

Fossil fuel financing in Canada

Financial flows & balance sheet impacts

Gerard Rijk, Léa Pham Van, Ender Kaynar, Lennart van Loenen and Ward Warmerdam

27 July 2021

About this report

This report has been commissioned by Greenpeace Canada.

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Authorship

This report was researched and written by Gerard Rijk, Léa Pham Van, Ender Kaynar, Lennart van Loenen, and Ward Warmerdam, with contributions of Alaia Moreno and Mara Werkman. Correct citation of this document: Rijk, G., L. Pham Van, E. Kaynar, L. van Loenen and W. Warmerdam (2021, March), *Fossil fuel financing in Canada: Financial flows and balance sheet impacts*, Amsterdam, The Netherlands: Profundo.

Front page cover photograph by Chris LeBoutillier - Unsplash.

Acknowledgements

The authors would like to thank Alaia Moreno and Mara Werkman for their contributions.

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Preface from Greenpeace Canada

The finance sector's role in fuelling climate destruction is increasingly in the political spotlight and Canadian banks have a global impact.

For more than a century, Canada's big five banks have facilitated and profited from financing and investment in resource extraction. They have developed globally recognized expertise in financing oil & gas development, putting all of Canada's big five banks on the list of the top 25 global banks supporting fossil fuels.ⁱ This report details the significant financial support flowing from Royal Bank of Canada (RBC), Bank of Nova Scotia (Scotiabank), Canadian Imperial Bank of Commerce (CIBC), Toronto Dominion Bank (TD) and Bank of Montreal (BMO) to the fossil fuel industry globally. It also details such support provided by the Desjardins Group (DG), which plays an important economic role in Quebec.

Greenpeace Canada commissioned this research to quantify the financial support flowing from Canadian banks to fossil fuel companies around the world and their direct investments in the fossil fuel sector. In addition, methodologies for quantifying climate risk related to stranded assets is a new and developing field that will play an essential role in determining future legislation on climate-related risk disclosure and whether or not it is actually effective. This report is therefore also a contribution to ensuring any new regulations have teeth.

Some of the key findings of this research include:

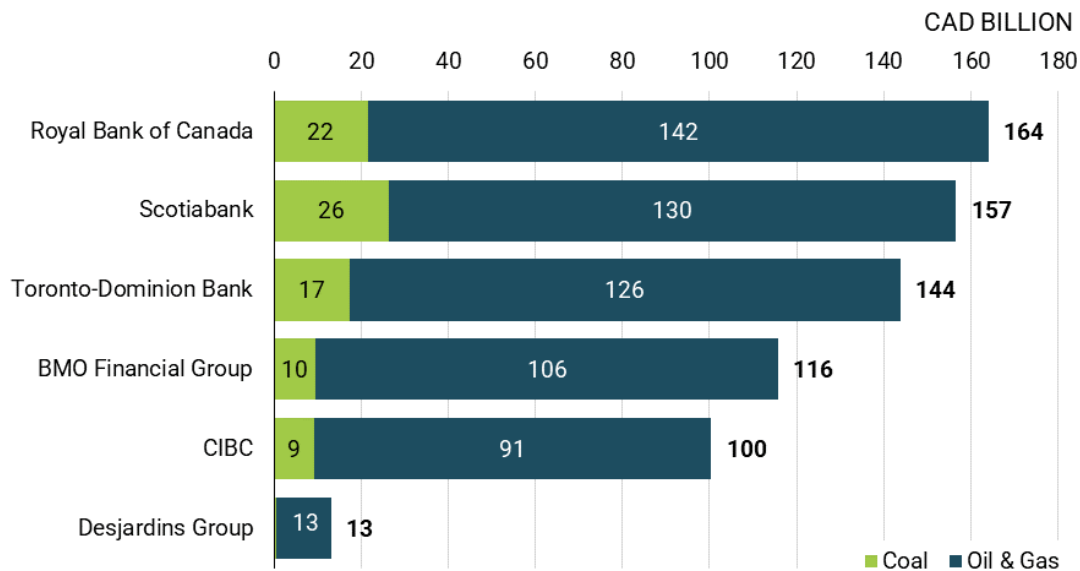
Canadian banks are funding climate destruction and undermining international climate commitments through the provision of CAD \$694 billion in loans and underwriting services to fossil fuel companies:

- Since the Paris Climate Agreement was signed in 2015, the six Canadian banks in this study have provided over \$694 billion to fossil fuel companies in the form of loans (\$477 billion) and underwriting services (\$216 billion). Over this same period, the federal government invested \$60 billion in climate action and clean growth.ⁱⁱ
- RBC is the largest financier of fossil fuels, followed by Scotiabank, TD, BMO, CIBC and then DG.
- The bulk of this (\$609 billion, or 88% of total) went to oil & gas companies. Coal companies received \$84.8 billion (12% of total). Enbridge was the largest recipient, followed by CNRL, TransCanada and Cenovus.

ⁱ Rainforest Action Network. *Banking on Climate Chaos 2021*. Available at <https://www.ran.org/bankingonclimatechaos2021/>

ⁱⁱ Government of Canada. *Background: Budget 2021 A Healthy Environment for a Healthy Economy* (April 19, 2021). Available at <https://www.canada.ca/en/departement-finance/news/2021/04/budget-2021-a-healthy-environment-for-a-healthy-economy.html>

Figure 1 Ranking of Canadian fossil fuel creditors (January 2016 – December 2020)

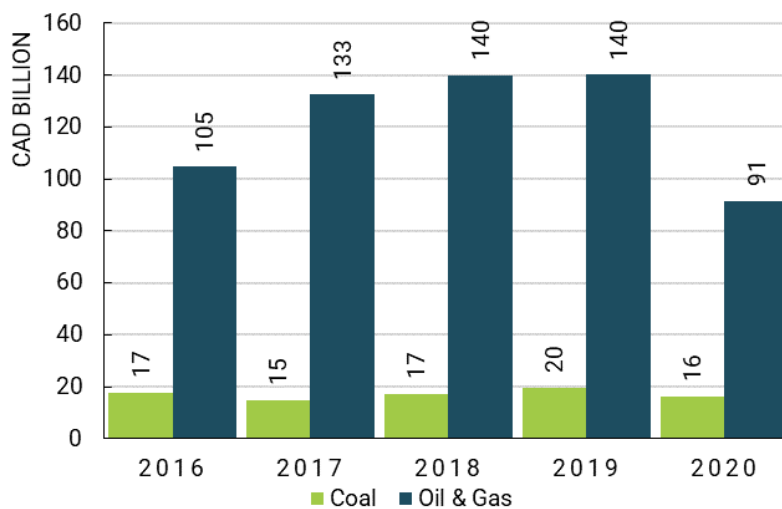


Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

Fossil fuel finance continued to rise after the Paris Climate Agreement was signed but fell in 2020 due to the pandemic.

- Fossil fuel financing by Canadian banks rose from \$122 billion in 2016 to \$160 billion in 2019, before dropping by 30% in 2020.
- DG’s fossil fuel finance peaked in 2017, while TD and RBC peaked in 2018. BMO, CIBC, and Scotiabank peaked in 2019.

Figure 2 Annual trends of Canadian fossil fuel credit (January 2016 – December 2020)

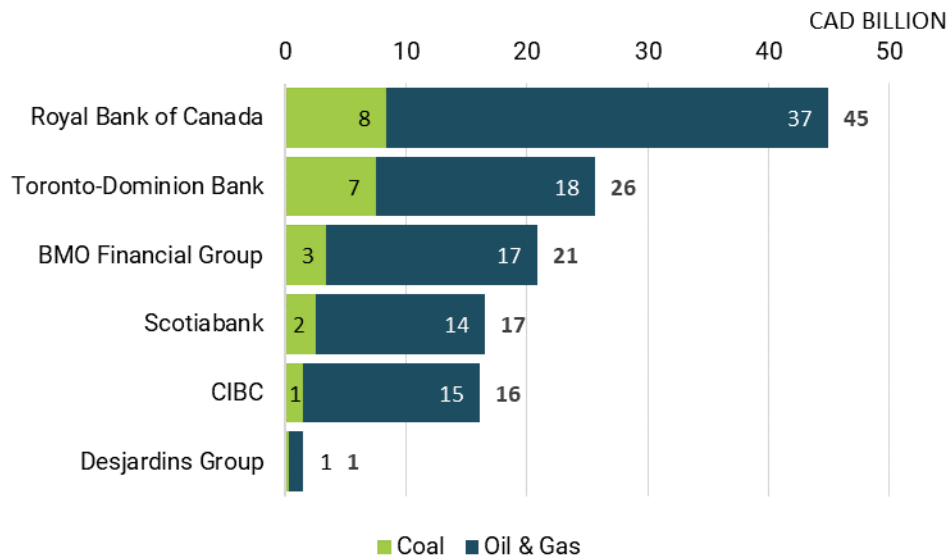


Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

These banks also hold more than one hundred billion dollars in fossil fuel shares, and their investments have been rising.

- The investment arms of the selected Canadian banks hold \$114 billion worth of shares and \$11.4 billion worth of bonds in fossil fuel companies.
- Except for TD, the banks’ total exposure to fossil fuel company shares has been rising since December 2015, including in 2020. TD’s exposure has been falling since 2017.

Figure 3 Investments per bank and fossil fuel category at most recent filing in Q4-2020



Source: Refinitiv (2021, February), Shareholdings: 31-12-2020, Bondholdings: latest filings

Canadian banks are more exposed to climate risk than they are telling investors.

- This analysis found that the banks are more highly exposed to losses from a decline in the value of fossil fuel companies than what they self-report (130 basis points on average in this analysis versus 57 basis points in their published materials).ⁱⁱⁱ
- The outstanding loans to oil & gas firms account for around half of the Common Equity Tier 1 Capital (a key indicator of financial stability) for BMO (54%), CIBC (49%) and Scotiabank (45%). Oil & gas loans are also significant for TD (35%) and RBC (29%) but less so for DG (13%).
- The exposure to the fossil fuel industry is even more significant, accounting for around 55-60% of Common Equity Tier 1 (CET 1) Capital for BMO, Scotiabank and CIBC; around 40% for TD and RBC; and 17% for DG.
- Based on their specific loan and investment portfolios, the banks most at risk in a 1.5-degree scenario are (in order of the impact on their CET 1 ratio): BMO, CIBC, Scotiabank, TD, and then RBC. DG is last, with much lower exposure to fossil fuels than the Big 5.
- While fossil fuel companies are major clients of Canadian banks, this relationship is not “too big to fail”. All of the banks currently have capital reserves roughly double what is required by regulators, so even in a 1.5-degree scenario the impact of the loan defaults by fossil fuel companies would not, on their own, put the banks in breach of those requirements.

ⁱⁱⁱ This report proposes a methodology for evaluating climate risk exposure that we hope will inform the rapidly evolving debate on mandatory climate risk reporting in Canada. We look forward to feedback from the sector on this approach.

- While likely significant, this report does not attempt to assess possible ripple effects, such as the impact on mortgage default loans in oil-producing provinces if major oil & gas companies go bankrupt in the absence of just transition policies.

The federal government must change the rules governing banks and climate change

- This data in this research shows that Canadian banks have been increasing their exposure to fossil fuels, even while issuing public statements about concern for climate change.
- As Greenpeace Canada argued in our submission to the federal bank regulator, mandatory disclosure of climate risk using transparent methodologies is an important - but insufficient - tool for shifting our financial system onto a sustainable track. The federal government must replace the market-driven, risk-management approach to financial policy and supervision with a precautionary, market-shaping approach.^{iv}

Behind these numbers, however, is a complicated history. The data in this report should be understood in the context of Canada’s colonial history and the extractivist mindset it has entrenched within our governing institutions and elites. One of the many legacies of colonialism lies in how Canada’s economy has been shaped by resource extraction from the time of the fur trade and through the fish, lumber, wheat, and mining booms. This history has also shaped the white settler relationship with the Indigenous peoples who inhabited this land, and to whom we owe a duty of reconciliation.

That history is ongoing. The dominant form of resource extraction in recent decades has been oil & gas, which is currently Canada’s largest export. Extracting that oil & gas is also our largest, and fastest rising, source of the greenhouse gases that cause climate change. This has been done in contravention of treaty obligations and without the free, prior and informed consent of Indigenous communities.

This isn’t a purely economic relationship. Oil & gas is, in the words of CIBC CEO Victor Dodig, Canada’s “family business.”^v The oil lobby and its enablers have enormous political influence and have wielded that power to prevent or delay action to address the climate crisis.^{vi} This deep-rooted political, cultural, and economic attachment to oil & gas extraction likely contributes to the Canadian financial sector’s relative blindness to the risks posed by fossil fuel finance detailed in this report.

^{iv} Greenpeace Canada. *A precautionary approach to climate risk in financial policy and supervision: Greenpeace Canada submission to the Office of the Superintendent of Financial Institutions consultation on promoting preparedness and resilience to climate-related risks* (April 2021). Available at <https://www.greenpeace.org/static/planet4-canada-stateless/2021/07/66675875-gpca-submission-to-osfi-april-2021.pdf>

^v Canadian Press (November 1, 2019). “Energy is Canada’s ‘family business,’ benefiting all Canadians, says CIBC CEO.” Available at <https://www.ctvnews.ca/business/energy-is-canada-s-family-business-benefiting-all-canadians-says-cibc-ceo-1.4666724>

^{vi} For details, see The Corporate Mapping Project’s database, available at <https://www.corporatemapping.ca/database/>

Summary

This research seeks to identify and quantify financial flows (loans, underwriting services and equity investments) from six Canadian banks to the fossil fuel sector since the Paris Climate Agreement was signed in December 2015. It also evaluates the financial impact on the six banks from their exposure to fossil fuels in a scenario where the world successfully limits global warming to 1.5 degrees Celsius (1.5°C), with a resulting loss in value for fossil fuel assets.

- **Financial flows**

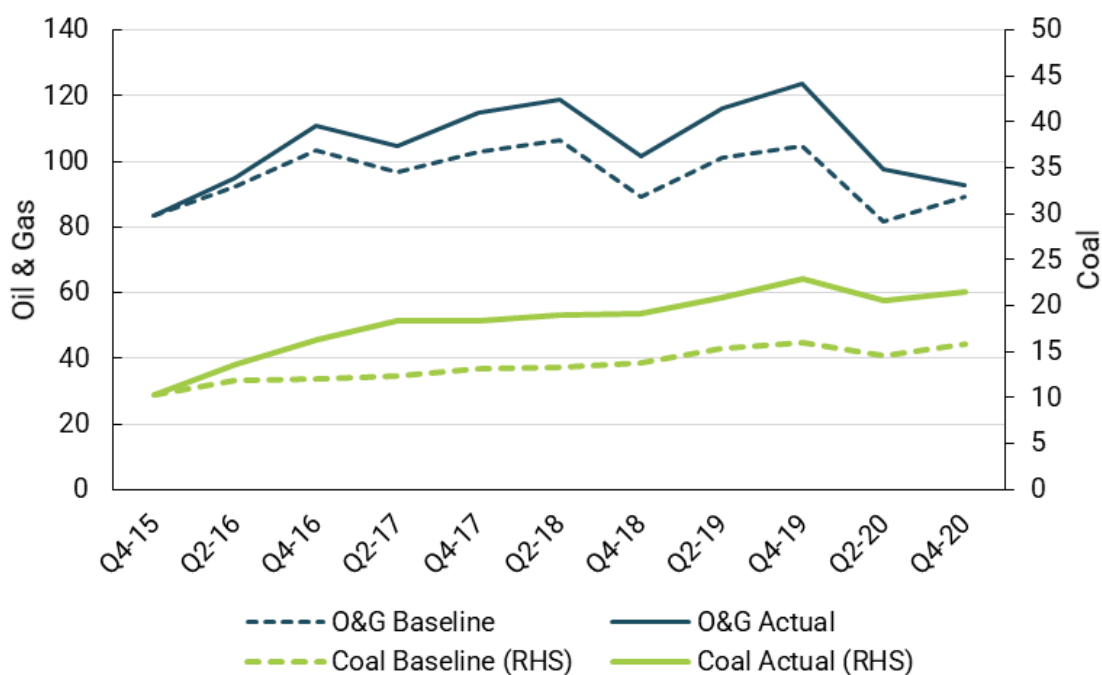
Canadian Banks have provided at least CAD 694 billion to companies active in the fossil fuels sector since the signing of the Paris Agreement in December 2015.

Financial flows towards the fossil fuels sector from Canadian banks even saw a 20% year-over-year increase in 2017, driven by increased lending to the oil & gas sector. However, after three years of steady flows, credit towards fossil fuel companies dropped 30% in 2020, due to the demand and price impact of COVID-19 on the sector.

Among the Canadian Banks in this study, Royal Bank of Canada (RBC), Bank of Nova Scotia (Scotiabank), and Toronto Dominion Bank (TD) were the Top-3 largest financiers of the fossil fuels sector, providing CAD 164 billion, CAD 157 billion and CAD 144 billion, respectively, to coal and oil & gas companies.

The investment arms of the selected Canadian banks held CAD 114 billion worth of shares and CAD 11.4 billion worth of bonds in fossil fuel companies as of the most recent filings on 31 December 2020. The aggregated data of all selected banks implies that they are still increasing their investments in fossil fuels and that investments in coal companies are increasing at an even higher pace than overall in fossil fuels (see Figure 4, where the baseline indicates what would happen to the total value of shares held if no new shares were bought or sold).

Figure 4 Momentum analysis of Canadian fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020

- **Financial impact**

This study evaluates the exposure of the Canadian financial institutions to the fossil fuel industry, with a focus on the oil & gas sector, through the loans they provide and the investments they make.

The Paris UN Climate Conference in 2015 (Conference of the Parties, or COP 21) agreed to limit global temperature increase to 1.5°C versus pre-industrial levels. Nationally Determined Contributions (NDCs) represent pledges by individual countries to reduce national emissions, impacting also relevant industries. The fossil fuel sector will be affected from two sides. Firstly, the fossil fuel industry will need to reduce emissions in its processes (scope 1 and 2) and in its supply chains (scope 3). Secondly, the fossil fuel industry will be confronted with declining demand for oil, gas and coal and potential supply-side regulations such as a moratorium on Arctic drilling, fracking bans, or other restrictions on the development of new fossil fuel projects.

These impacts create a risk of stranded assets, as coal, oil or gas reserves that are listed as corporate assets cannot be developed and sold. As the value of these stranded assets decline, fossil fuel companies might not be able to repay their debts. In this way, the stability of the financial system in some countries might be impacted by regulations to achieve 1.5°C and by market consequences of 1.5°C. It is important to note that while it is not the focus of this research, the stability of the financial system is also threatened by the greater physical impacts associated with higher levels of global warming.

The financial analysis of the selected Canadian financial institutions conducted in this research indicates solid financial stability in a business-as-usual scenario (i.e. without the impact on fossil fuel companies of policies designed to achieve a 1.5°C scenario), though this disregards the much larger costs to the broader economy of failing to limit greenhouse gas emissions (e.g. more extreme weather, rising seas, etc.). The banks' current equity and capital ratios, including the Common Equity Tier 1 (CET 1) Ratio which measures the bank's solvency, stand well above the levels required by the regulator, which implies relatively safe capitalization and solvency.

In evaluating the exposure of the Canadian financial institutions to the fossil fuel industry, this analysis consulted different sources, namely the reports published by the banks, and the financing research completed internally using the Refinitiv and IJGlobal databases. Most of the exposure is linked to the provision of loans, as they account on average for around half of the balance sheets' total assets.

Loans granted to the oil & gas sector, and more broadly to the fossil fuel industry, are significant and represent a high proportion of the CET 1 Capital. On average, loans and acceptances to the fossil fuel industry, as published by the banks, represent 40% of the CET 1 Capital of the banks. Outstanding loans to the fossil fuel industry, as calculated in the financing research, account for 44% of the CET 1 Capital on average.

In a 1.5°C scenario, fossil fuel companies lose a significant portion of their value. The majority of these losses would be absorbed by their shareholders and less by banks. If banks would continue to finance fossil fuel for many years to come, then applied modelling shows that fossil fuel companies could be unable to repay 23% of their loans to Canadian banks.

Canadian financial institutions maintain regulatory capital ratio far above the level required by regulation, so even the 23% loss in value of fossil fuel loans in a 1.5°C scenario does not put them at risk. Based on the banks' own categorization of oil & gas loans, the CET 1 Ratio of 13.8% in the base case would decline to 13.2%. Based on the identified loan methodology from Profundo, the stress test of a 23% loan value decline from the fossil fuel industry leads to an average CET 1 ratio of 12.5%, versus an average 13.8% reported at the latest reporting date. Of the six financial institutions, Bank of Montréal, Bank of Nova Scotia and CIBC are most impacted in a 1.5°C scenario, as their CET 1 Capital Ratio is the most affected.

The report is organized as follows: Chapter 1 presents the findings of the financial flows research. The financial impact assessments are introduced in Chapter 2. Finally, Chapter 3 assesses the balance sheet impacts of various scenarios of continued exposure to the fossil fuel by Canadian financial institutions.

1

Financial flows

Canadian Banks have provided at least CAD 694 billion to companies active in the fossil fuels sector since the signing of the Paris Agreement in December 2015. The investment arms of the selected Canadian Banks held CAD 114 billion worth of shares in fossil fuel companies according to most recent filings as of 31 December 2020. The aggregated data of all selected banks implies that they are still increasing their investments in fossil fuels, with the relative pace being highest in coal companies.

