CIBC Asset Management

April 2020

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

The Responsible Investing Working Group, made up of various members across CIBC Asset Management (CAM), identified the need to stress test CAM portfolios for climate change risks. We were motivated by the Principles for Responsible Investment (PRI) reporting on the Task Force on Climate-Related Financial Disclosures (TCFD) indicators, which states it is "increasingly important for investors to incorporate emerging mega risks such as climate change into their view of the future". A multidisciplinary and multifaceted group of equity and fixed income analysts on the CAM Investment Management Team formed an ad hoc committee to determine our approach and assumptions for the stress test.

The committee started by identifying risks and opportunities, both physical and transitional, related to the escalation of climate change (outlined below). We debated the potential impact and timeline of each of these changes for potential inclusion in a stress test. There were many differing opinions and views, which highlights the vast grey area and uncertainty related to the impact of climate change. In the end, we chose to focus on the most impactful and easily observable transitions for our inaugural stress test.

For stress testing purposes, the team made a series of assumptions including:

1. Governments will target a limit of **1.5 degrees warming by 2030**, aligned with the Paris Agreement.
2. A conversion of the vehicle fleet from those using **fossil fuel to electric vehicles (EVs)** will be the primary focus in achieving the target.
3. The **price of various commodities will fluctuate as a result** of this transition. We outline our assumptions related to oil, natural gas and copper prices in the next chart.

	Physical	Transitional
Risks	• Decline in oil demand • Rising insurance costs • Loss of real estate value • Trade disruption	• Capex and expenses required to transition • Valuation impact • Increased natural gas demand for electricity production
Opportunities	• Commodity scarcity • Renewable energy • EV charging infrastructure • Trade disruption	• Technological innovation • Increased investment • Valuation impact

Commodities

A shift to a lower-carbon-intensive economy will have a material impact on demand for a wide range of extractive industries. Copper will be a critical component in the production of green energy (i.e. high copper usage in electric vehicles, wind, solar etc.) and in the infrastructure involved in the transmission of the green energy to end users (the grid). Given the expected intensity of copper usage in a cleaner energy scenario, we expect that a significantly higher copper price will be required over time to support the economics around bringing new sources of mined supply into production. Depending on longer-term battery technology, other mined materials like nickel, cobalt, graphite and lithium will also be critical to a lower carbon energy sector. While lithium and graphite are fairly abundant, we see potential risks to copper, cobalt and nickel supply as green energy production accelerates.

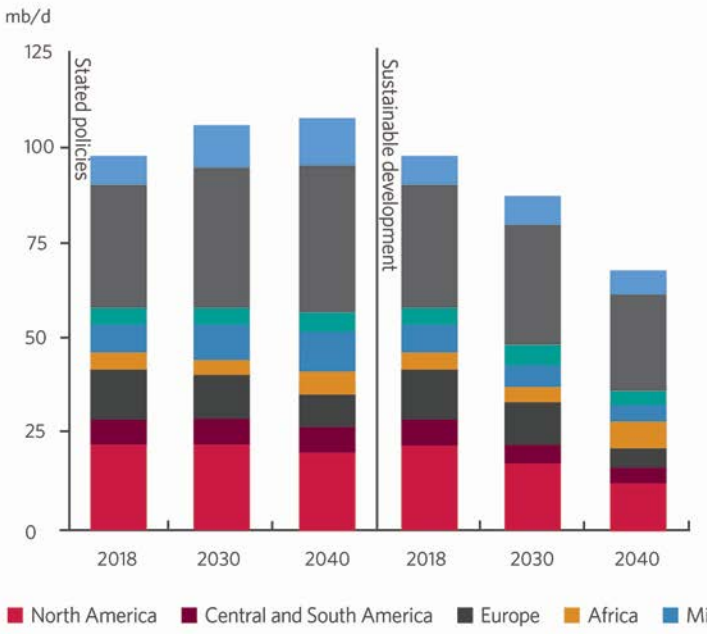
For the purposes of our stress test we focused on copper, as cobalt and nickel are not materially represented in CAM public securities holdings. Based on our assumption of 1.5 degrees warming by 2030, we estimate that copper demand would need to grow by 3-6% per year between now and 2030 to support this warming target. Complete decarbonization scenarios would require dramatic increases in copper supply to meet targets. We expect that the resulting copper demand implications mean copper will trade well out of the cost curve, to a price that provides a reasonable return to the next generation of copper projects.

Energy

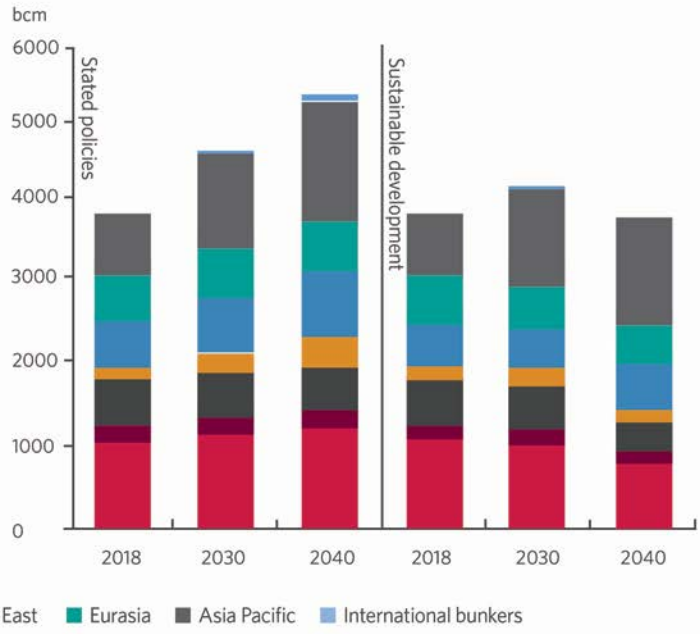
By 2040, the International Energy Agency (IEA) expects oil demand to fall to approximately 70 mm barrels per day under a sustainable development scenario, which will have a negative impact on the price of oil.

Natural gas demand is likely to increase faster than oil demand—natural gas is seen as a bridge fuel as we transition to a carbon-constrained economy; renewable energy can't be relied upon due to its intermittent nature. Natural gas, via liquified natural gas (LNG), will provide a cleaner power source for emerging market (EM) countries and should continue to take market share from coal. The IEA estimates natural gas demand will increase to 5500 billion cubic meters (bcm) by 2040 and grow at a faster pace than oil demand. In a 1.5 degree scenario, natural gas demand must fall as well, but demand growth is effectively flat from 2018 demand levels.

Oil demand by region and scenario, 2018-2040



Gas demand by region and scenario, 2018-2040



Source: IEA

Conclusions

Using the assumptions outlined above, CAM's risk team stress tested portfolios representing $94B of AUM as at November 30, 2019. The result was a modest decline in the value of AUM, as exposure to oil producers was offset by natural gas and copper exposure. Results were presented to the Responsible Investing Committee, which is composed of senior leaders of CAM, for further discussion.

We expect to sharpen our assumptions for next year's review of climate change risk to our portfolios, as well as augment the impact to broader investments. This could include assumptions and implications for greater climate related losses for the insurance industry, higher insurance premiums and loss of physical property for real estate, and various companies that will be exposed negatively or positively in a carbon-constrained world. We will attempt to identify issuers with material operations at risk of rising sea levels and coastal storm surges, including sovereign issuers. In addition, we will continue to refine our commodity price assumptions as we monitor penetration of EVs and possible government subsidies for EVs, which we believe would accelerate the conversion of the global fleet.