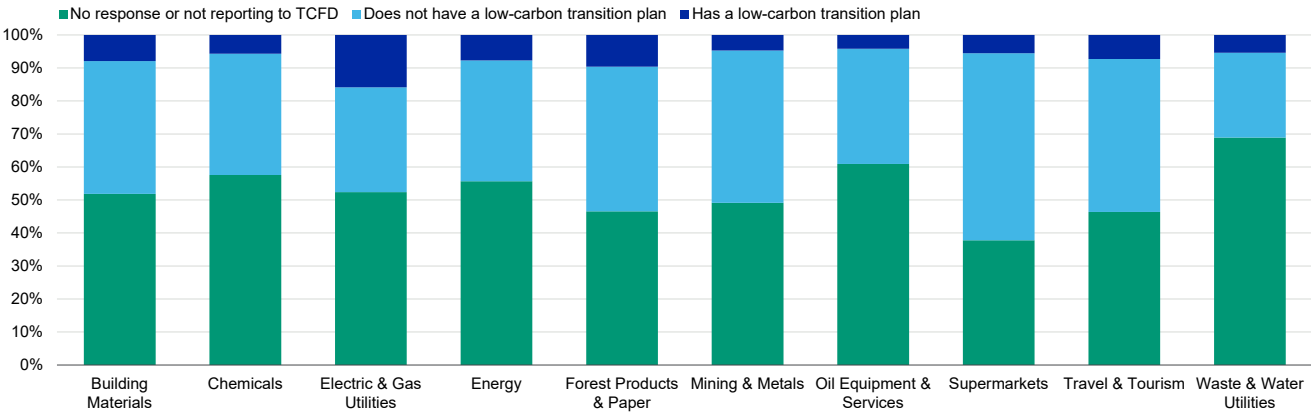
At a higher level, this analysis also demonstrates that companies are still exploring their methods of reporting GHG emissions, and these processes will likely continue to evolve, hopefully reaching greater consistency as reporting requirements become more standardized. As banks dig deeper into the reported GHG emissions data and changes over time they can assess potential transition risk and future engagement options such as thorough business model assessment, request for disclosure aligned with globally accepted GHG accounting frameworks or implementation of emission reduction targets and plans.

**Leveraging disclosures to understand counterparties' climate governance**

As climate-related disclosure continues to become more widespread, banks can leverage data from disclosures to dig further into companies' strategy, governance and management of transition risks. By combining information on a counterparty's emissions with information on whether or not it is managing this risk, banks can start to identify which counterparties may present the most concern and thus inform their due diligence and renewal processes. Data on companies' risk management, such as from their TCFD disclosures, provides invaluable information on how their potential risk exposure may or may not translate into material impacts.

Using the TCFD framework as an example, we use an indicator from [Moody's TCFD Strategy Assessment](#), which assesses how companies are disclosing in the line with the TCFD recommendations, to contextualize what heavy GHG emitting sectors are currently doing to lower their GHG emissions and carbon intensity. We assess which companies are disclosing a low-carbon transition plan. For sectors such as mining & metals with a high average carbon intensity, if individual companies have a low-carbon transition plan and demonstrate decreasing GHG emissions over time, this provides a signal to banks that the company is taking steps to address transition risks. In our analysis the electric and gas utilities sector has the highest percentage of companies disclosing the development of a low carbon transition plan (16%), while the oil equipment & services sector only has 4% of companies doing so. This is a lower percentage than our assessed universe, with 8% of the nearly 5,000 companies having disclosed development of a low-carbon transition plan. This demonstrates the significant need for improvement, which may present useful information for targeted engagement efforts by banks with their counterparties.

**Figure 3 Percent of companies within the ten highest GHG emitting sectors that report if a low-carbon transition plan is developed as part of their long-term business strategy**



Source: Moody's Corporation

Low-carbon transition plans can include a range of strategies such as setting GHG emissions reduction targets or larger fossil fuel dependent energy companies acquiring smaller renewable energy assets and retiring fossil fuel assets. Before banks can quantify their own portfolio emissions and implement emission reduction strategies, a key step is to engage with companies that have reportedly implemented a low-carbon transition strategy and to understand the associated GHG emissions reduction and business