1.1 Research methodology

This section presents the methodology used to identify the financial flows in the period 2016-2020 from six Canadian financial institutions to companies engaged in fossil fuels, that is since the Paris Climate Agreement at the end of 2015.

This section is organized as follows: section 1.1.1 lists the financial institutions included in the scope of this study; section 1.1.2 presents the sectors that are considered in this research; section 1.1.3 describes the types of financing included within the scope of this research; section 1.1.4 details the methodology used to calculate financial contributions of financial institutions where these are not listed in the financial databases; section 1.1.5 lists the data sources used for the financial research; and finally, section 1.1.6 sets out the timeframe of this research.

1.1.1 Selected Canadian financial institutions

This study researched the financial relationships with the fossil fuel sectors of the following 6 Canadian financial institutions:

- Bank of Montreal Financial Group (BMO)
- Bank of Nova Scotia (Scotiabank)
- Canadian Imperial Bank of Commerce (CIBC)
- Desjardins Group (DG)
- Royal Bank of Canada (RBC)
- Toronto-Dominion Bank (TD)

1.1.2 Sectors in scope

This research screened the syndicated financing to, and bond and shareholdings of, the Canadian financial institutions in the following sectors as defined by The Refinitiv Business Classification (TRBC) industry groups:

- Coal (501010)
- Electric Utilities (excluding pure renewable energy and hydro power companies. Global Coal Exit List was used as a reference to exclude non-fossil fuel-related companies) (591010)
- Metals & Mining (only companies also on the Global Coal Exit List) (512010)
- Multiline Utilities (591040)
- Natural Gas Utilities (591020)
- Oil & Gas (501020)
- Oil & Gas Related Equipment and Services (501030)

1.1.3 Types of financing

The banks financing companies engaged can be involved through two types of financing: credit and investment. When financial institutions provide credit, it can be through loans or the underwriting of share and/or bond issuances. Investment, on the other hand, is when financial institutions invest in the equity and debt of a company by holding shares and/or bonds. This section outlines the different types of financing, how they were researched and the implications for the study.

- **Loans**

The easiest way to obtain debt is to borrow money. In most cases, money is borrowed from commercial banks. Loans can be either short-term or long-term in nature. Short-term loans (e.g. trade credits, current accounts, leasing agreements) have a maturity of less than a year. They are mostly used as working capital for day-to-day operations. Short-term debts are often provided by a single commercial bank, which does not ask for substantial guarantees from the company.

A long-term loan has a maturity of at least one year, but more often of three to ten years. Long-term corporate loans are particularly useful to finance expansion plans, which only generate rewards after a certain period of time. The proceeds of corporate loans can be used for all activities of the company. Long-term loans are frequently extended by a loan syndicate, which is a group of banks brought together by one or more arranging banks. The loan syndicate will only undersign the loan agreement if the company can provide certain guarantees that interest and repayments on the loan will be fulfilled. Corporate loans are often used as project finance (a loan that is earmarked for a specific project) or as general corporate purposes or working capital. Sometimes, a loan's use of proceeds is reported as general corporate purposes when it will be used for a certain project. In practice, as disclosures are not fully transparent it can be difficult to ascertain what loans described as "for general corporate purposes" are actually funding.

Moreover, another type of loan is a revolving credit facility. A revolving credit facility provides a company with an option to take up a loan from a bank (or more often: a banking syndicate) when it has an urgent financing need. It is similar to a credit card. Companies can use the revolving facility up to a certain limit, but they do not have to. Revolving credits are often concluded for a five-year period and then renewed, but many companies renegotiate their revolving credit facility every year with the same banking syndicate. Amounts, interest rates, fees and participating banks can change slightly every year. As the financial press often reports these renegotiations for larger companies, this might raise the impression that banks are lending huge sums of money to the same company every year. But: this concerns renegotiations of basically the same facility and a revolving credit facility is hardly ever actually called upon for a loan. Within the scope of this research revolving credit facilities are counted for every time that they are renewed.

Although revolving credit facilities are not always fully called upon, the syndicate of banks providing the facility do have the obligation to provide the entire amount of money when the company asks for it. Therefore, even if the company ends up never using the facility, the banks were still involved with the company during the period of the revolving credit facility and would have provided the company with the money when they asked for it.

- **Share issuances**

Issuing shares on the stock exchange gives a company the opportunity to increase its equity by attracting a large number of new shareholders or to increase the equity from its existing shareholders.

When a company offers its shares on the stock exchange for the first time, this is called an Initial Public Offering (IPO). When a company's shares are already traded on the stock exchange, this is called a secondary offering of additional shares. To arrange an IPO or a secondary offering, a company needs the assistance of one or more (investment) banks, which will promote the shares and find shareholders. The role of investment banks in this process is therefore very important.

The role of the investment bank is temporary. The investment bank purchases the shares initially and then promotes the shares and finds shareholders. When all issued shares that the financial institution has underwritten are sold, they are no longer included in the balance sheet or the portfolio of the financial institution. Nevertheless, the assistance provided by financial institutions to companies in share issuances is crucial. They provide the company with access to capital markets and provide a guarantee that shares will be bought at a pre-determined minimum price.

- **Bond issuances**

Issuing bonds can best be described as cutting a large loan into small pieces and selling each piece separately. Bonds are issued on a large scale by governments, but also by corporations. Like shares, bonds are traded on the stock exchange. To issue bonds, a company needs the assistance of one or more (investment) banks which underwrite a certain amount of the bonds. Underwriting is in effect buying with the intention of selling to investors. Still, in case the investment bank fails to sell all bonds it has underwritten, it will end up owning the bonds.

- **(Managing) shareholdings**

Institutional investors, such as banks, insurance companies, pension funds and asset managers, can, through the funds they are managing, buy shares of a certain company making them part-owners of the company. This gives the bank a direct influence on the company's strategy. The magnitude of this influence depends on the size of the shareholding.

As financial institutions actively decide in which sectors and companies to invest, and are able to influence the company's business strategy, this research will investigate the shareholdings of financial institutions of the selected companies. Shareholdings are only relevant for stock listed companies. Not all companies in the study are listed on a stock exchange.

Shareholdings have a number of peculiarities that have implications for the research strategy. Firstly, shares can be bought and sold on the stock exchange from one moment to the next. Financial databases keep track of shareholdings through snapshots, or filings. This means that when a particular shareholding is recorded in the financial database, the actual holding, or a portion of it, might have been sold, or more shares purchased. Secondly, share prices vary from one moment to the next.

- **(Managing) investments in bonds**

Institutional investors can also buy bonds of a certain company. The main difference between owning shares and bonds is that the owner of a bond is not a co-owner of the issuing company; the owner is a creditor of the company. The buyer of each bond is entitled to repayment after a certain number of years, and to a certain interest during each of these years.

Similar to shares, bonds can be bought and sold from one moment to the next. Bondholdings are also reported by the holding investor through regular filings. However, historical filings are not kept within the financial databases; only the most recent bondholding information is available.

1.1.4 Financial institution financing contributions

The financial databases do not always include details on the levels of individual financial institutions' contribution to a deal. Individual bank's contributions to syndicated loans and underwriting were recorded to the largest extent possible where these details were included in the financial databases. In many cases, the total value of a loan or issuance is known, as well as the number of banks that participate in this loan or issuance. However, the amount that each individual bank commits to the loan or issuance must be estimated. This research uses a two-step method to calculate this amount.

The proportion of fees received (e.g. Bank A received 10% of all fees) was applied to the known total deal value to determine the amount loaned (e.g. 10% x total loan of US\$ 10 million = US\$ 1 million for Bank A).

Where deal fee data was missing or incomplete, this research used the bookrunner ratio (bookratio). The bookratio (see formula below) is used to determine the spread over bookrunners and other managers.

$$\text{Bookratio: } \frac{\text{number of participants} - \text{number of bookrunners}}{\text{number of bookrunners}}$$

Table 1 shows the commitment assigned to book runner groups with this estimation method. When the number of total participants in relation to the number of bookrunners increases, the share that is attributed to bookrunners decreases. This prevents very large differences in amounts attributed to book runners and other participants.

Table 1 Commitment assigned to book runner groups

Bookratio	Loans	Issuances
> 1/3	75%	75%
> 2/3	60%	75%
> 1.5	40%	75%
> 3.0	< 40%*	< 75%*

* In case of deals with a bookratio of more than 3.0, we use a formula which gradually lowers the commitment assigned to the bookrunners as the bookratio increases. The formula used for this:

$$\frac{1}{\frac{\sqrt{\text{bookratio}}}{1.443375673}}$$

The number in the denominator is used to let the formula start at 40% in case of a bookratio of 3.0. As the bookratio increases the formula will go down from 40%. In case of issuances the number in the denominator is 0.769800358.

1.1.5 Data sources

The financial research was based primarily on Refinitiv (formerly known as Thomson Reuters EIKON) to retrieve the syndicated financing portfolio of the selected financial institutions, and their bond- and shareholdings. Additionally, project finance was researched using IJGlobal. Only deals not already identified through Refinitiv were added. Bilateral lending is not included in this research.

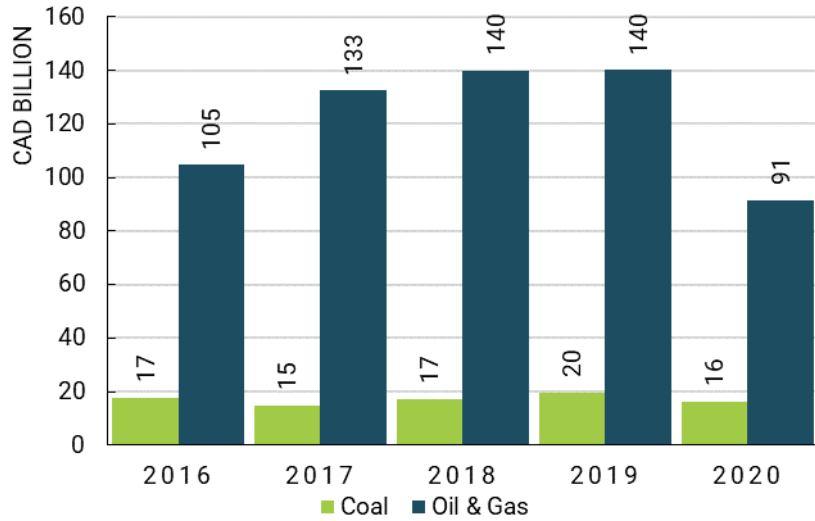
1.1.6 Timeframe

Different time periods were used for the different financing types. For shareholdings, the last filings at two reporting dates – 31 December 2015 and 31 December 2020 – were retrieved. Bondholdings were retrieved based on the most recent filings at the time of the research as no historical bondholding data is available. For loans, bond and share issuances all deals to the relevant sectors by the Canadian banks from January 1, 2016, to December 31, 2020, were included.

1.2 Creditor analysis

The six Canadian banks included in this analysis have provided at least CAD 694 billion to companies active in the fossil fuels sector since the signing of the Paris Agreement in December 2015. Companies engaged in coal received CAD 84.8 billion (12% of total), and CAD 609 billion (88% of total) was provided to the oil & gas sector in the form of loans and underwriting services.

Figure 5 Annual trends of Canadian fossil fuel credit (January 2016 – December 2020)

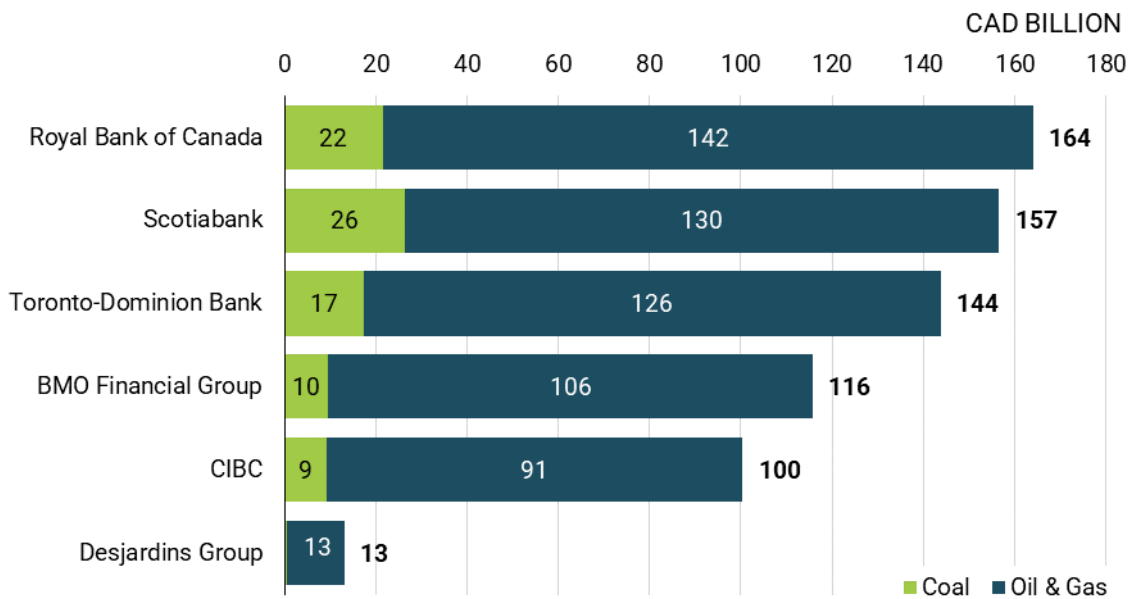


Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

Financial flows from Canadian banks towards the fossil fuels sector even saw an increase of 20% year-over-year in 2017, driven by increased lending to the oil & gas sector. However, after three years of steady flows, credit towards fossil fuel companies dropped by 33% in 2020, due to the demand and price impact of COVID-19 on the sector.

Among the Canadian banks in this study, RBC, Scotiabank and TD were the top-3 largest financiers of the fossil fuels sectors, providing CAD 164 billion, CAD 157 billion and CAD 144 billion, respectively, to coal and oil & gas companies.

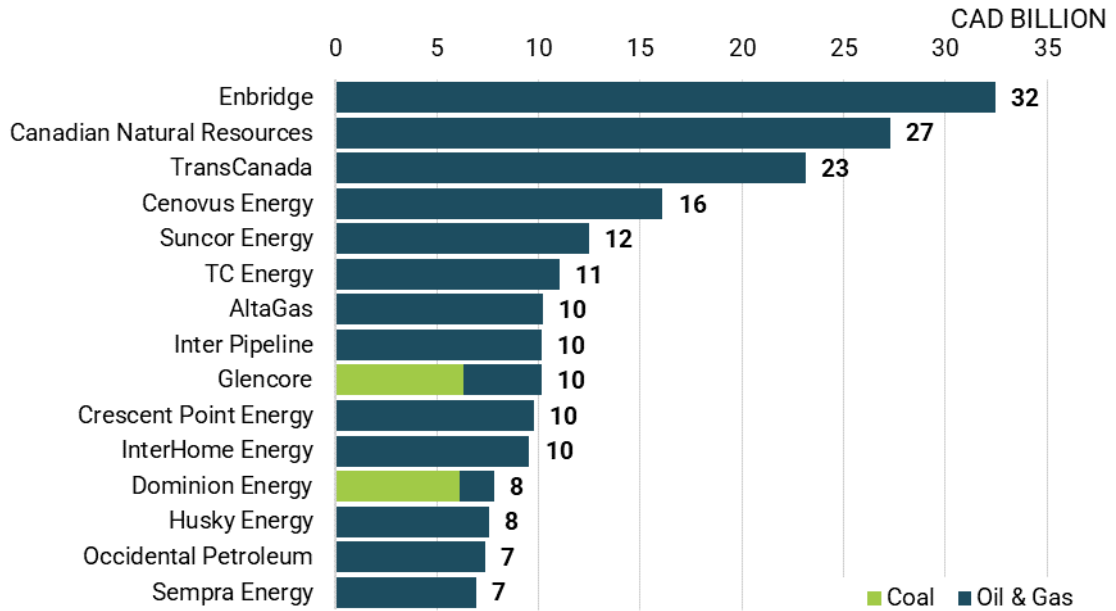
Figure 6 Ranking of Canadian fossil fuel creditors (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

Receiving 29% of the total identified credit, the top-15 fossil fuel clients of Canadian banks accounted for CAD 202 billion in loans and underwriting. Enbridge was the largest client with CAD 32.5 billion, followed by Canadian Natural Resources with CAD 27.3 billion, and TransCanada with CAD 23.1 billion of financing.

Figure 7 Top-15 Canadian fossil fuel credit clients (January 2016 – December 2020)

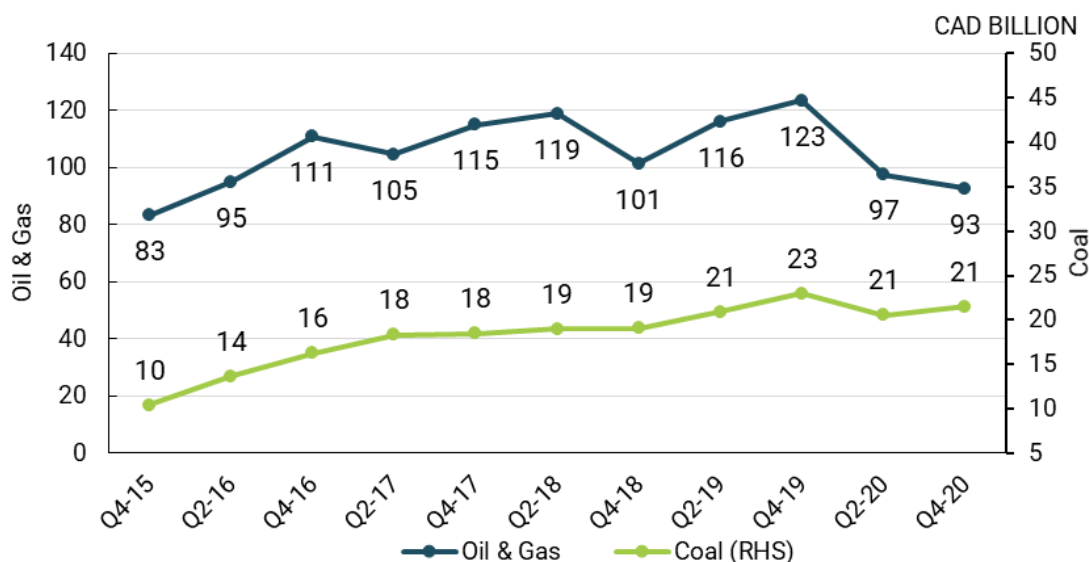


Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

1.3 Investor analysis

The investment arms of the selected Canadian banks held CAD 114 billion worth of shares in fossil fuel companies according to most recent filings as of 31 December 2020. Similar to the impact observed in credit flows, shareholding values were also negatively affected by the COVID-19 pandemic, especially in the first half of 2020 when the total value of shareholdings fell by 20%.

Figure 8 Quarterly analysis of Canadian fossil fuel shareholdings

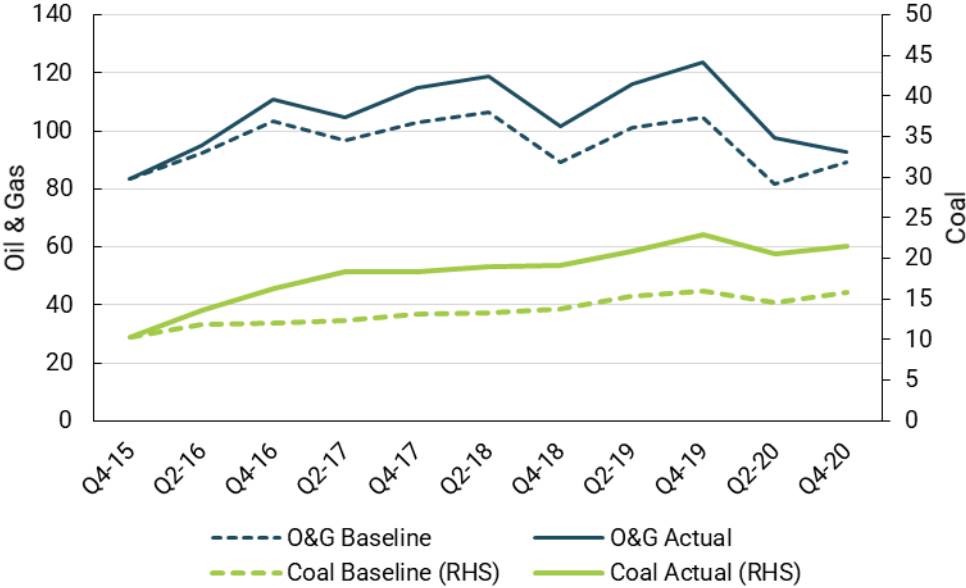


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The momentum analysis shown on Figure 9 compares the share investments of Canadian Banks with a baseline, representing a scenario of no new purchases or sales of shares. The aggregated data of all selected banks implies that they are still increasing the number of shares they hold in fossil fuel companies and that the number of shares held in coal companies is increasing at a relatively higher pace than overall fossil fuels.

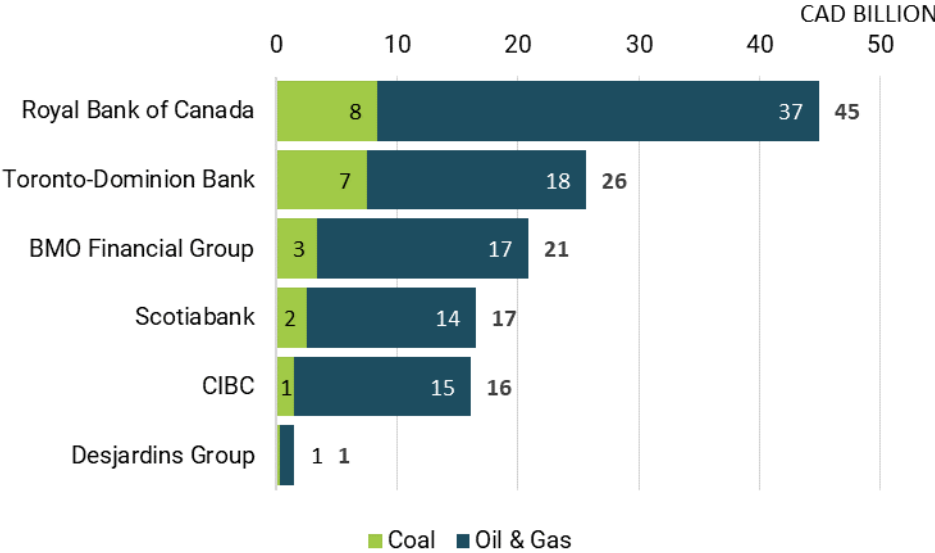
The value of Canadian banks' shareholdings in coal companies increased by 107% in the past 5 years vs. 53% growth of the starting baseline, while the absolute value at the end of 2020 was CAD 21.5 billion, implying CAD 5.6 billion of additional cumulative investments in coal companies since the Paris Agreement in December 2015. On the other hand, oil & gas sector investments steadily increased to 120% of the baseline until June 2020, after which the gap between the actual value and the baseline shrunk to just CAD 3.3 billion, possibly due to divestments by the banks.

Figure 9 Momentum analysis of Canadian fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 10 Investments per bank and fossil fuel category at most recent filing in Q4-2020

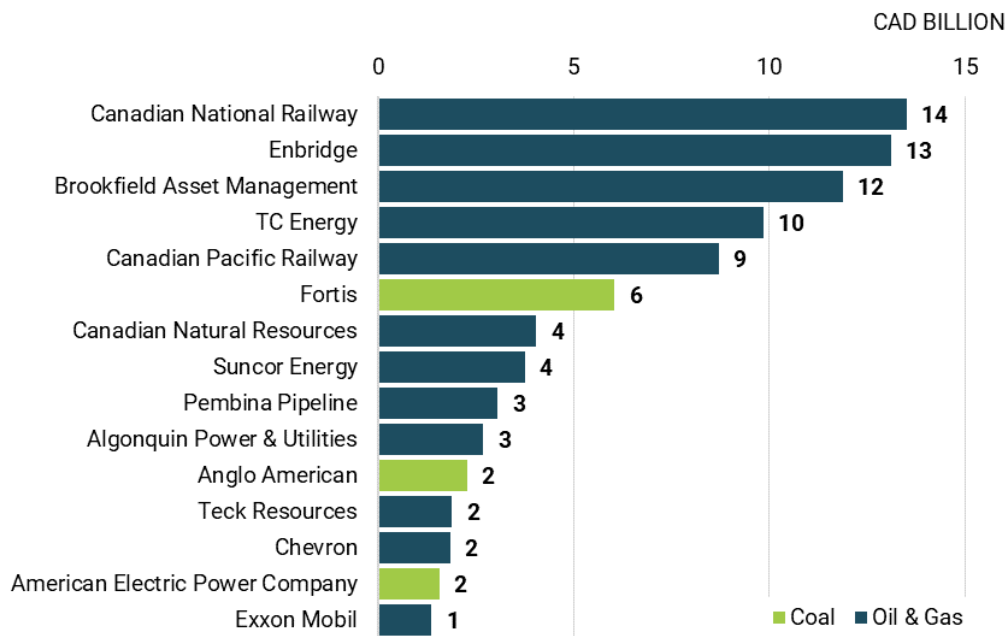


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020, Bondholdings: latest filings.

RBC had the highest investment position in Q4-2020, with CAD 8 billion in coal and CAD 37 billion invested in oil & gas companies in the form of shareholdings and bondholdings. Toronto-Dominion Bank and BMO Financial Group followed with CAD 25.6 billion and CAD 20.9 billion investments, respectively.

Canadian National Railway (which ships an average of 45 million tonnes of coal annually and is also a major oil-by-rail shipper) was the largest recipient of investments with CAD 13.5 billion, followed by Enbridge with CAD 13.1 billion and Brookfield Asset Management with CAD 11.9 billion (Figure 11).

Figure 11 Top-15 Canadian fossil fuel investee companies at most recent filing in Q4-2020



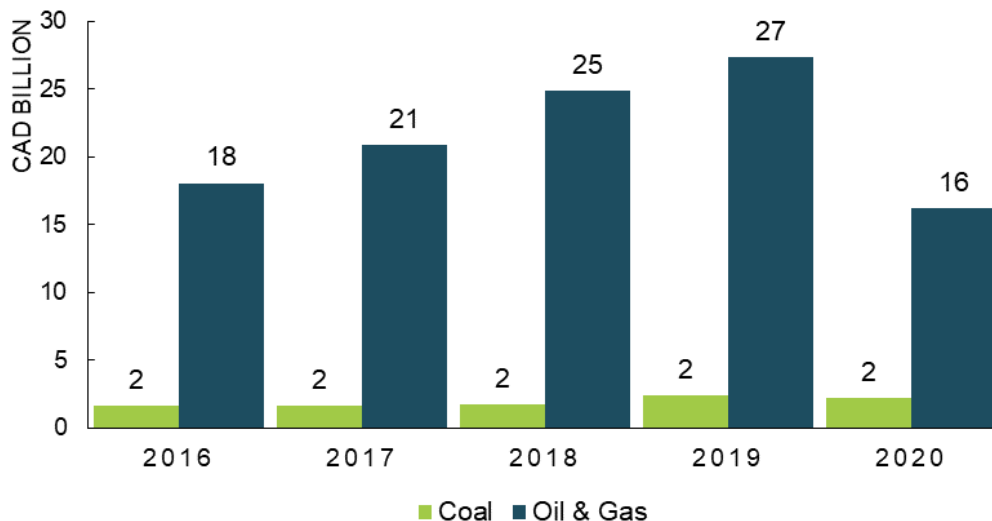
Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4 Findings per bank

1.4.1 BMO Financial Group

BMO has provided CAD 9.6 billion to coal and CAD 106.2 billion to oil & gas companies since 2016, bringing the total to CAD 115.8 billion. Annual credit flows to coal companies averaged CAD 1.9 billion in the last five years while flows to the oil & gas sector trended up between 2016 and 2019 from CAD 18.0 billion to CAD 26.9 billion. Similar to the other banks, financing flows to oil & gas declined sharply in 2020 by around 40% year-over-year (Figure 12).

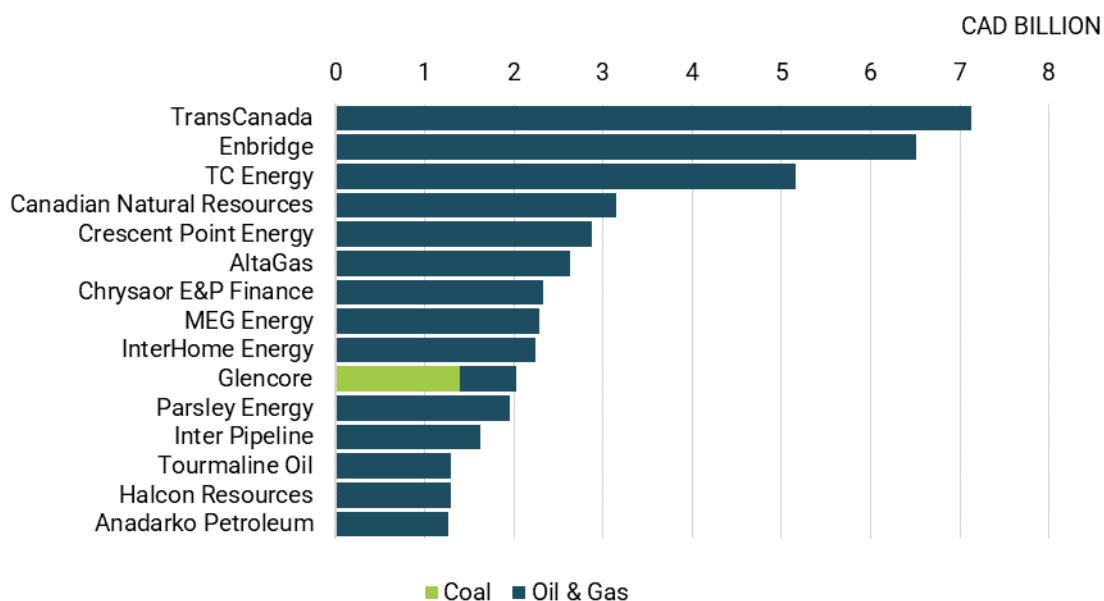
Figure 12 Annual trends of BMO Financial Group fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

The largest fossil fuel client of BMO was TransCanada with CAD 7.1 billion of financing, followed by Enbridge with CAD 6.5 billion and TC Energy with CAD 5.2 billion (Figure 13).

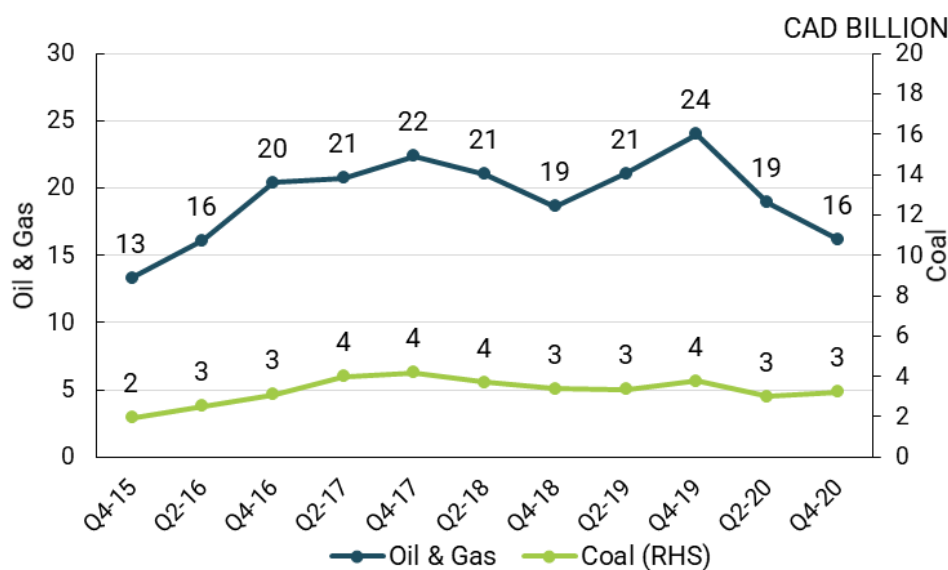
Figure 13 Top-15 BMO Financial Group fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

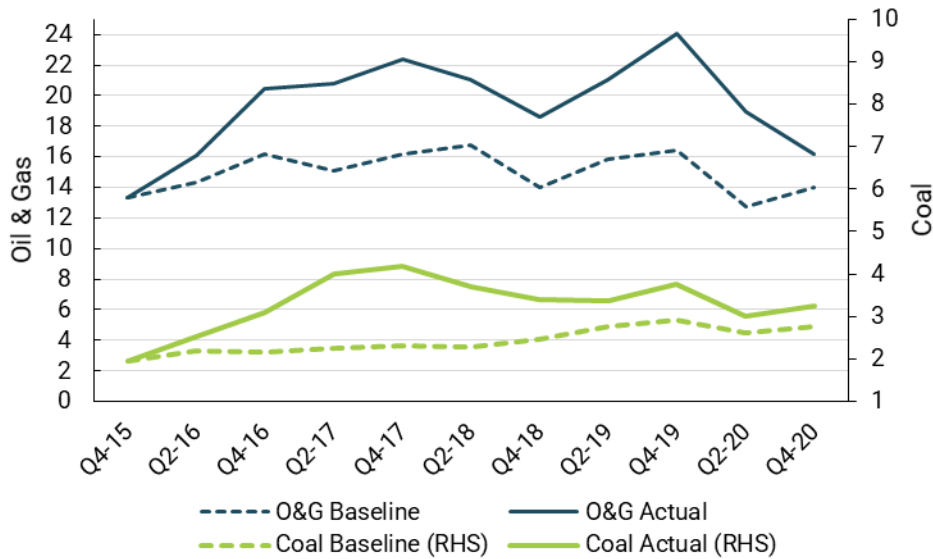
BMO’s oil & gas investments fluctuated during the last five years between CAD 13.3 billion and CAD 24.0 billion and stood at CAD 16.2 billion as of Q4-20. The value of coal investments was more stable, averaging around CAD 3.5 billion since 2016 (Figure 14).

Figure 14 Quarterly analysis of BMO Financial Group fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 15 Momentum analysis of BMO Financial Group fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

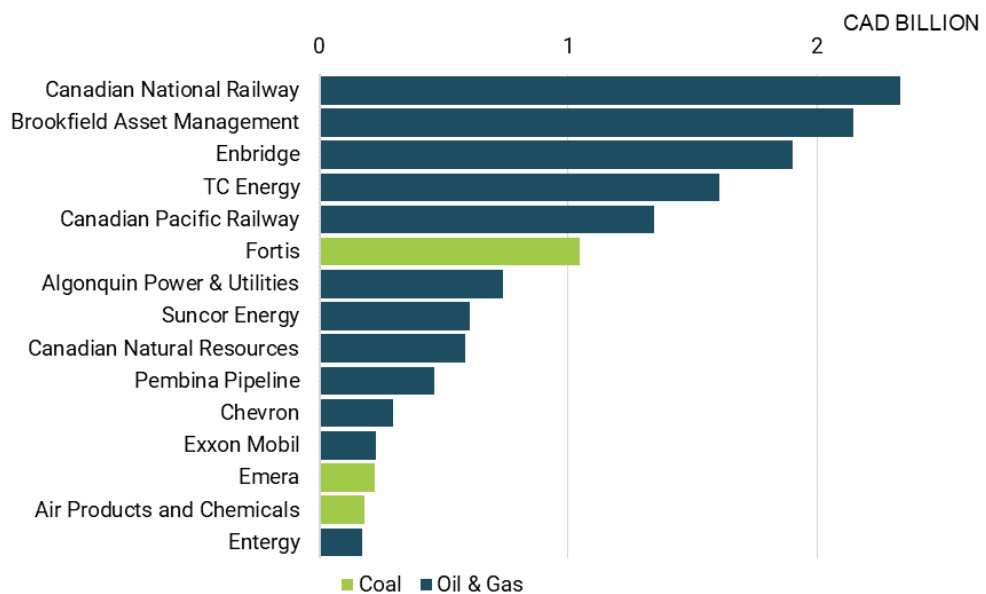


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The shareholdings momentum analysis shows that, despite increasing its coal investments until the end of 2017, BMO started to shrink its coal shareholdings in 2018 and the additional investments over the calculated baseline stood at CAD 471 million as of Q4-20 (Figure 15). Oil & gas sector investments followed a similar trend. Additional investments over the baseline in 2017 and 2019 appear to be divested as of Q4-20. The final gap between baseline and actual value was CAD 2.2 billion.

BMO’s largest investments as of December 2020 were Canadian National Railway with CAD 2.3 billion, followed by Brookfield Asset Management with CAD 2.1 billion and Enbridge with CAD 1.9 billion (Figure 16).

Figure 16 Top-15 BMO Financial Group investments

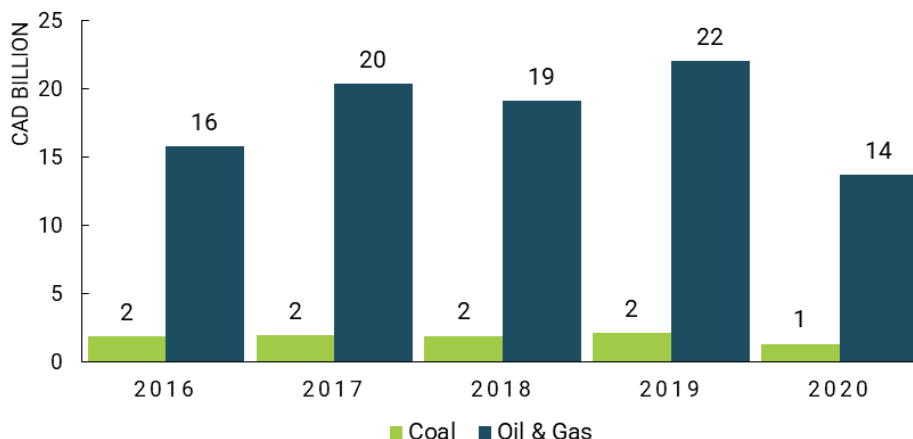


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4.2 CIBC

Since December 2015, CIBC provided CAD 9.3 billion to coal and CAD 91.1 billion to oil & gas companies in loans (CAD 76.8 billion) and underwriting (CAD 23.6 billion), adding up to a total of CAD 100.4 billion. On average, 9% of the total credit flow from CIBC went towards coal companies, averaging CAD 1.9 billion annually without much fluctuation throughout the last five years. Credit flow towards the oil & gas sector declined sharply by 38% in 2020 due to lower capital spending by the sector during the pandemic (Figure 17).

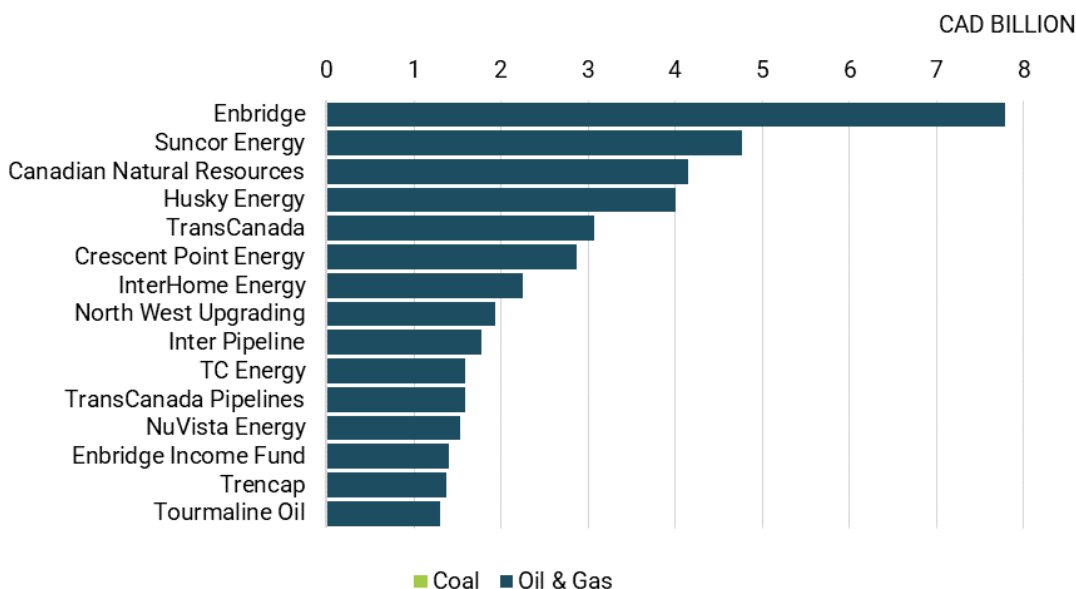
Figure 17 Annual trends of CIBC fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

Enbridge was CIBC’s largest fossil fuel client with CAD 7.8 billion of financing, followed by Suncor Energy with CAD 4.8 billion and Canadian Natural Resources with CAD 4.2 billion (Figure 18).

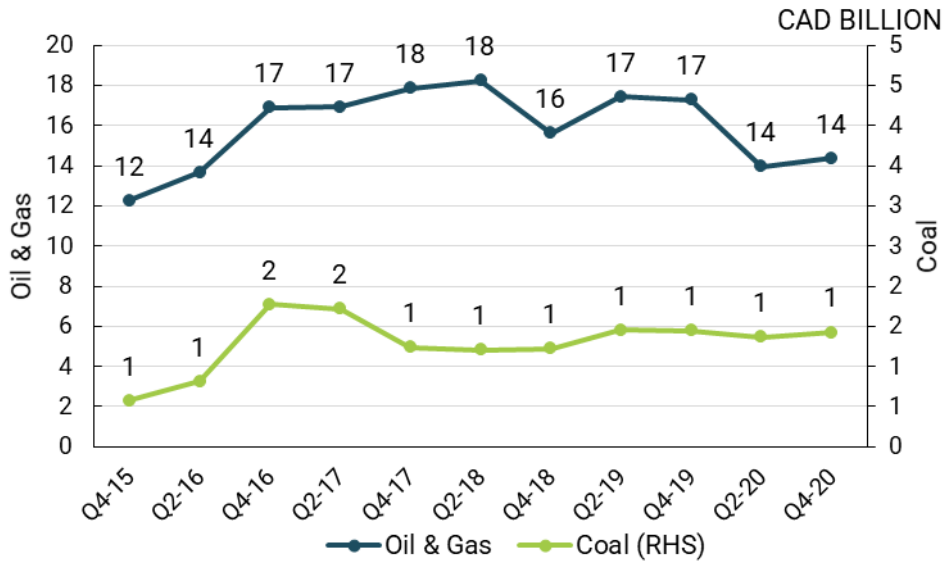
Figure 18 Top-15 CIBC fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

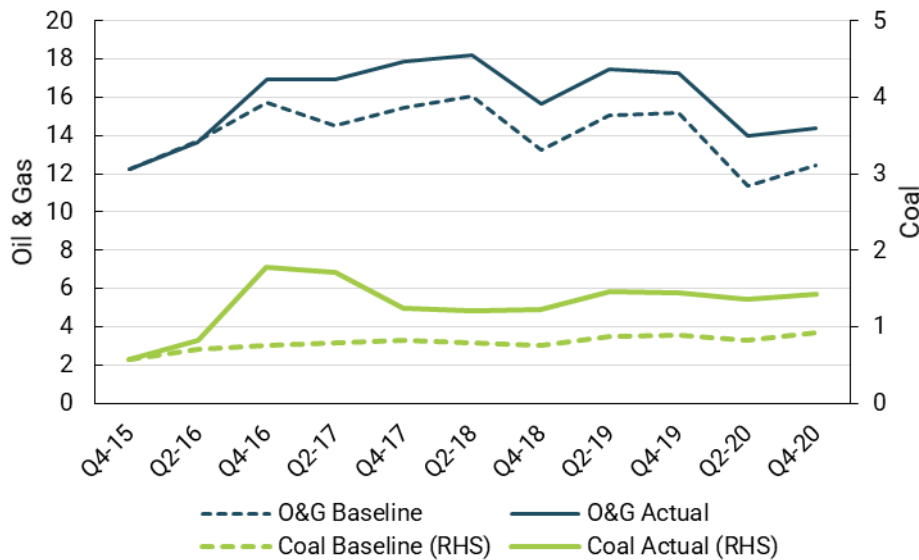
The value of CIBC’s shareholdings in fossil fuel companies increased by 23% from CAD 12.8 billion in Q4-15 to CAD 15.8 billion in Q4-20. Shareholdings in coal companies remained flat after the 209% increase in 2016 from CAD 575 million to CAD 1.8 billion (Figure 19).