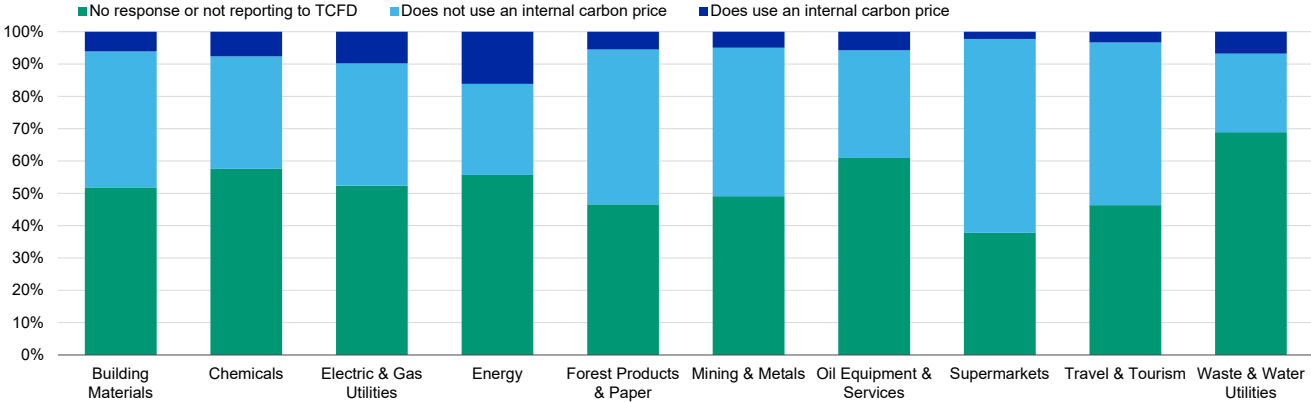


model impacts. Banks can benefit from a high-level understanding of which counterparties are already doing something to address their transition risks or embrace opportunities.

Another component of a risk management strategy is to preemptively introduce a carbon price.<sup>4</sup> The introduction of a carbon price proactively integrates an estimate of the potential financial cost of regulation aimed at reducing emissions. This is another indicator in our TCFD dataset that enables banks to conduct due diligence on heavy emitting sectors. [Carbon pricing can be calculated in various ways](#) by companies. An internal carbon price can be set by leveraging an externally published source, such as the [UK Green Book guidance or CDP Carbon Pricing Corridors](#), [internal setting of a carbon price for an internal tax](#) based on spending from reducing GHG emissions, or calculating a [social cost of carbon](#) that adds up quantifiable costs and benefits of emitting a tonne of CO<sub>2</sub>.

The implementation of an internal carbon price in heavy GHG emitting sectors such as building materials, chemicals and electric & gas utilities demonstrates knowledge of potential regulatory risks as well as active strategy to get ahead of such risks, although implementation details do vary across companies. In our database approximately 3% of all companies integrate an internal carbon price, but within the top ten heaviest GHG emitting sectors 8% of all assessed companies integrate an internal carbon price. Banks can leverage this knowledge by asking a company about appropriate prices of carbon and how it identified the one in use, as well as the potential financial materiality if an external policy were to be implemented. The introduction of an internal carbon price in capital asset intensive sectors allows for companies to prospectively account for an impending regulatory cost of carbon.

**Figure 4 Percent of companies within the ten highest GHG emitting sectors that report if they have an internal carbon price.**



Source: Moody's Corporation

Heavy GHG emitting companies are implementing analyses that incorporate a possible carbon price and could outweigh the financial benefits of projects including new coal plants, or products that require high energy input. Banks can leverage these cost benefit analyses to conduct their own financial analysis of a potential project's viability and impacts based on their own policies and assumptions for setting carbon prices. For example, asset intensive companies with a focus on transition risk can integrate the price of carbon into capital investment decisions for new projects and also for R&D projects looking into new products. Companies [recognizing and reporting on this potential scenario can proactively buy CO<sub>2</sub> offsets or invest in GHG reduction](#) projects and provide periodic updates to shareholders on expenses due to changing policy, which demonstrates engagement and willingness to mitigate potential transition risks. This type of analysis can be passed onto banks that companies solicit for financing and provide insight on how companies with high GHG emissions are factoring in potential risks related to the transition.

<sup>4</sup> There is a range of published carbon prices internationally with a median price of [\\$27/metric tonne of CO<sub>2</sub> in Europe while in Asia the median price is \\$18/metric tonne of CO<sub>2</sub>](#). Economists globally are unable to agree upon a universal price of carbon due to varying factors globally such as willingness to pay and perceived social cost of climate change, also the temporal dimension of the cost of emitting a unit of carbon and its longevity in the atmosphere.

## Conclusion

Banks are primarily exposed to transition risk and associated opportunities through their portfolios, which means there are layers of complexity when it comes to both assessing their transition risk and opportunities and implementing strategies to address them. There is growing focus on accurately accounting for banks' financed emissions, which requires both a comprehensive understanding of portfolio companies' emissions as well as detailed information on the financing. At the same time, banks also need to understand how those companies they are financing may face risks due to the transition, which may affect the viability of their loans. Leveraging data on companies' GHG emissions and their risk management provides an important first step from which banks can develop lending strategies that minimize their risk and embrace opportunities, as well as taking steps to determine their financed emissions.

## MEDIA CONTACT

**Kibui Pyron**

Vice President, Corporate  
Communications  
Sustainability and ESG  
[kibui.pyron@moody's.com](mailto:kibui.pyron@moody's.com)

© 2022 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$5,000,000. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody.com](http://www.moody.com) under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY100,000 to approximately JPY550,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.