Figure 19 Quarterly analysis of CIBC fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 20 Momentum analysis of CIBC fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

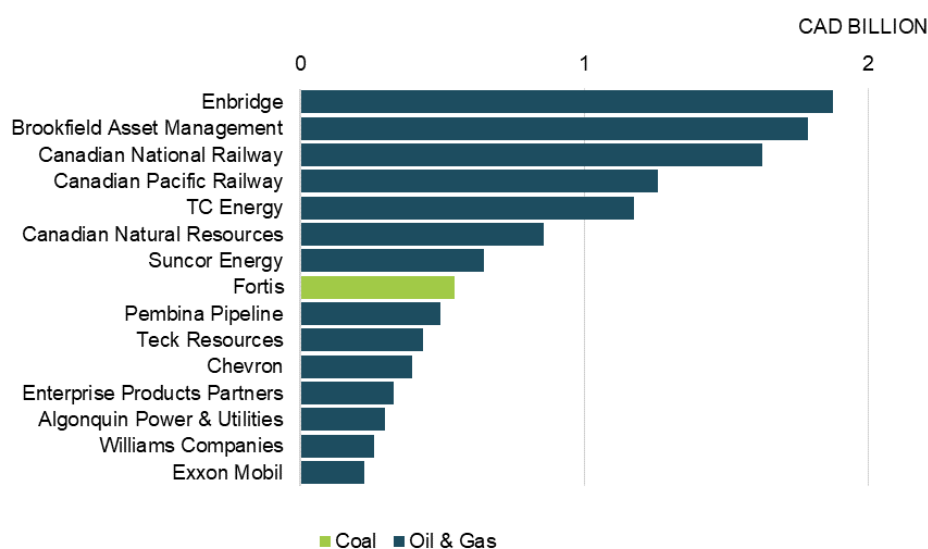


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The shareholding momentum analysis in Figure 20 shows that following the initial increase in investments over the baseline in 2016 and 2017, CIBC’s investments in fossil fuel companies did not increase or decrease significantly throughout the analysed period. The gap between the baseline and the actual value was around CAD 3.0 billion since 2018, with additional investments in coal companies of CAD 0.5 billion and CAD 1.9 billion in oil & gas companies as of Q4-20.

The largest investments of CIBC as of December 2020 were Enbridge with CAD 1.9 billion, followed by Brookfield Asset Management with CAD 1.8 billion, and Canadian National Railway with CAD 1.6 billion (Figure 21).

Figure 21 Top-15 CIBC investments

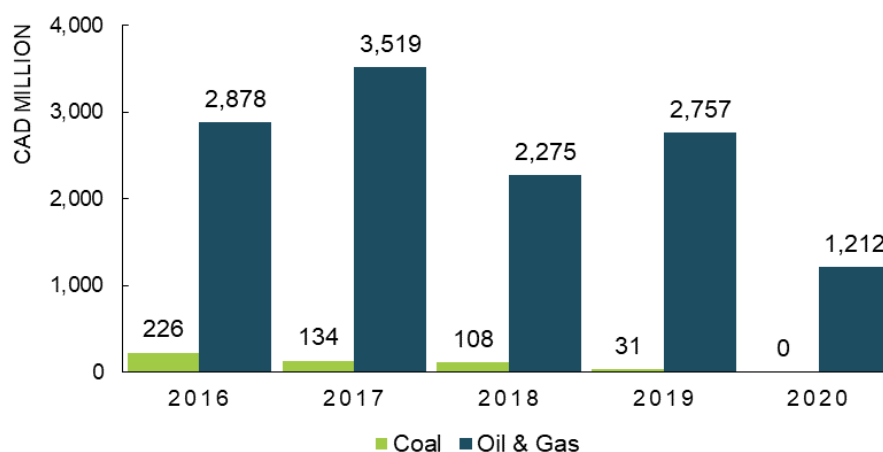


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4.3 Desjardins Group

DG, the smallest bank in the study, provided CAD 13.1 billion in loans and underwriting to the fossil fuels sector since December 2015. Credit flows to both the oil & gas and coal sectors has trended downwards since 2016. In 2020, DG did not provide any financing to coal companies (Figure 22).

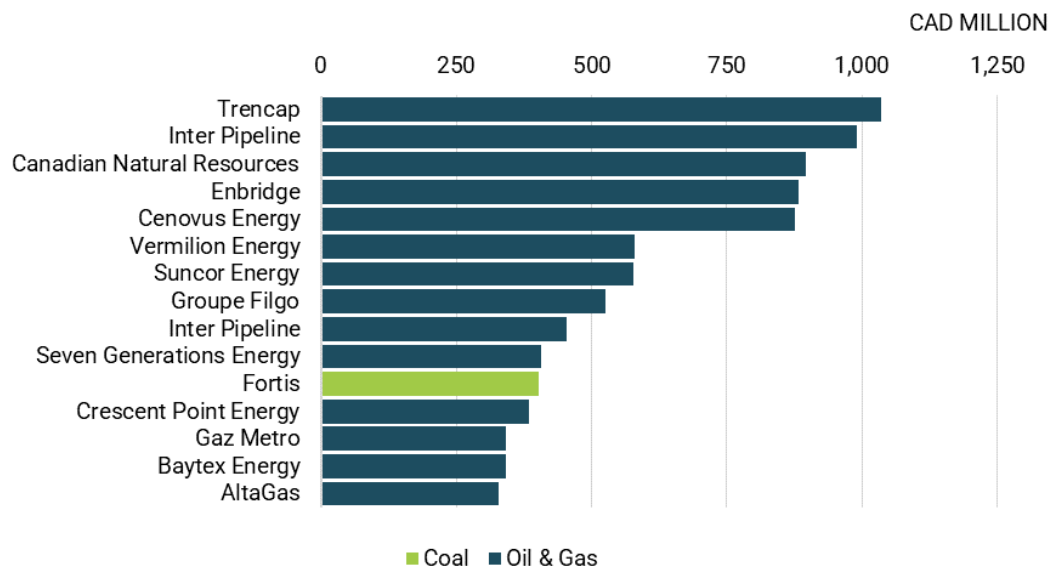
Figure 22 Annual trends of Desjardins Group fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

The largest fossil fuel client of DG was Trenchap with CAD 1,036 million financing, followed by Inter Pipeline with CAD 991 million and Canadian Natural Resources with CAD 896 million (Figure 23).

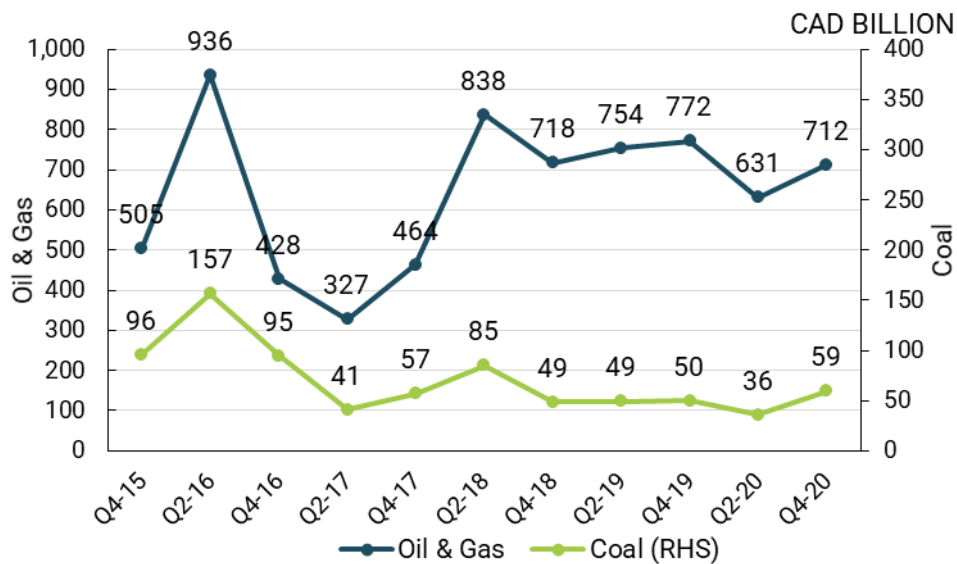
Figure 23 Top-15 Desjardins Group fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

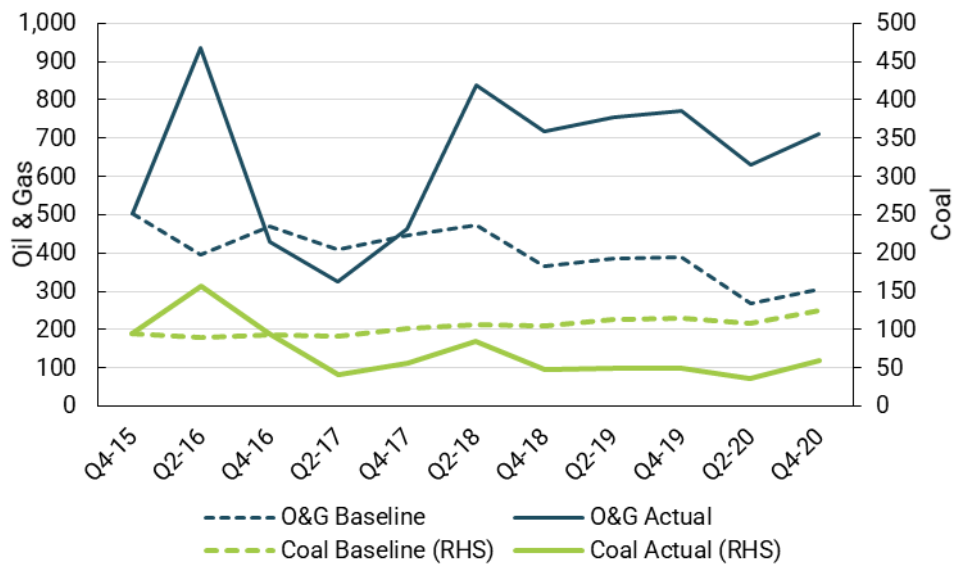
Since 2016, the value of DG's shareholdings in fossil fuel companies fluctuated around CAD 700 million. Oil & gas investments stood at CAD 712 million as of Q4-20, while the value of shareholdings in coal companies amounted to CAD 59 million (Figure 24).

Figure 24 Quarterly analysis of Desjardins Group fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 25 Momentum analysis of Desjardins Group fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

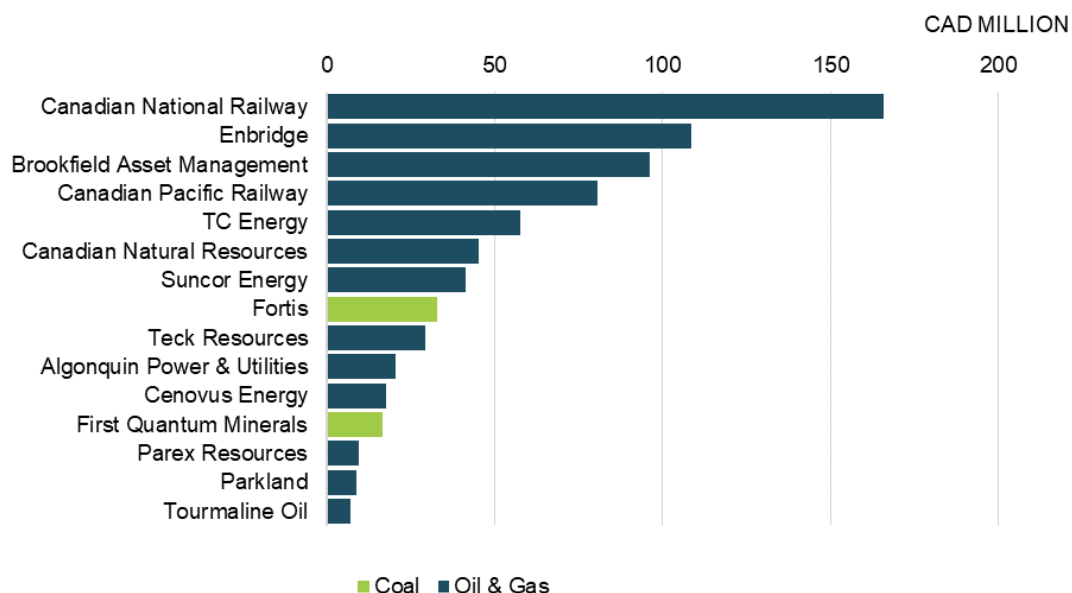


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The shareholdings momentum analysis shows that DG has increased its investments in oil & gas companies in recent years, especially in 2018. At the end of 2020, the incremental value of shareholdings above the baseline was calculated at CAD 408 million. Investments in coal companies have been below the baseline for DG since 2018, while the final reading at Q4-20 implies a CAD 65 million divestment from the sector.

The largest investments of DG as of December 2020 were Canadian National Railway with CAD 166 million, followed by Enbridge with CAD 109 million, and Brookfield Asset Management with CAD 96 million (Figure 26).

Figure 26 Top-15 Desjardins Group investments

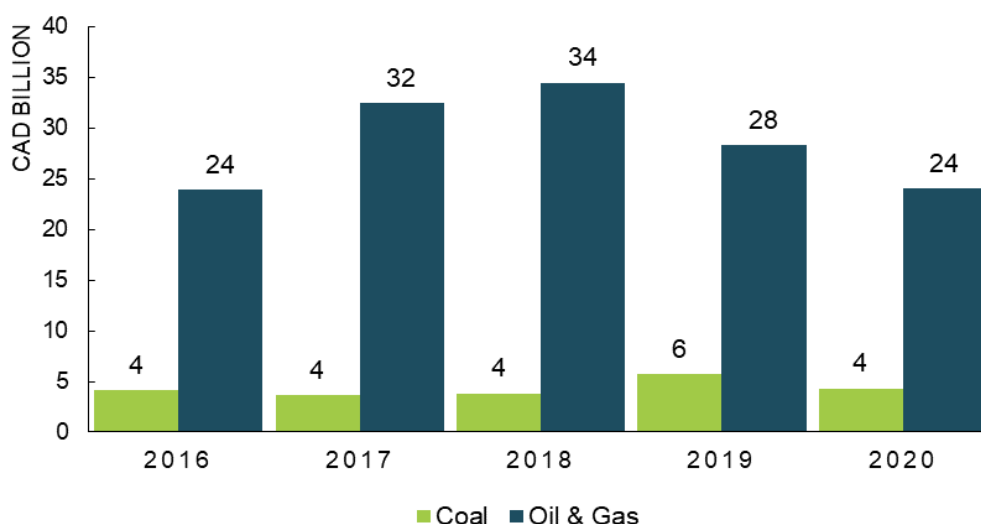


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4.4 Royal Bank of Canada

RBC provided CAD 164 billion in loans and underwriting to the fossil fuels sector since December 2015, the highest amount of financing among the six Canadian Banks in this study. Around 15% of the total credit flow from RBC went towards coal companies, averaging CAD 4.3 billion annually with no clear sign of a downward trend. Meanwhile, credit flowing to oil & gas sector has been declining for the last two years after peaking at CAD 34 billion in 2018 (Figure 27).

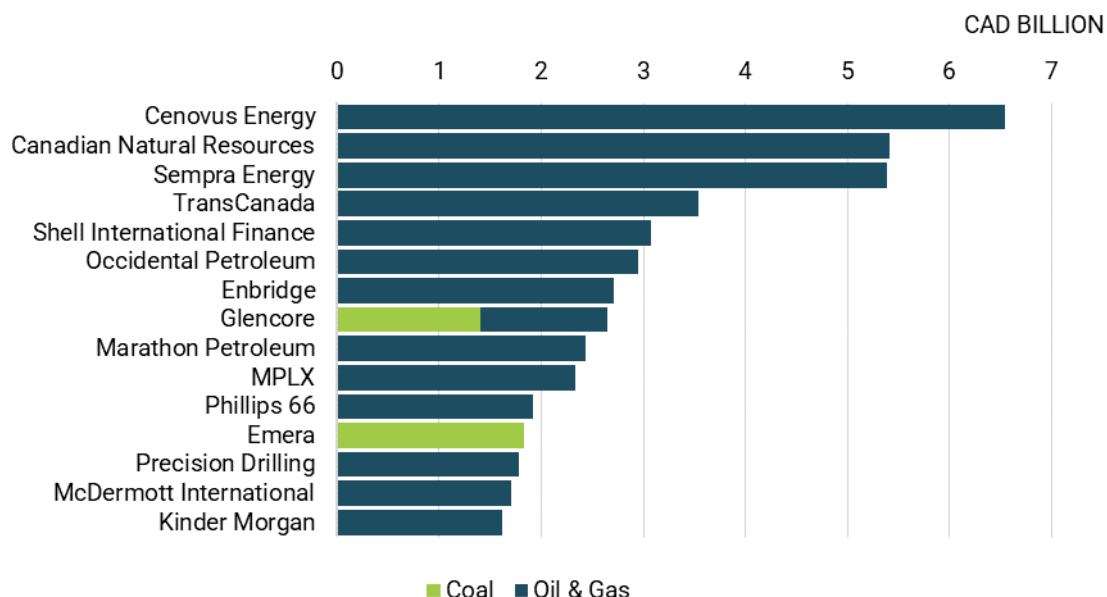
Figure 27 Annual trends of Royal Bank of Canada fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

The largest fossil fuel client of RBC was Cenovus Energy with CAD 6.5 billion of financing, followed by Sempra Energy and Canadian Natural Resources with CAD 5.4 billion each (Figure 28).

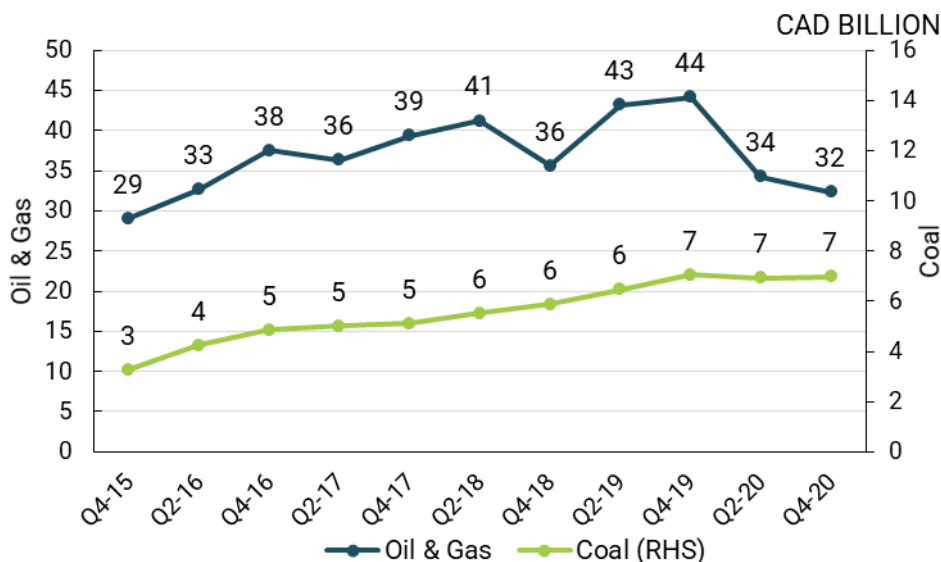
Figure 28 Top-15 Royal Bank of Canada fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

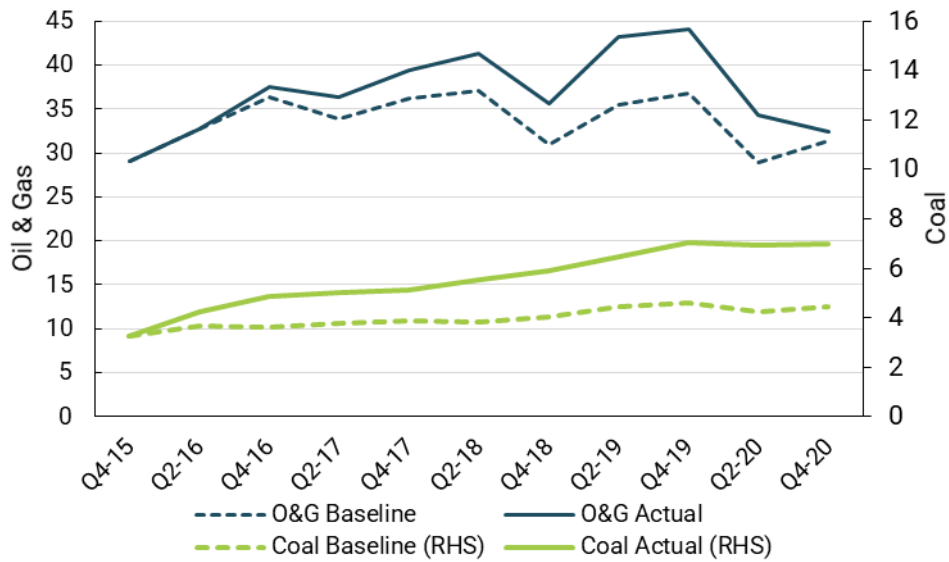
Since 2016, the value of RBC’s shareholdings in fossil fuel companies trended upwards, until the COVID-19 pandemic. The shareholdings in oil & gas companies stood at CAD 32 billion as of Q4-2020, down by 26% from the end of 2019. Meanwhile, the value of coal shares did not fluctuate in 2020 (Figure 29).

Figure 29 Quarterly analysis of Royal Bank of Canada fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 30 Momentum analysis of Royal Bank of Canada fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

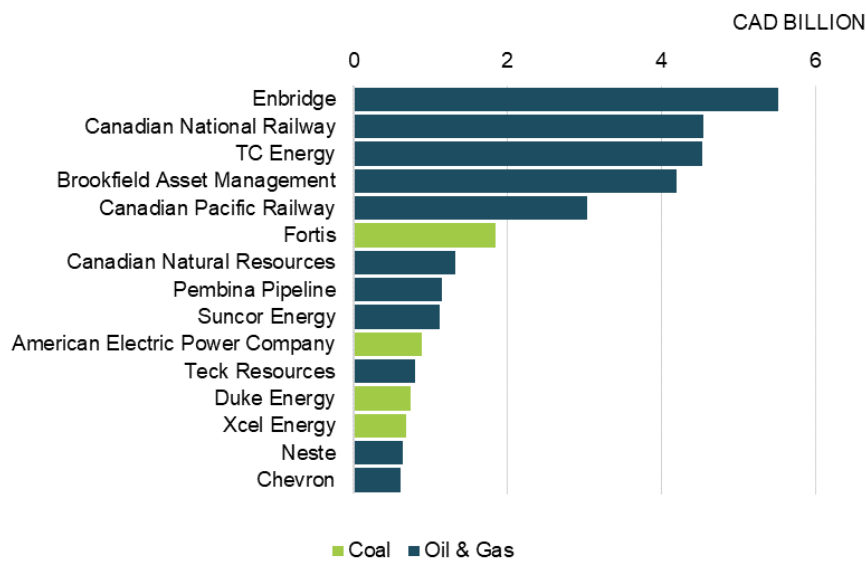


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The shareholdings momentum analysis shows that RBC has steadily increased its investments in coal companies, as the gap between the actual and baseline graphs continued to widen (Figure 30). By adding a cumulative CAD 2.6 billion of new coal investments over the baseline, RBC is responsible for 45% of the total new investments of all selected Canadian banks in coal after the Paris Agreement. The data for oil & gas investments suggest that RBC is probably decreasing its investments since the second half of 2019. The gap between the baseline and the actual value of investments decreased CAD 7.8 billion in Q2-19 to just USD 1.0 billion in Q4-20.

The largest investments of RBC as of December 2020 were Enbridge with CAD 5.5 billion, followed by Canadian National Railway, and TC Energy with CAD 4.5 billion each (Figure 31).

Figure 31 Top-15 Royal Bank of Canada investments

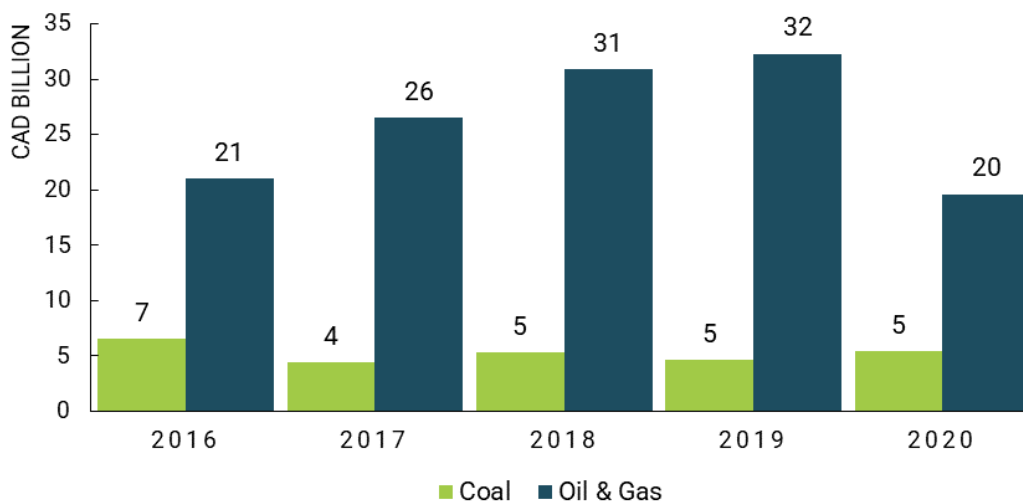


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4.5 Scotiabank

Since December 2015, Scotiabank provided CAD 26 billion to coal and CAD 130 billion to oil & gas companies in loans (CAD 109 billion) and underwriting (CAD 48 billion) for a total of CAD 157 billion. On average, 16% of the total credit flow from Scotiabank were towards coal companies, averaging CAD 5.3 billion annually with no clear sign of a downward trend. Credit flow towards oil & gas sector declined sharply by 39% in 2020, due to lower capital spending by the sector during the pandemic.

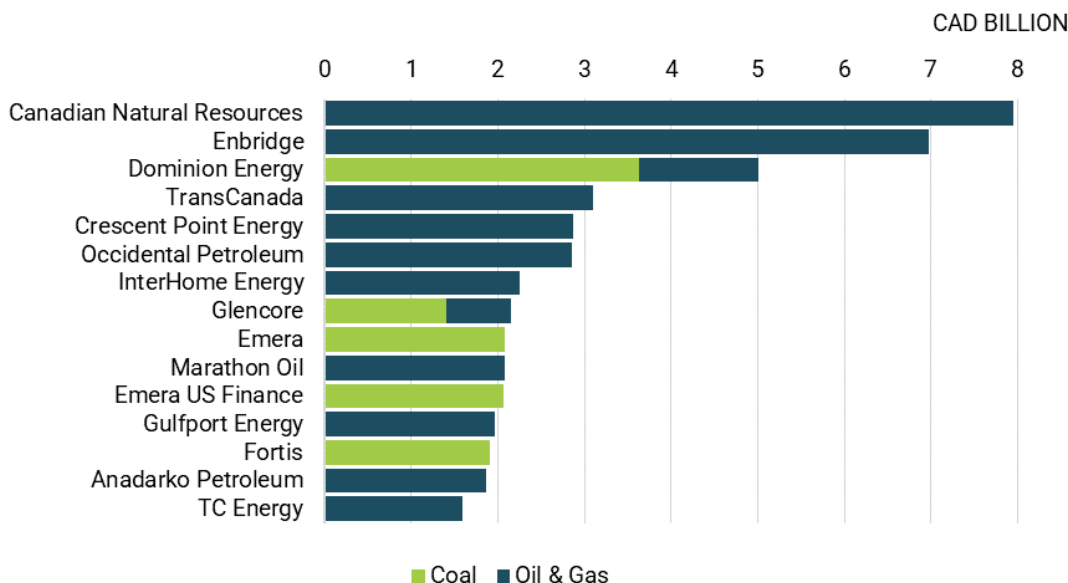
Figure 32 Annual trends of Scotiabank fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

Canadian Natural Resources was the largest fossil fuel client of Scotiabank with CAD 7.9 billion financing followed by Enbridge with CAD 7.0 billion and Dominion Energy with CAD 5.0 billion.

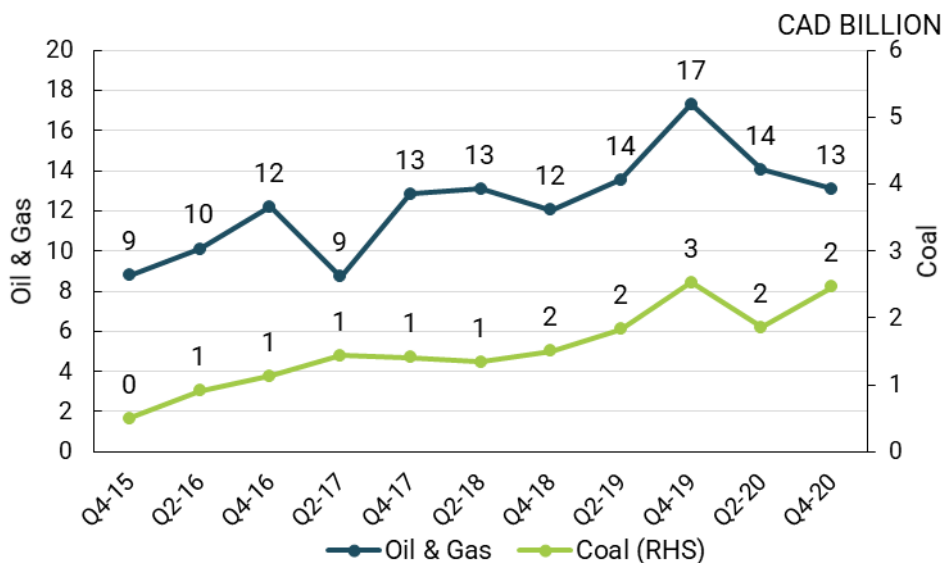
Figure 33 Top-15 Scotiabank fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

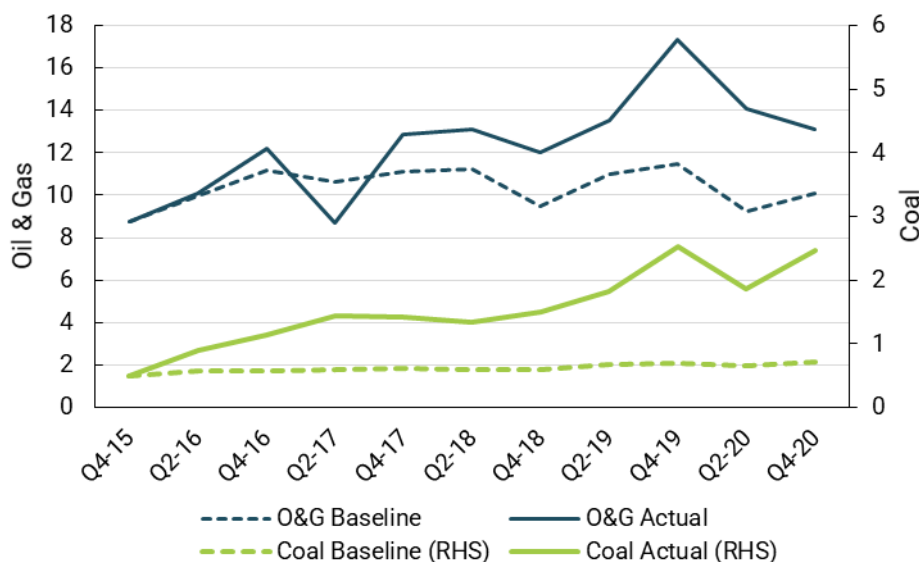
The value of Scotiabank’s shareholdings in fossil fuel companies increased from CAD 9.3 billion in Q4-15 to CAD 19.8 billion in Q4-19, then fell to CAD 15.5 billion in 2020 due to CAD 4.2 billion decline in oil & gas share values. The value of coal shares recovered in the second half of 2020 and were flat year-over-year at CAD 2.5 billion.

Figure 34 Quarterly analysis of Scotiabank fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 35 Momentum analysis of Scotiabank fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

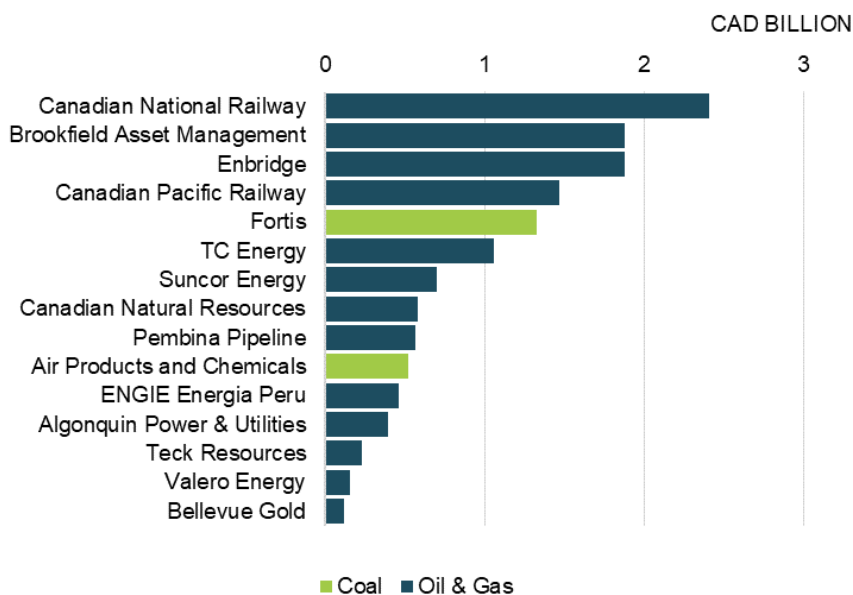


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

As the shareholding momentum analysis on Figure 35 shows that Scotiabank continued to add to its investments in coal companies since 2016. During the last five years, the calculated baseline grew by 44% to CAD 718 million while the actual value of Scotiabank’s coal investments increased by 393% to CAD 2.5 billion, putting the additional investments at USD 1.4 billion. The bank also increased its oil & gas investments by CAD 1.7 billion as of Q4-20, compared to the baseline.

The largest investments of Scotiabank as of December 2020 were Canadian National Railway with CAD 2.4 billion, followed by Brookfield Asset Management and Enbridge with CAD 1.9 billion each.

Figure 36 Top-15 Scotiabank investments

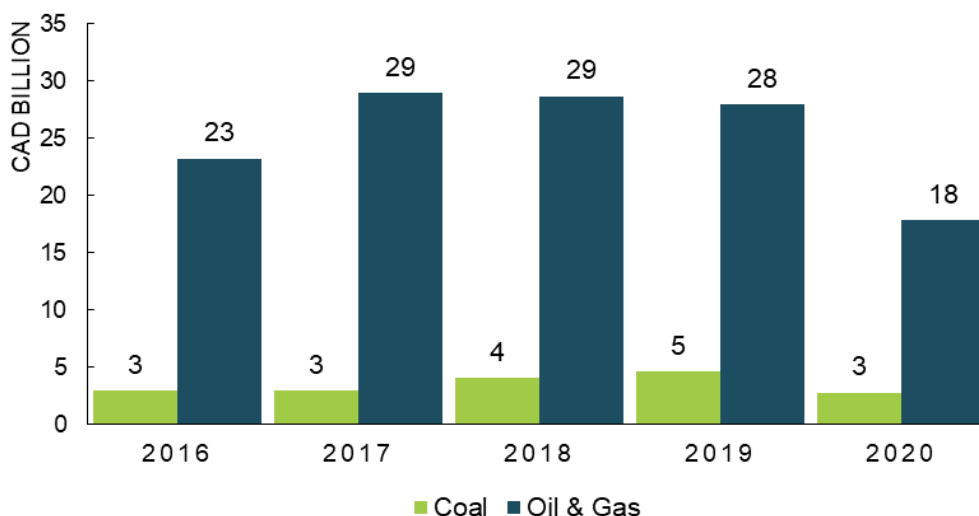


Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

1.4.6 Toronto-Dominion Bank

Toronto-Dominion Bank has provided CAD 144 billion total financing to coal (CAD 17.4 billion) and oil & gas (CAD 126.4 billion) companies since the Paris Agreement. Credit flows to both coal and oil & gas sector trended up between 2016 and 2019 but declined sharply for both sectors due to the global pandemic in 2020 by around 40% year-over-year.

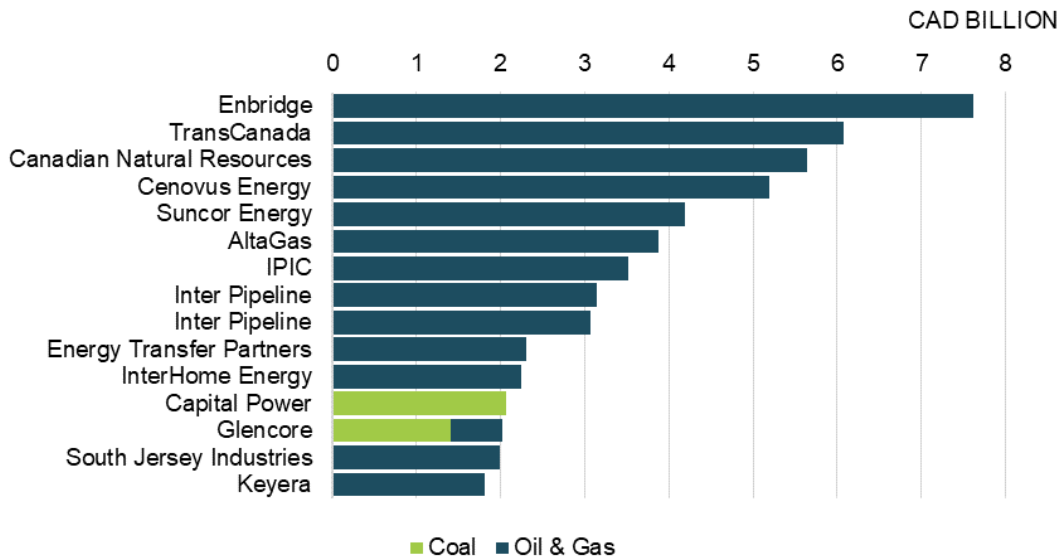
Figure 37 Annual trends of Toronto-Dominion Bank fossil fuel credit (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

The largest fossil fuel client of Toronto-Dominion Bank was Enbridge with CAD 7.6 billion financing followed by TransCanada with CAD 6.1 billion and Canadian Natural Resources with CAD 5.7 billion.

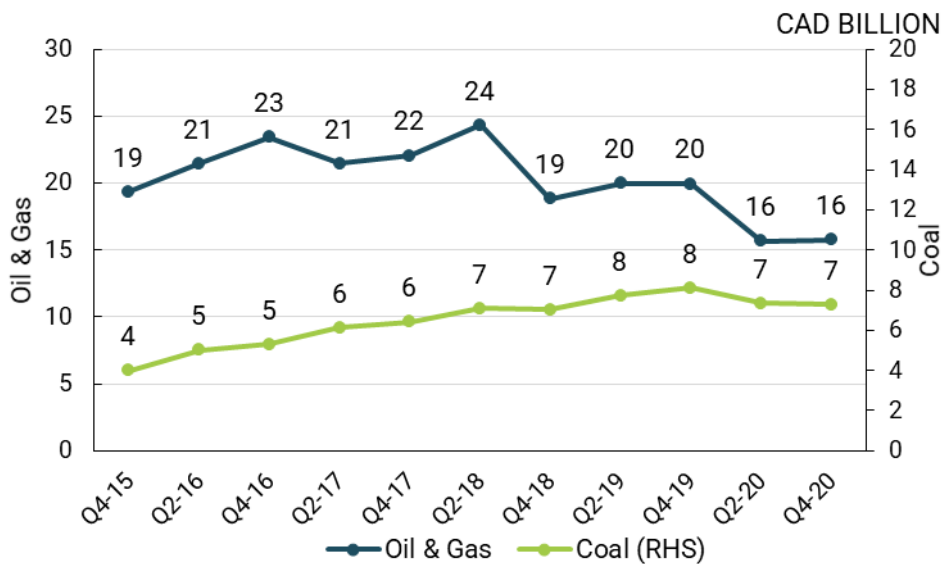
Figure 38 Top-15 Toronto-Dominion Bank fossil fuel credit clients (January 2016 – December 2020)



Source: Refinitiv (2021, February), Bond issuances; Refinitiv (2021, February), Share issuances; Refinitiv (2021, February), Loans; IJGlobal (2021, February), Transaction search.

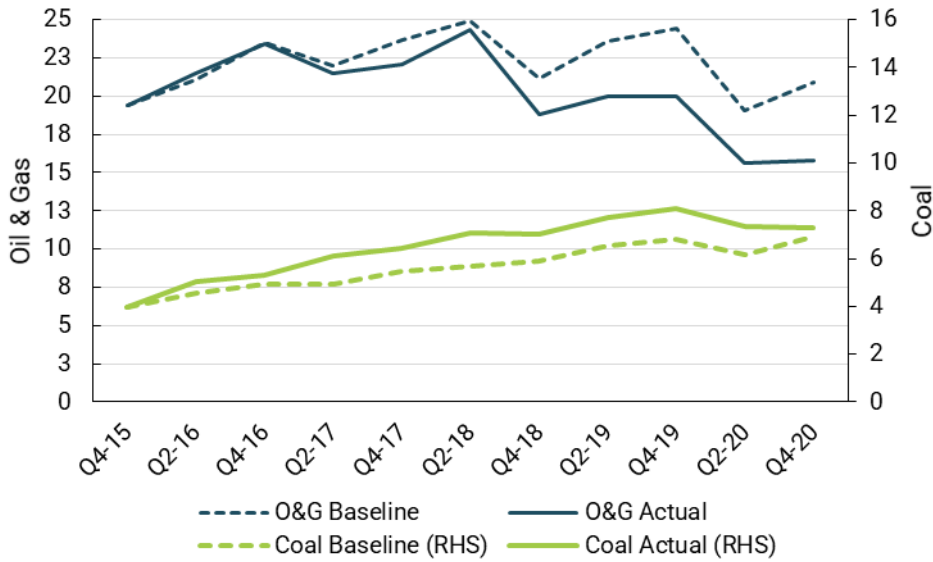
Toronto-Dominion Bank’s oil & gas investments declined in the last five years by CAD 3.6 billion in terms of value and the start of the decline was at the second half of 2018, thus not linked to the COVID-19 pandemic. During the same period, the value of investments in coal companies went up by 83% from CAD 4.0 billion in Q4-15 to CAD 7.3 billion in Q4-20.

Figure 39 Quarterly analysis of Toronto-Dominion Bank fossil fuel shareholdings



Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

Figure 40 Momentum analysis of Toronto-Dominion Bank fossil fuel shareholdings vs. 31-12-2015 baseline (CAD billions)

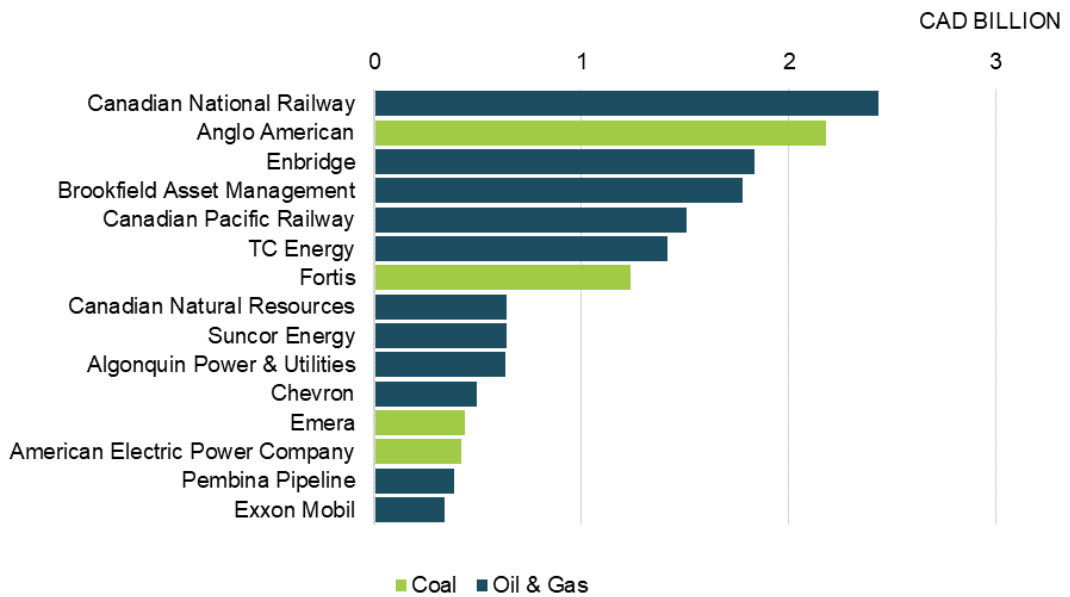


Source: Refinitiv (2021, February), Shareholdings: from 31-12-2015 to 31-12-2020.

The shareholdings momentum analysis shows that Toronto-Dominion was the only bank in this study which decreased its total exposure to fossil fuel company shares compared to the start of the baseline in December 2015. The value of the bank’s oil & gas investments shrunk by 19% in the last five years, compared to 8% increase in the baseline calculation, corresponding to a CAD 5.1 billion divestment. Although Toronto-Dominion’s coal investments increased in terms of value, the difference between the baseline and actual figures point to just CAD 391 million additional investments as of Q4-20.

Toronto-Dominion’s largest investments as of December 2020 were Canadian National Railway with CAD 2.4 billion, followed by Anglo American with CAD 2.2 billion and Enbridge with CAD 1.8 billion.

Figure 41 Top-15 Toronto-Dominion Bank investments



Source: Refinitiv (2021, February), Shareholdings: 31-12-2020.

2

Financial impact: 1.5°C introduction

There are differences between coal and oil & gas sectors in their carbon dioxide (CO₂) emissions, cost of production and the impact of this on the share of the reserves that will probably remain in the ground based on a 1.5°C scenario.

The financial impacts assessed below are restricted to the direct impacts on fossil fuel companies' ability to repay bank loans. However, there would likely be broader impacts on the stability of the financial sector that are not assessed here. For example, if oil companies were to go bankrupt due to stranded assets and reduced demand for their product, there would likely be homeowners in oil-producing regions unable to repay their mortgages (in the absence of just transition policies), or companies supplying services to the fossil fuel sector unable to repay business loans.

And while this analysis focuses on transition risks, it should be noted that financial system stability is also at risk in scenarios with higher levels of global warming (due primarily to the physical impacts of extreme weather, sea rise, etc.). The Network for Greening the Financial System (NGFS), of which the Bank of Canada is a member, is working to quantify these risks,¹ but the Bank of International Settlements is urging a precautionary approach that focuses on limiting temperature rise.²

2.1 The impact of a 1.5°C scenario: the sequence of events

The Paris UN Climate Conference in 2015 (Conference of the Parties, or COP 21) agreed to limit global temperature increase to 1.5°C versus pre-industrial levels. There is wide-spread scientific consensus, reflected in the work of the Intergovernmental Panel on Climate Change (IPCC), that a vast part of the fossil fuel reserves should remain in the ground to keep global temperatures from averaging below this 1.5°C increase.

Nationally Determined Contributions (NDCs) submitted by national governments under the Paris Agreement might require emission reductions from all relevant industries. The fossil fuel sector will be affected from two sides. Firstly, the fossil fuel industry will need to reduce emissions in its processes (scope 1 and 2) and in its supply chains (scope 3). Secondly, the fossil fuel industry will be confronted with declining demand for oil, gas and coal and potential supply-side regulations such as a moratorium on Arctic drilling, fracking bans, or other restrictions on the development of new fossil fuel projects.

This creates a risk of stranded assets, as coal, oil or gas reserves that are listed as corporate assets cannot be developed and sold.

Consequently, the fossil fuel industries' turnover and earnings will be affected. Declining demand for fossil fuels will impact volume, while trailing supply adjustments globally might negatively impact the price of fossil fuels. Demand trends might develop below supply trends as national oil & gas companies from countries dependent on oil & gas production could react more slowly in adjusting supply. Thus, both volumes and prices could be impacted negatively in a 1.5°C scenario. This impact will be larger than in a 2D scenario.

Research by the Carbon Tracker Initiative (CTI) analyses the relative positions of oil & gas companies and their sensitivity to various scenarios.³ The outcomes indicate that some companies are more heavily impacted than others. Companies with the highest greenhouse gas (GHG) emission footprint and the highest cost of production are affected most. A 1.5°C scenario will have a lower impact on production fields with relatively low exploitation costs per barrel, and on fields that are already in production and for which the large upfront investments have already been spent.

Stranded assets: CTI has calculated how the current investment plans of many fossil fuel companies could be affected by various scenarios from 2D to 1.6D. These to-be-developed fields are already partly valued in the balance sheet item property, plant, and equipment (PPE). The exploration costs (costs invested to find oil before it is harvested), which are relatively high, are capitalized in PPE. This means that the costs made for this ‘successful’ search are not booked directly as costs in the profit & loss account but are booked on the balance sheet. Subsequently, they are normally depreciated annually in line with the production from the field. A part of these to-be-developed fields will not come into production under a 1.5°C scenario, and that part of PPE will need to be written-off as stranded asset. These fields also impact the future income stream and profit of developed and undeveloped reserves, and thus the discounted cash flow (DCF) which is often published in an appendix by fossil fuel companies. Consequently, the ability to pay back/refund debt will be impacted as well as the equity value.

Sequence of events: the financial stability of some countries might be impacted by regulation to achieve 1.5°C. Banks and pension funds and other investors finance the fossil fuel industry. A reduction in the value of equity investments of fossil fuel companies or their inability to pay back debt will lead to lower AUM (Assets under Management) and write-downs by banks. Banks’ capital might be affected, which will impact their financial resilience.

The sequence of events that affects the financial system is as follows:

- 1.5°C limits the reserves that can be developed/harvested for a fossil fuel company A.
- Potential volumes in future production as well as pricing will be affected negatively.
- This will impact the value of its fixed assets, which comprises property, plant, and equipment (PPE), as well as goodwill.
- Company A will need to depreciate/amortize its assets quicker than anticipated, leading to extra charges and reduction of assets.
- A reduction of to-be-harvested reserves will also impact the DCF of future profit streams.
- A reduction of cash flow might impact the redemption/refunding of debt and bonds.
- A reduction in cash flow and the reduction in value of assets might impact the value of equity.
- The reduction in value of debt and equity of a fossil fuel company will in turn affect the assets of a financial institution or bank. Banks are mainly exposed to loans as that is their core business, while bonds and equity are more commonly owned by pension funds and institutional investors.
- If a bank’s asset side is affected, the liability side will be affected in its equity. Consequently, the core capital ratios for a bank might be reduced.
- If these are affected strongly, the bank might need to issue new shares. In a worst-case scenario, public confidence in a bank might decline and a bank-run might occur.

2.2 The balance sheet items and the value of the assets of fossil fuel sectors

The financials of fossil fuel companies will be impacted as CTI data indicate that a certain part of planned investments can probably not be executed in a 1.5°C scenario . This impact will occur in two ways:

- **The PPE value will be affected. This item includes capitalized exploration costs of developed and undeveloped proven reserves as well as plants and equipment related to this.**
- **The present and future earnings potential of developed and undeveloped proven reserves. These make up the DCF.**

In case a fossil fuel company will not be able to develop/harvest its proven reserves, it will need to take a one-off depreciation or amortisation charge on PPE.

Secondly, the company will reduce the publicly communicated DCF value. If the DCF declines, the total enterprise value of a fossil fuel company will be affected. The enterprise value consists of the market value of the equity and the value of the debt, minus the cash position. Bank loans and debt have a preferential status for receiving payments versus equity. Therefore, if the DCF declines, the value of equity will be hurt first. However, if the equity value is below zero, the debt of a fossil fuel company also cannot be paid back to banks and will need to be restructured. Banks will need to take a charge.

2.3 Seven representative case studies on potential losses

The analysis uses seven large fossil fuel companies as case studies. Selection criteria were their presence amongst the 20 largest recipients of funds from Canadian banks, and the availability of a company profile published by CTI assessing their specific exposure to stranded assets in a 1.5°C scenario. The CTI profiles enable an impact assessment of a 1.5°C scenario on developed and undeveloped proven reserves and key financials: PPE, DCF and investment value in the form of equity and debt.

Methodology used in this phase – Example Exxon:

- Table 2 shows the PPE (A), the DCF (B) (if available, proven developed and undeveloped); the enterprise value (C); the market capitalization (D); and the net-debt (E).
- The CTI company profile of Exxon provides two important numbers:
 - a) the percentage of capital expenditures that are outside of a 1.5°C budget (F: for Exxon, 92%). This will impact the PPE.
 - b) the percentage of production reduction that should happen in a 1.5°C world (G; for Exxon 55%). This will impact the DCF.
- Often the company's guidance is still growth (for instance 15%; also in the CTI sheet). Our assumption is that 50% (H) of the 100% (F) of Exxon's PPE (A) should be written down, resulting in a value loss (J) of US\$ 110.4 billion.
- 50% (I) of the 15% (G) of DCF (B) also needs to be written off, leading to a value loss (K) of US\$ 24.7 billion.

The following arguments are crucial to make a 50% correction on the write-offs for PPE and DCF:

1. The oil & gas field characteristic, considering that on average, oil & gas reserves (developed and undeveloped) offer circa 10 to 15 years of production, at present production volume rates. Through further investing in exploitation techniques, the lifetime of existing fields can often be further expanded as the accessible reservoir of oil is dependent on techniques. The PPE exists partly of existing field equipment, and partly of capitalized costs of undeveloped proven reserves. Often, oil & gas companies offer no transparency on the division of assets related to current production and to capitalized costs of undeveloped reserves.
2. The PPE includes upstream as well as the other activities of a company including downstream and chemical activities.
3. The DCF includes cash flow from developed fields and to-be-developed fields. Companies' calculations on DCF already assume that production of existing fields will decline gradually, although in most cases the companies invest to keep production stable or let it grow. Therefore, it is fair to take only a part of the 1.5°C guided production decline into account.

In L we average the losses from J and K, mainly because there is (the risk of) overlaps between J and K. Hereby, the methodology avoids double counting.

In a next step, two scenarios are introduced:

- A. **Scenario for current debt and current equity value/market cap, reflecting the current short-term mindset of financiers:** M calculates the value loss as percentage of equity. For Exxon, the value loss is 30% versus the current value of equity. If this percentage is higher than 100%, the net-debt will be affected. If this occurs, N shows the value higher than (exceeding) the equity amount which will be written down from net-debt, and O shows the percentage of net-debt that needs to be written down. In this scenario it is 0% for Exxon. This scenario A is a reflection of how financial institutions behave in debt financing: they hope to have their medium-term debt reduced to zero before the fossil fuel industry gets into trouble. In the meantime, they benefit from high yields.
- B. **Scenario if financial institutions continue to finance fossil fuel companies for many years to come:** With increasing regulation related to 1.5°C, cash flows from the fossil industry will get under pressure. From these cash flows (represented by DCF), first the debt needs to be paid back. If DCF (B) after correction for value loss (L) is lower than net-debt (E), debt investors like banks will not get their loans repayed for 100%. In the case of Exxon, the adjusted DCF is US\$ 19.9 billion lower than net-debt. Therefore, US\$ 19.9 billion or 47% of net-debt needs to be written off and restructured. Not only equity investors will be hurt, but also banks and bondholders.

These seven case studies will lead to an average percentage impact versus shareholdings value (51%), and a percentage value impact in two scenarios for net-debt, respectively 0% in A and 23% in B. These outcomes will become leading in Chapter 3 (Financial impact: quality of assets).

In the presented cases, Canadian Natural Resources is sourcing for 34% of its reserves from tar sands. Dominion Energy (Dominion) has 12% of its electricity plants burning on coal. Teck Resources (Teck) is large in coal mining for steel plants.

Table 2 Case studies: Potential Value Impact from 1.5°C scenario

25/2/2021		Canadian Natural Resources	Chevron Corp	Dominion Energy	Exxon	Occidental	Suncor	Teck	Average
Years		2019	2019	2019	2019	2019	2020	2020	
Currency (billion)		Can\$	US\$	US\$	US\$	US\$	Can\$	Can\$	
PPE	A	68.0	326.7		240.0	80.5	73	31.4	
DCF (10% WACC) after tax	B	127.8	100.5		89.9	28.0	44	NA	
Enterprise Value (D+E)	C	63.9	219.8	95.7	264.2	35.2	58	22.5	
Equity Value/Market Cap	D	43.1	198.8	58.1	222.0	26.2	41	15.8	
Net-debt	E	20.8	21.0	37.6	42.2	35.2	17	6.7	
% capex outside 1.5°C budget/demand levels	F	82%	60%	NA	92%	93%	100%	100%	
% production/emission reduction (1.5°C)	G	25%	35%	NA	55%	100%	15%	30%	
Part of F considered	H	50%	50%	50%	50%	50%	50%	50%	
Part of G considered	I	50%	50%	50%	50%	50%	50%	50%	
Value loss PPE (A*F*H)	J	27.9	98.0		110.4	37.4	36.3	15.7	
Value loss DCF (B*G*I)	K	16.0	17.6		24.7	14.0	3.3	NA	

25/2/2021		Canadian Natural Resources	Chevron Corp	Dominion Energy	Exxon	Occidental	Suncor	Teck	Average
Average value loss: (J +K)/2	L	21.9	57.8		67.6	25.7	19.8	15.7	
Value loss as % equity value (L/D)	M	51%	29%	0.4%	30%	98%	48%	99%	51%
Debt risk - current loans/bonds:									
Value written down from net-debt (if M >100%)	N	0.0	0.0		0.0	0.0	0.0	0.0	
% written down from net-debt (N/E)	O	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0%
Debt risk - in case of same exposure until 2040:									
DCF -/- average value loss -/- net debt (B-L-E)	P	85.1	21.7		-19.9	-32.9	7.4		
Value written down from net-debt (if P < 0)	Q	0.0	0.0		19.9	32.9	0.00	0.00	
% written down from net-debt (Q/E)	R	0%	0%		47%	94%	0%	0%	23%

Source: Profundo Equity Research; for PPE (A) and DCF (B): Annual Reports, 10-K's; for equity value (D) and net-debt (E) Annual Reports and yahoo finance; F and G from Carbon Tracker Initiative (CTI) company profiles.

The seven case studies consist of companies in the top-20 fossil fuel companies financed by the top-6 Canadian financial institutions. The top-20 accounts for 43% of all the identified financing instruments and is representative for a 'stress test' of the six leading financial institutions.

Table 3 Case studies: Potential Value Impact from 1.5°C scenario

USD billions	Loans, underwriting	Bonds	Shares	Total
Top 20	181.5	1.7	70.2	253.4
Total identified	490.4	8.4	90.8	589.6
Top-20 % of total	37%	20%	77%	43%

Source: Profundo financial research.

Financial impact: Quality of assets

This chapter analyses the composition of the selected Canadian banks' balance sheets, to assess the level of risk which stems from the exposure of the banks to the fossil fuel industry. Section 3.1 focuses on the analysis of the banks' balance sheets, to discern the weight of each banking activity. Section 3.2 details the financial exposure of the banks to the fossil fuel industry, through loans, exposure at default and investments. Finally, section 3.3 highlights the climate change risks identified by the banks and the corresponding financial risks.

3.1 Financial analysis shows solid fundamentals

3.1.1 Balance sheet analysis: loans account for half of the assets

The balance sheet of a company is composed of assets and liabilities. While the assets reflect what the company owns, the liabilities illustrate what it owes, at a specific date.

For a bank, the assets correspond to the outstanding loans of their customers as well as the investments they make in securities, physical assets such as property, fixtures, and equipment, but also cash and other assets.

As demonstrated in Table 4 and Table 5, the assets of the selected Canadian banks are mainly composed of loans, as they represent on average 50% of the total assets. Investments (securities, securities purchased/borrowed under resale agreements, derivative instruments) come second with an average weight of 36%. The rest of the assets is composed of cash (5% on average) and other assets (9%). The liabilities of a bank are either the deposits of customers or money that banks borrow from other sources.

As shown in Table 4 and Table 5, the liabilities of the selected Canadian banks are mainly composed of liabilities deposits, which include money-market accounts, savings, and checking accounts, and represent on average 67% of the total liabilities. Shareholders' Equity (SE) only accounts for 6% on average.

Table 4 Balance sheet summary of the selected banks (CAD mln)

	BMO	Scotia-bank	CIBC	RBC	DG	TD
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020
Loans	448,307	610,902	403,242	666,631	203,767	725,812
Securities	234,260	229,228	149,046	275,814	59,693	492,569
Securities purchased/borrowed under resale agreements	111,878	119,747	65,595	313,015	10,032	169,162
Derivative instruments	36,815	45,065	32,730	113,488	4,246	54,242
Cash	57,408	76,460	43,531	118,888	3,709	6,445
Other assets	60,593	55,064	75,407	136,712	31,549	267,635
Total Assets	949,261	1,136,466	769,551	1,624,548	312,996	1,715,865
Liabilities deposits	659,034	750,838	570,740	1,011,885	193,918	1,135,333
Shareholders' equity	56,593	68,127	41,154	86,664	26,656	95,499
Minority interests	0	2,376	181	103	773	0
Debt	8,416	7,405	5,712	9,867	1,398	11,477
Other liabilities	225,218	307,720	151,764	516,029	90,251	473,556
Total Liabilities	949,261	1,136,466	769,551	1,624,548	312,996	1,715,865

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 147; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 140; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 109; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 127; Desjardins Group (2020, March), *Annual Report 2019*, p. 112; Toronto Dominion (2021, January), *Annual Report 2020*, p. 132.

Table 5 Balance sheet summary of the selected banks (% of Total Assets)

	BMO	Scotia-bank	CIBC	RBC	DG	TD	Average
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
Loans	47%	54%	52%	41%	65%	42%	50%
Securities	25%	20%	19%	17%	19%	29%	21%
Securities purchased/ borrowed under resale agreements	12%	11%	9%	19%	3%	10%	11%
Derivative instruments	4%	4%	4%	7%	1%	3%	4%
Cash	6%	7%	6%	7%	1%	0%	5%
Other assets	6%	5%	10%	8%	10%	16%	9%
Total Assets	100%	100%	100%	100%	100%	100%	100%
Liabilities deposits	69%	66%	74%	62%	62%	66%	67%
Shareholders' Equity	6%	6%	5%	5%	9%	6%	6%
Minority interests	0%	0%	0%	0%	0%	0%	0%
Debt	1%	1%	1%	1%	0%	1%	1%
Other liabilities	24%	27%	20%	32%	29%	28%	26%
Total Liabilities	100%	100%	100%	100%	100%	100%	100%

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 147; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 140; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 109; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 127; Desjardins Group (2020, March), *Annual Report 2019*, p. 112; Toronto Dominion (2021, January), *Annual Report 2020*, p. 132.

3.1.2 Solvency analysis: FI's capitalization and liquidity remain sound

Since the subprime crisis, for which the banks bore significant responsibility, central banks have introduced new measures to monitor the solvency of banks.

It is mandatory for banks to calculate and disclose regulatory capital indicators and ratios to demonstrate their financial stability. Capital indicators are used and compared to risk indicators. Capital indicators include:

- **CET 1 Capital** (Common Equity Tier 1 Capital): includes the core capital that a bank holds in its capital structure. It is the highest quality of regulatory capital.
- **Tier 1 Capital**: a bit larger, as it includes the core capital (CET 1 Capital) as well as other capital instruments. Because it can include some debt instruments, such as perpetual contingent convertible capital instruments, it is less qualitative than CET 1 Capital.
- **Tier 2 Capital**: the second layer of capital that a bank must keep as part of its required reserves. It can also include debt instruments.

The main risk indicator used for the financial stability assessment is the RWA:

- **RWA** (Risk-Weighted Assets): the assets that the bank holds and that are evaluated for credit risks. The assets are assigned a weight according to their level of credit risk.

These indicators are used to calculate ratios, as presented in Table 6, which must attain a certain level imposed by the relevant regulator. **In Canada, the regulator, Office of the Superintendent of Financial Institutions (OSFI), imposes a CET 1 Ratio of 4.5%, a Tier 1 Capital Ratio of 6%, and a Total Capital Ratio of 8%⁴.**

Table 6 Calculation of the regulatory capital indicators and ratios

Indicator/Ratio	Calculation
CET 1 Capital	Common shares + Stock surplus + Retained earnings + Other comprehensive income + Qualifying minority interests and regulatory adjustments
Tier 1 Capital	CET 1 Capital + Capital instruments meeting the criteria and related surplus + Additional qualifying minority interests and regulatory adjustments
Tier 2 Capital	Capital instruments meeting the criteria and related surplus + Additional qualifying minority interests + Qualifying loan loss provisions and regulatory adjustments
Total Capital	Tier 1 Capital + Tier 2 Capital
RWA	Exposure amount * relevant risk weight for the type of loan or asset
CET 1 Ratio	CET 1 Capital / RWA
Tier 1 Capital Ratio	Tier 1 Capital / RWA
Total Capital Ratio	Total Capital / RWA

Source: Profundo; BIS (2019, June), “*Definition of capital in Basel III – Executive Summary*”, online: https://www.bis.org/fsi/fsisummaries/defcap_b3.htm, viewed in February 2021.

In our analysis of the major Canadian banks’ exposure to the fossil fuel industry and the risk it implies on their financial stability, it also makes sense to look at these indicators and ratios, as detailed in 0.

Table 7 Regulatory capital indicators and ratios of the selected banks (CAD mln)

	BMO	Scotia- bank	CIBC	RBC	DG	TD
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616
Tier 1 Capital	45,840	55,362	34,775	74,005	24,549	69,091
Tier 2 Capital	8,821	9,150	6,194	10,923	0	10,930
Tier 1 + Tier 2 Capital	54,661	64,512	40,969	84,928	24,549	80,021
RWA	336,607	417,138	254,871	546,242	113,861	478,909
CET 1 Ratio	11.9%	11.8%	12.1%	12.5%	21.6%	13.1%
Tier 1 Capital Ratio	13.6%	13.3%	13.6%	13.5%	21.6%	14.4%
Total Capital Ratio	16.2%	15.5%	16.1%	15.5%	21.6%	16.7%

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 67; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 217; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 167; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 216; Desjardins Group (2020, March), *Annual Report 2019*, p. 54; Toronto Dominion (2021, January), *Annual Report 2020*, p. 214.

At the latest available reporting date, the selected Canadian banks maintain their ratios well above the required level of 4.5% for the CET 1 Ratio, 6% for the Tier 1 Capital Ratio and 8% for the Total Capital Ratio.

3.2 Financial risks linked to the exposure to fossil fuels

The following sections aim at understanding the level of exposure of the banks to the fossil fuel sector by analysing the composition of their assets. This analysis considers both the figures published by the banks in their annual reports and figures coming from the financing research conducted in Chapter 1.

3.2.1 Loans and acceptances as published by the banks: CAD 109 billion in fossil fuel

As demonstrated in section 3.1, loans account for half of the banks' assets. Therefore, the defaults of clients' payments have direct and potentially significant consequences on the balance sheet of the bank. For this reason, it is essential to analyse the loan composition.

Banks communicate on the distribution of the loans and acceptances across the different client profiles (individuals or corporates) and, among the corporates, by industry.

As shown in Table 5, personal clients account for a significant share of the loans and acceptances of the analysed banks. On average, loans and acceptances to personal clients represent 63% of the total value of loans and acceptances.

Businesses and governments account for 37% on average of the total loans and acceptances. Among the businesses and governments, the sectors that relate to fossil fuels include:

- Oil & Gas: direct link;
- Metals & Mining: includes coal mining activities;
- Utilities: includes coal power generation activities;
- Finance: includes lending and investments in fossil fuel activities;
- Governments: includes, among others, subsidies, and investments in fossil fuel activities.

As published by the banks, loans provided to oil & gas businesses account for CAD 55 billion, i.e., on average for 2% of the total loans and acceptances (Table 8). Metals & Mining, which includes coal mining activities, represents on average 0.5%, at CAD 15 billion. Utilities, which represents CAD 39 billion or 1% of the total loans on average, includes coal power generation but also natural gas. In total, loans to oil & gas, metals & mining, and utilities account for CAD 109 billion.

However, it is important to note that other sectors have a close relationship with fossil fuel activities. Finance, which represents 5% of the total loans on average, includes financial institutions which lend money and invest in fossil fuel companies. In the same way, the amount loaned to governments, which represents 1% of the total loans on average, includes subsidies and investments in fossil fuel activities. For these reasons, a shock to the fossil fuel sector would certainly impact the above-mentioned sectors as well.

With the same logic, it is fair to assume that a shock to the fossil fuel industry would have a negative impact on the loans to personal clients, which include a significant share of mortgage loans.

In sum, the consequences for the stability of the financial system of a disorderly transition to a 1.5°C scenario extend beyond the immediate impacts on the fossil fuel sector. A failure to limit warming, however, also risks destabilizing the system. Therefore, the societally optimal strategy is an orderly transition that foresees potential impacts and plans accordingly.

Table 8 Distribution of loans and acceptances (CAD mln)

	BMO	Scotia-bank	CIBC	RBC	DG	TD	Total
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
Personal	204,940	393,200	272,914	457,976	153,779	469,375	1,952,184
Oil & Gas	12,644	16,400 ¹⁾	9,017	7,593	358 ²⁾	9,435	55,447
Metals & Mining	2,433 ³⁾	6,300 ³⁾	1,259 ³⁾	1,070	- ⁶⁾	3,405	14,467
Utilities	5,151	12,600	8,161	7,955	676	4,851	39,394
Total Direct Fossil Fuel	20,228	35,300	18,437	16,618	1,034	17,691	109,308
Finance	44,968	29,900	19,221	28,120	1,723	27,074	151,006
Governments	2,121	5,100	3,206	4,365	3,319	18,289	36,400
Other sectors	188,816	161,600	102,610	178,166	43,912	200,542	766,338
Business and governments	256,133	231,900	143,474	227,269	49,988	263,596	1,172,360
Total	458,497	625,100	416,388	685,245	203,767	742,411	3,131,408

1) Energy, 2) Oil & Gas and Mining, 3) Mining only, 6) Included in O&G

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 131; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 132; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 93; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 112; Desjardins Group (2020, March), *Annual Report 2019*, p. 76; Toronto Dominion (2021, January), *Annual Report 2020*, pp. 49-50.

To assess the extent of the risk inherent to lending money to companies engaged in fossil fuel activities, we need to compare the amount of money lent to the fossil fuel sector to the CET 1 Capital requirement. CET 1 Capital is taken as a reference because it is the most conservative capital indicator. Table 9 presents the loans and acceptances as a percentage of CET 1 Capital:

- **Oil & Gas:** Loans provided to oil & gas companies account for around a third of the CET 1 Capital of several banks, i.e., Scotiabank (33%), BMO (32%) and CIBC (29%). TD and RBC show more reasonable levels, although still significant, at respectively 15% and 11%. Only DG has an acceptable level at 1%.

- **Fossil Fuel:** Loans provided to fossil fuel companies account on average for 40% of the CET 1 Capital (of which 20% for oil & gas, 15% for utilities and 6% for metals & mining).

Looking in addition at the weight of other sectors linked to the fossil fuel industry (finance 54%, governments 13%), the exposure turns out to be very high.

Table 9 Loans and acceptances, as a percentage of CET 1 Capital

	BMO	Scotia-bank	CIBC	RBC	DG	TD	Average
Personal	511%	800%	884%	673%	626%	750%	707%
Oil & Gas	32%	33% ¹⁾	29%	11%	1% ²⁾	15%	20%
Metals & Mining	6% ³⁾	13% ⁴⁾	4% ⁵⁾	2%	- ⁶⁾	5%	6%
Utilities	13%	26%	26%	12%	3%	8%	15%
Total Direct Fossil Fuel	50%	72%	60%	24%	4%	28%	40%
Finance	112%	61%	62%	41%	7%	43%	54%
Governments	5%	10%	10%	6%	14%	29%	13%
Other sectors	471%	329%	332%	262%	179%	320%	315%
Business and governments	639%	472%	465%	334%	204%	421%	422%
Total	1144%	1271%	1349%	1006%	830%	1186%	1131%

1) Energy, 2) Oil & Gas and Mining, 3) Mining only, 4) Mining only, 5) Mining only, 6) Included in O&G

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 67, 131; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 217, 132; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 93, 167; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 112, 216; Desjardins Group (2020, March), *Annual Report 2019*, p. 54, 76; Toronto Dominion (2021, January), *Annual Report 2020*, pp. 49-50, 214.

3.2.2 Outstanding loans from Profundo's research show CAD 123 billion related to fossil fuel

Chapter 1 includes the findings on the identified loans and underwriting services provided by the selected Canadian banks. The research concluded that the selected Canadian banks provided a total of CAD 700 billion to the fossil fuel industry in the form of loans and underwriting services since 2016. Underwriting services accounted for CAD 219 billion. Loans, which include both matured and outstanding loans, accounted for CAD 481 billion.

As a reminder, only loans remain on the balance sheet of the bank, as underwriting services involve shares and bonds that are in the hand of other investors as soon as they are issued.

Loans include corporate loans and revolving credit facilities. The analysis below considers all loans that are still outstanding, i.e. loans that have not matured yet. Loans signed before 2016 have been included. Therefore, loans signed before 2016 but not matured yet are also included.

Table 10 presents the outstanding loans from the selected Canadian banks to the fossil fuel industry by TRBC industry group name, as used by Refinitiv Eikon.

Table 10 The still outstanding loans to fossil fuels account for CAD 123 billion, of which CAD 103 billion is related to Oil & Gas only. Outstanding loans from selected Canadian banks (CAD mln, 2016-2020)

TRBC Industry Group Name	BMO	Scotia-bank	CIBC	RBC	DG	TD	Total
Oil & Gas	15,198	15,083	9,832	12,891	2,296	12,568	67,869

Oil & Gas Related Equipment and Services	6,582	6,982	5,216	6,713	911	9,330	35,734
Total Oil & Gas	21,780	22,065	15,048	19,604	3,208	21,898	103,603
Metals & Mining	28	219	224	21	51	144	687
Coal	1,606	2,736	1,375	2,734	141	2,011	10,603
Total Metals & Mining	1,634	2,955	1,599	2,756	192	2,155	11,290
Multiline Utilities	323	554	117	744	32	554	2,323
Natural Gas Utilities	74	395	432	313	473	341	2,027
Electric Utilities & IPPs	65	513	121	106	96	168	1,069
Total Utilities	461	1,462	669	1,163	601	1,063	5,419
Total	23,875	26,482	17,316	23,523	4,001	25,116	120,312
Others	99	99	784	429	158	685	2,253
All Fossil Fuel	23,974	26,581	18,100	23,951	4,159	25,801	122,566

1) Others correspond to companies which are not classified under a TRBC Industry Group which directly relate to the Oil & Gas, Metals & Mining or Utilities sectors, but which activities are linked to one or several of these activities (for example: financing vehicle of an O&G company). This is due to the fact that the TRBC classification is a market-oriented schema, which classifies companies into sector and industry based on the consumption of products and services rather than their production. For more information, please visit <https://www.refinitiv.com/en/financial-data/indices/trbc-business-classification>.

Source: Profundo; Refinitiv Eikon.

The figures taken from the annual reports and the balance sheets of the banks (Table 8) are different than the figures included in the financing research conducted and presented in Chapter 1. There are three main explanations for this:

- Our financial research was conducted for the period January 2016 to December 2020. Therefore, any loan signed before January 2016 is not included. On the other hand, all outstanding loans are included in the banks' reporting.
- The figures from the financing research include revolving credit facilities, which are presented for their full amounts. Yet, banks include revolving credit facilities in their balance sheet only partially, with the amounts that are drawn by the companies accounted for in the balance sheet. The remaining amount (undrawn commitments) is presented in the off-balance sheet (OBS) commitments. No sector breakdown is provided on the balance sheet items. Although the discrepancies in sectorization are debatable, it is fair to consider the revolving credit facilities in whole, as the bank committed to provide this amount of money and the company is free to draw the amount as it needs it.
- There are potential discrepancies between the sectorization used by the banks and the TRBC classification used in financial databases. Companies that are included in the oil & gas TRBC sector in Refinitiv Eikon may not be classified as such in the banks' reporting, and vice versa.

Other points to note are:

- The financial databases used as sources for the financing research mostly capture syndicated financing, as bilateral financing is generally not disclosed. These figures therefore reflect only partially the financing provided.
- The utilities sector in our financing research excluded companies active in water utilities. As much as possible, the scope was reduced to utilities active in fossil fuel. This is different from the banks' reporting, which includes all utilities.

The outstanding loans to oil & gas companies account for a bigger portion of the CET 1 Capital than the loans and acceptances presented in the banks' annual reports. The outstanding loans account for around half of the CET 1 Capital for BMO (54%), CIBC (49%) and Scotiabank (45%). They are still significant for TD (35%) and RBC (29%) but less for DG (13%).

The exposure to the fossil fuel industry is even more significant, accounting for around 55 to 60% of CET 1 Capital for BMO, Scotiabank and CIBC; around 40% for TD and RBC; and 17% for DG.

Table 11 Outstanding loans, as a percentage of CET 1 Capital

TRBC Industry Group Name	BMO	Scotia-bank	CIBC	RBC	DG	TD	Average
Oil & Gas	38%	31%	32%	19%	9%	20%	25%
Oil & Gas Related Equipment and Services	16%	14%	17%	10%	4%	15%	13%
Total Oil & Gas	54%	45%	49%	29%	13%	35%	37%
Metals & Mining	0%	0%	1%	0%	0%	0%	0%
Coal	4%	6%	4%	4%	1%	3%	4%
Total Metals & Mining	4%	6%	5%	4%	1%	3%	4%
Multiline Utilities	1%	1%	0%	1%	0%	1%	1%
Natural Gas Utilities	0%	1%	1%	0%	2%	1%	1%
Electric Utilities & IPPs	0%	1%	0%	0%	0%	0%	0%
Total Utilities	1%	3%	2%	2%	2%	2%	2%
Total	60%	54%	56%	35%	16%	40%	43%
Others	0%	0%	3%	1%	1%	1%	1%
All Fossil Fuel	60%	54%	59%	35%	17%	41%	44%

Source: Profundo; Refinitiv Eikon; Bank of Montréal (2020, November), *Annual Report 2020*, p. 67; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 217; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 167; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 216; Desjardins Group (2020, March), *Annual Report 2019*, p. 54; Toronto Dominion (2021, January), *Annual Report 2020*, p. 214.

3.2.3 Exposure at default: Banks' evaluation of the financial risk inherent to loan defaults

Following the 2008 financial crisis, several indicators and ratios were introduced to monitor the solidity and solvency of the banks, as already described in section 3.1.2. The Exposure at Default (EAD) is a key input in the measurement of the expected and unexpected credit losses, as it helps to reflect the global risk supported by each bank from the loans it provides.

EAD is the predicted amount of loss a bank may be exposed to when a debtor defaults on a loan.⁵ The loss is dependent upon the amount for which the bank was exposed to the borrower at the time of default, as the default occurs at an unknown future date. It is calculated by adding the risk already drawn on the operation to a percentage of undrawn risk. Banks commonly calculate an EAD value for each loan and then use these data to determine their overall default risk. In the EAD calculation, the underlying asset, forward valuation, facility type, and commitment details are considered. The value does not take account of collateral, guarantees, or security.⁶

Basel compliance requires estimated EAD to be at least equal to or above the drawn balance of the credit line. Indeed, some exposures, such as credit cards or credit lines, should include the potential increase in the outstanding balance from a reference date to the time of default. As an example, revolving credit facilities should include both the drawn amount and the undrawn amount. For this reason, EAD will be most of the time higher than the outstanding balance.

The selected Canadian banks do not all communicate the split of their EAD by industry. Scotiabank and TD do not publish the detailed numbers. However, BMO, CIBC, RBC and DG do publish numbers for oil & gas.

Table 12 Exposure at default by industry (CAD mln)

	BMO	Scotia-bank	CIBC	RBC	DG	TD	Total
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
Personal	259,289	361,243	352,697	602,063	158,272	658,298	2,391,862
Oil & Gas	32,664	-	21,525	22,671	929 ¹⁾	-	77,789
Mining & Metals	-	-	5,131 ²⁾	6,939	- ³⁾	-	12,070
Utilities	-	-	20,139	35,145	18,335	-	73,619
Total Direct Fossil Fuel	32,664	-	46,795	64,755	19,264	-	163,478
Finance	215,553	-	180,045	189,300	14,289	-	599,187
Governments	88,191	251,726	79,620	302,324	17,486	528,599	1,267,946
Other sectors	289,907	471,255	110,410	409,112	77,334	600,105	1,794,645
Business and governments	626,315	722,981	416,870	965,491	128,373	1,128,704	3,988,734
Total	885,604	1,084,224	781,843	1,567,554	298,379	1,936,565	

1) O&G and Mining, 2) Mining only, 3) Included in O&G

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 86; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 140; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 58, 60; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 66; Desjardins Group (2020, March), *Annual Report 2019*, p. 71-72; Toronto Dominion (2021, January), *Annual Report 2020*, p. 89.

The exposure of BMO, CIBC, RBC and Desjardins Group to oil & gas account respectively for 82%, 70%, 33% and 4% of the CET 1 Capital, as represented in Table 13. Their exposure to the fossil fuel industry account respectively for 82%, 152%, 95% and 78% of the CET 1 Capital.

Table 13 Exposure at default, as a percentage of CET 1 Capital

% of CET 1	BMO	Scotia-bank	CIBC	RBC	DG	TD	Average
Personal	647%	735%	1142%	884%	645%	1051%	851%
Oil & Gas	82%	-	70%	33%	4% ¹⁾	-	47%
Metals & Mining	-	-	17% ²⁾	10%	- ³⁾	-	13%
Utilities	-	-	65%	52%	75%	-	64%
Total Direct Fossil Fuel	82%	-	152%	95%	78%	-	102%
Finance	538%	-	583%	278%	58%	-	364%
Governments	220%	512%	258%	444%	71%	844%	392%

% of CET 1	BMO	Scotia-bank	CIBC	RBC	DG	TD	Average
Other sectors	723%	959%	358%	601%	315%	958%	652%
Business and governments	1563%	1471%	1350%	1418%	523%	1803%	1355%
Total	2210%	2205%	2532%	2302%	1215%	3093%	2260%

1) O&G and Mining, 2) Mining only, 3) Included in O&G

Source: Bank of Montréal (2020, November), *Annual Report 2020*, p. 86; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 140; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 58, 60; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 66; Desjardins Group (2020, March), *Annual Report 2019*, p. 71-72; Toronto Dominion (2021, January), *Annual Report 2020*, p. 89.

3.2.4 Investments: Profundo's research reveals CAD 125 billion investments in Fossil Fuel

While loans already reveal a significant exposure to the fossil fuel industry, they “only” account for around 50% of the balance sheets of the banks. Through investing, banks conduct another activity which accounts for a significant share of their balance sheets. The following items are linked to investments:

- **Securities:** investments from which the bank earns a yield, including equity investments and debt investments.
- **Securities borrowed or purchased under resale agreements:** amounts that the bank will receive because of its commitment to return or resell securities that it has borrowed or purchased, back to the original lender or seller, on a specified date at a specified price. These instruments are accounted as if they were loans.
- **Derivatives:** financial contracts that derive their value from underlying changes in interest rates, foreign exchange rates or other financial or commodity prices or indices.

On average, these three items account for 36% of the assets of the six banks studied here. Unlike for loans, no detail is communicated on the distribution of these elements. It is however fair to assume that a share of the investments directly and indirectly concerns the fossil fuel industry. In the event of a shock to the fossil fuel sector, the investments held by the banks would also be affected.

The financial research conducted in Chapter 1 presents the investments by the selected Canadian banks to the fossil fuel industry. At the latest reporting date 31 December 2020, the selected Canadian banks held shares and bonds of companies engaged in the fossil fuel industry for a total of CAD 125 billion (Table 14).

Table 14 Investments provided by the selected Canadian banks (CAD mln, latest reporting date December 2020)

TRBC Industry Group Name	BMO	Scotia-bank	CIBC	RBC	DG	TD	Total
Oil & Gas	4,363	2,781	3,285	8,513	371	4,818	24,132
Oil & Gas Related Equipment and Services	5,152	3,894	5,584	13,269	313	5,107	33,320
Total Oil & Gas	9,515	6,675	8,869	21,783	684	9,925	57,452
Metals & Mining	660	522	645	1,400	69	2,923	6,219
Coal	31	11	3	16	6	29	97
Total Metals & Mining	691	533	648	1,416	74	2,953	6,316
Multiline Utilities	1,104	577	400	1,101	46	1,226	4,454
Natural Gas Utilities	148	149	2	512	53	403	1,266
Electric Utilities & IPPs	2,840	2,173	1,099	7,499	184	4,320	18,115

TRBC Industry Group Name	BMO	Scotia-bank	CIBC	RBC	DG	TD	Total
Total Utilities	4,091	2,900	1,501	9,111	283	5,949	23,835
Total	14,297	10,108	11,018	32,311	1,042	18,827	87,603
Others	6,591	6,398	5,053	12,603	381	6,807	37,832
All Fossil Fuel	20,888	16,506	16,071	44,914	1,422	25,634	125,435

1) Others correspond to companies which are not classified under a TRBC Industry Group which directly relate to the Oil & Gas, Metals & Mining or Utilities sectors, but which activities are linked to one or several of these activities (for example: financing vehicle of an O&G company). This is due to the fact that the TRBC classification is a market-oriented schema, which classifies companies into sector and industry based on the consumption of products and services rather than their production. For more information, please visit <https://www.refinitiv.com/en/financial-data/indices/trbc-business-classification>.

Source: Profundo, Refinitiv Eikon.

The financing research conducted in Chapter 1 includes investments from the selected Canadian banks and all their subsidiaries active in investing. This includes the asset management arms of the banks, which are managing assets for their own accounts but also provide asset management services for third parties.

Double counting may occur in asset management for third parties as the reported investments may be reported by both the asset manager and a third party. Yet, it is not possible to retrieve the amounts that are concerned by double counting as asset managers do not split out the amounts invested as part of asset management for third parties. Therefore, it should be highlighted that the figures from Table 14 include double counts and therefore do not reflect what is accounted in the banks' financial reports.

3.3 Evaluation of climate-change risks by the banks through TCFD

The Task Force on Climate-Related Financial Disclosures (TCFD) was established in December 2015 with the goal of developing a set of voluntary climate-related financial risk disclosures which can be adopted by companies to inform investors and other members of the public about the risks they face from climate change. The organization was formed by the Financial Stability Board (FSB) as a means of coordinating disclosures among companies impacted by climate change. The Task Force is charged with considering "*the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries,*" per the organization's mission statement.⁷

All the selected banks publish reports in accordance with the TCFD framework, although not all communicate at the same level of detail. Table 15 summarizes the conclusions from the banks' policy assessment on criterion 3 of the TCFD, evaluating whether the financial institution measures and discloses climate-related impacts in line with the recommendations by the TCFD.⁸

The TCFD reporting system is still evolving and faces numerous limitations, including its current status as a voluntary system where reporting is often incomplete. Comparisons between banks would be more useful if governments made climate-related financial disclosures mandatory and financial institutions were required to publish the full methodology and results of their stress tests.

Table 15 Summary of Profundo's assessment on TCFD criterion 3 (maximum score 1)

Bank	Scope for criterion 3	Policy document(s)	Draft assessment
BMO	1	BMO Climate Report 2020	Full score. The 2020 Climate Report is set up in accordance with the four main indicators of the TCFD requirements (governance, strategy, risk management, metrics, and targets).
Scotiabank	0.5	CDP 2020 Scotiabank 2020 Annual Report (p.5)	Basic score. Scotia publishes a TCFD report structured around the 4 TCFD indicators, but it does not address impacts and risks of financed companies and investees in detail.

Bank	Scope for criterion 3	Policy document(s)	Draft assessment
CIBC	0.5	CIBC TCFD Report 2019	Basic score. CIBC publishes a TCFD report structured around the 4 TCFD indicators, but it is strongly focused on own operations and does not address impacts and risks of financed emissions in great detail. Under the metrics and targets indicator, mostly targets relating to operations are included.
RBC	1	RBC- Task Force on Climate-related Financial Disclosures Report 2019 (p.14)	Full score.
Desjardins Group	0.9	Social and cooperative responsibility report 2019	Full score. The 2019 Social and cooperative responsibility report is set up in accordance with the four main indicators of the TCFD requirements (governance, strategy, risk management, metrics, and targets).
Toronto Dominion	1	TCFD report 2019 (p.20-21)	Full score. TD publishes a TCFD report structured around the 4 TCFD indicators and discloses relevant metrics such as their lending exposure to carbon-intensive companies and power companies.

Source: Profundo

The following sections present for each bank the amount which is communicated (if any) over their exposure to carbon-related assets as part of their TCFD disclosure. However, the term “carbon-related assets” is not well defined. It is generally considered to refer to assets or organizations with relatively high direct or indirect GHG emissions.⁹ The TCFD recommends banks define carbon-related assets as those tied to the energy and utilities sectors under the Global Industry Classification Standard, excluding water utilities and independent power and renewable electricity producer industries.¹⁰ Definitions can vary from one financial institution to another, which leads to differences between the banks’ own reporting of loans and acceptances by sector and our asset findings.

Out of the six selected banks, only three disclose their exposure to carbon-related assets: BMO, RBC and TD.

3.3.1 Bank of Montréal

In its 2020 Annual Report, BMO states that it “*supports the recommendations of the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD) and employs the TCFD framework to enhance its understanding and disclosure of the evolving impact of risks associated with climate change, together with possible mitigation strategies. BMO continues to build its internal capacity to conduct climate change scenario analysis, in line with the TCFD recommendations, and is expanding this program to evaluate both physical and transition risks across a selection of climate-sensitive portfolios.*”¹¹

More specifically regarding its exposure to the fossil fuel industry, the bank says that it “*remains focused on taking risks in the oil & gas industry, within its approved risk appetite, while seeking appropriate returns on those risks. In the exploration and production sector, the bank is working with existing borrowers to maintain loan exposures, in line with changing estimates of oil & gas reserve values. BMO maintains an internal limit that caps its exposure to this sector. In the oil & gas services sector, BMO is focused on Canadian borrowers with a strong capital base and diversified operations that are heavily weighted to providing maintenance and servicing to large producers.*”¹²

In its 2020 Climate Report, BMO communicates an exposure of 3% of its total loan portfolio, i.e., around CAD 14 billion, to carbon-related assets. This amount represents 35% of the CET 1 Capital.

The bank also communicates on the distribution of its exposure to power generation, of which 31% relate to fossil-fuel based energy generation.

3.3.2 Bank of Nova Scotia

In 2018, Scotiabank announced its support of the TCFD.¹³ The bank publishes a TCFD Report but does not communicate on its exposure to carbon-related assets.

3.3.3 Canadian Imperial Bank of Commerce

In its 2020 Annual Report, CIBC writes about the TCFD: “Along with many other global banks, we are participating in the United Nations Environment Programme Finance Initiative (UNEP FI) and the TCFD, in order to accelerate our progress and ensure consistency in the approach to effective climate scenario analysis. Developing a comprehensive TCFD report is a journey that is expected to take several years. We are proactively collaborating with peer banks to ensure consistency and comparability as we improve the completeness of our TCFD reporting.”¹⁴

The bank publishes a TCFD Report but does not communicate on its exposure to carbon-related assets.

3.3.4 Royal Bank of Canada

RBC publishes a TCFD Report, in which they communicate details on their exposure to fossil fuel.

Their exposure to carbon-related assets, which includes utilities without renewables, oil & gas, mining & metals (coal only) amounted to CAD 51.1 billion in 2019. This amount represented 82% of the bank’s CET 1 Capital of 2019.

The bank also communicates on the distribution of its exposure to power generation, of which 49% relate to fossil-fuel based energy generation.

3.3.5 Desjardins Group

DG presents a specific disclosure, based on the recommendations of the TCFD, in its annual social and cooperative responsibility report.

However, the bank does not communicate on its exposure to carbon-related assets.

3.3.6 Toronto Dominion

TD is “a member of the United Nations Environment Programme Finance Initiative (UNEP-FI) and is participating in TCFD pilot studies led by UNEP-FI that seek to develop harmonized industry-wide approaches for climate scenario analysis in bank lending, investments, and insurance portfolios.”¹⁵

In its 2019 TCFD Report, TD communicates an exposure of CAD 31 billion to carbon-related assets. This amount represents 56% of the bank’s CET 1 Capital.

The bank also communicates on the distribution of its exposure to power generation, of which 55% relate to fossil-fuel based energy generation.

Table 16 Financial disclosure as part of TCFD requirements (CAD mln)

	BMO	Scotia-bank	CIBC	RBC	DG	TD
Date	31/10/2020		31/10/2020	31/10/2019	-	31/10/2019
Exposure to carbon-related assets	13,830	-	-	51,100	-	31,000
CET 1 Capital	40,077	49,165	30,876	62,184	24,549	55,042
Exposure / CET 1 Capital	35%	-	-	82%	-	56%
Lending to Power generation						

	BMO	Scotia-bank	CIBC	RBC	DG	TD
Low carbon energy generation	58%	-	-	49%	-	44%
Fossil-fuel based energy generation	31%	-	-	49%	-	55%
Other	11%	-	-	1%	-	2%

Source: Bank of Montréal (2020, November), *Climate Report 2020*, p. 86; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 140; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 58, 60; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 66; Desjardins Group (2020, March), *Annual Report 2019*, p. 71-72; Toronto Dominion (2021, January), *Annual Report 2020*, p. 89.

3.4 Summary of all data on fossil fuel and oil & gas exposure

The previous sections presented our findings on the banks' exposure to the fossil fuel industry, both from the figures that the banks report and from the figures coming from our financing research. In both cases, the exposure to the fossil fuel industry through the loans provided is significant compared to the CET 1 Capital.

To summarise:

- **Loans and acceptances as published by the banks (section 3.2.1):** this figure comes from the banks' annual reports and reflects the amount of loans provided by the banks that are still outstanding.
- **Outstanding loans from our financing research (section 3.2.2):** this figure comes from our financial research. It also reflects the amount of loans provided by the banks that are still outstanding. However, differences arise from figures presented by the banks as:
 - Our financial research only covers the January 2016 to December 2020 period. Therefore, any loans secured before January 2016 do not appear.
 - Our financial research comes up with the total amount of loans secured. The share of loans still outstanding is an estimation from us. Therefore, it may differ from what banks publish.
 - Our financial research includes revolving credit facilities in full, while banks only present the drawn amount. Undrawn commitments are presented in the off-balance sheet items.
 - Our financial research used our methodology for sectorization (based on TRBC sectors). It may differ from the banks' sectorization and reporting.
 - The financial databases used as sources for the financing research (i.e., Thomson Reuters Eikon, Bloomberg) mostly capture syndicated financing, as bilateral financing is generally not disclosed. Therefore, our financial research reflects only partially the financing provided by the banks.
- **EAD as published by the banks (section 3.2.3):** This figure comes from the banks' annual reports and reflects the total value that the bank is exposed to at the time of default. It helps to reflect the global risk supported by the bank from the loans it provides. Banks often calculate an EAD value for each loan and then use these figures to determine their overall default risk. Basel compliance requires estimated EAD to be at least equal to or above the drawn balance of the credit line. Indeed, some exposures, such as credit cards or credit lines, should include the potential increase in the outstanding balance from a reference date to the time of default. As an example, Revolving Credit Facility should include both the drawn amount and the undrawn amount. For this reason, EAD will be most of the time higher than the outstanding balance.
- **Exposure to carbon-related assets (section 3.3):** This figure comes from the bank's TCFD or similar reports. TCFD writes in June 2017 about the exposure to carbon related assets: "*Recognizing that the term carbon-related assets is not well defined, the Task Force encourages asset owners and asset managers to use a consistent definition to support comparability. The Task Force suggests defining carbon-related assets as those assets tied to the energy and utilities sectors under the Global Industry Classification Standard, excluding water utilities and independent power and renewable electricity producer industries.*"¹⁶.

Table 17 summarizes our findings and illustrates the weight of the Fossil Fuel industry in the banks' CET 1 Capital.

Table 17 Summary of the Canadian banks' exposure to the Fossil Fuel industry (CAD mln)

Fossil Fuel	BMO	Scotia- bank	CIBC	RBC	DG	TD
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616
Loans and acceptances as published by the banks (section 2.2.1.)	20,228	35,300	18,437	16,618	1,034	17,691
as % of CET 1 Capital	50%	72%	60%	24%	4%	28%
Outstanding loans from our financing research (section 2.2.2.)	23,974	26,581	18,100	23,951	4,159	25,801
as % of CET 1 Capital	60%	54%	59%	35%	17%	41%
EAD as published by the banks (section 2.2.3.)	32,664	-	46,795	64,755	19,264	-
as % of CET 1 Capital	82%	-	152%	95%	78%	-
Exposure to carbon-related assets (section 2.3)	13,830	-	-	51,100	-	31,000
as % of CET 1 Capital	35%	-	-	82%	-	56%

Source: Profundo.

Table 18 summarizes our findings and illustrates the weight of the Oil & Gas industry in the banks' CET 1 Capital.

Table 18 Summary of the Canadian banks' exposure to the Oil & Gas industry (CAD mln)

Oil & Gas	BMO	Scotia- bank	CIBC	RBC	DG	TD
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616
Loans and acceptances as published by the banks (section 2.2.1.)	12,644	16,400	9,017	7,593	358	9,435
as % of CET 1 Capital	32%	33%	29%	11%	1%	15%
Outstanding loans from our financing research (section 2.2.2.)	21,780	22,065	15,048	19,604	3,208	21,898
as % of CET 1 Capital	54%	45%	49%	29%	13%	35%
EAD as published by the banks (section 2.2.3.)	32,664	-	21,525	22,671	929	-
as % of CET 1 Capital	82%	-	70%	33%	4%	-
Exposure to carbon-related assets (section 2.3) – TCFD	13,830	-	-	51,100	-	31,000
as % of CET 1 Capital	35%	-	-	82%	-	56%

Source: Profundo.

3.5 Impact of a 1.5°C scenario on the bank's financial stability

3.5.1 General impacts of a loan's default

Default loans have a material cost for banks. Even before a loan defaults, banks must record and maintain provisions as soon as the default is suspected. Main impacts:

- **Income Statement:** if a loan is expected not to be repaid, the bank needs to take a provision which is a charge in its profit & loss account. This reduces the net profit of the bank.
- **Balance Sheet:** as presented in section 3.1.1, loans are the major component of the banks' assets. When a loan defaults or a provision needs to be taken on a loan, the asset loses its value. This value loss, recorded in the income statement, affects the liability side of the balance sheet in the item 'equity value'. This affects the solvency/capital ratios of the bank.
- **Impact on the Credit Rating:** if a bank's solvency/capital ratios are affected, it will lose its credibility to repay its own liabilities. This will lead to a decrease in the credit rating of the bank. In turn, this increases the cost of funding of the bank, i.e. the interest rate that the bank pays on the funds it acquires. A higher cost of funds means lower returns.

3.5.2 Simulation of Scenario B: banks can bear a value loss in loans to fossil fuel

The seven case studies lead to an average percentage impact versus shareholdings' value (51%), and a percentage value impact in two scenarios for net-debt, respectively 0% in scenario A and 23% in scenario B.

In the analysis below, we will only focus on the simulation with scenario B, as it is the only scenario implying an impact on debt. Indeed, in scenario B, the fact that fossil fuel companies' debt is affected by 23% means that these companies will not be able to reimburse 23% of their debt. This has a direct impact on the banks' financial statements.

Only loans are considered in the simulation, as:

- Underwriting services are not accounted in the balance sheet, as they involve shares and bonds that are in the hand of other investors as soon as they are issued,
- Investments figures are potentially over-estimated as they may include double-counted holdings of share or bonds, as explained in section 3.2.4. Moreover, the risk in asset-management for third parties is supported by the clients.
- **Loans & Acceptances, as published by the banks**

In 0, the base case illustrates the current total loans & acceptances as reported by the banks, as well as those related to oil & gas. Scenario B reflects the 23% negative impact on the O&G companies' debt, which translates into a reduction of 23% of the loans reported in the banks' assets.

The analysis focuses on the oil & gas sector rather than the whole fossil fuel industry. Indeed, the fossil fuel industry includes utilities, which is not restricted to fossil fuel-related activities but also comprises water utilities and renewable power generation. The banks do not provide the split in utilities between the fossil fuel and the non-fossil fuel activities.

Table 19 Impact of Scenario B on O&G Loans & Acceptances reported by the banks (CAD mln)

Oil & Gas	BMO	Scotia-bank	CIBC	RBC	DG	TD
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020
BASE CASE						
O&G Loans & Acceptances	12,644	16,400	9,017	7,593	358	9,435
Total Loans & Acceptances	458,497	625,100	416,388	685,245	203,767	742,411
SCENARIO B						
Loss in Scenario B on O&G loans and acceptances	2,908	3,772	2,074	1,746	82	2,170
O&G Loans & Acceptances in Scenario B	9,736	12,628	6,943	5,847	276	7,265
Total Loans & Acceptances in Scenario B	455,589	621,328	414,314	683,499	203,685	740,241

Source: Profundo; Bank of Montréal (2020, November), *Annual Report 2020*, p. 131; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 132; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 93; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 112; Desjardins Group (2020, March), *Annual Report 2019*, p. 76; Toronto Dominion (2021, January), *Annual Report 2020*, pp. 49-50.

Table 20 reflects the consequences from the 23% reduction in the loans' asset value on the regulatory capital ratios. As explained in section 3.5.1, a reduction in the loans' asset value leads to the record of a loss in the income statement, which itself leads to a reduction in the equity value. Because the regulatory capital ratios are based on equity, they are also directly affected.

Table 20 Impact of Scenario B with O&G loans and acceptances on regulatory capital ratios (CAD mln)

Oil & Gas	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
BASE CASE							
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616	-
Tier 1 Capital	45,840	55,362	34,775	74,005	24,549	69,091	-
Tier 2 Capital	8,821	9,150	6,194	10,923	0	10,930	-
Tier 1 + Tier 2 Capital	54,661	64,512	40,969	84,928	24,549	80,021	-
RWA	336,607	417,138	254,871	546,242	113,861	478,909	-
CET 1 Ratio	11.9%	11.8%	12.1%	12.5%	21.6%	13.1%	13.8%
Tier 1 Capital Ratio	13.6%	13.3%	13.6%	13.5%	21.6%	14.4%	15.0%
Total Capital Ratio	16.2%	15.5%	16.1%	15.5%	21.6%	16.7%	16.9%
SCENARIO B							
CET 1 Capital	37,169	45,393	28,802	66,336	24,467	60,446	-

Oil & Gas	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
Tier 1 Capital	42,932	51,590	32,701	72,259	24,467	66,921	-
Tier 2 Capital	5,913	5,378	4,120	9,177	-82	8,760	-
Tier 1 + Tier 2 Capital	48,845	56,968	36,821	81,435	24,384	75,681	-
RWA	336,607	417,138	254,871	546,242	113,861	478,909	-
CET 1 Ratio	11.0%	10.9%	11.3%	12.1%	21.5%	12.6%	13.2%
Tier 1 Capital Ratio	12.8%	12.4%	12.8%	13.2%	21.5%	14.0%	14.4%
Total Capital Ratio	14.5%	13.7%	14.4%	14.9%	21.4%	15.8%	15.8%

Source: Profundo; Bank of Montréal (2020, November), *Annual Report 2020*, p. 67; Bank of Nova Scotia (2020, December), *Annual Report 2020*, p. 217; Canadian Imperial Bank of Commerce (2020, December), *Annual Report 2020*, p. 167; Royal Bank of Canada (2020, December), *Annual Report 2020*, p. 216; Desjardins Group (2020, March), *Annual Report 2019*, p. 54; Toronto Dominion (2021, January), *Annual Report 2020*, p. 214.

With an average CET 1 Ratio of 13.8% in the base case, the Canadian banks are well above the required level of 4.5%. The simulation of scenario B, which implies a default for 23% of the oil & gas loans and acceptances, leads to an average decrease of 50 basis points (0.5%) in the CET 1 Ratio of the banks, to 13.3%. Therefore, despite the 23% default, the regulatory capital ratios remain well above the levels required by the regulator. Indeed,

- **Outstanding loans, from our financing research**

The same simulation was conducted by replacing the loans & acceptances published by the banks by the figures from our financing research (Table 21). The following tables are still focusing on Oil & Gas.

Table 21 Impact of Scenario B on O&G Outstanding loans from our financing research (CAD mln)

Oil & Gas	BMO	Scotia-bank	CIBC	RBC	DG	TD
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020
BASE CASE						
O&G Outstanding loans	21,780	22,065	15,048	19,604	3,208	21,898
SCENARIO B						
Loss in Scenario B on O&G Outstanding loans	5,009	5,075	3,461	4,509	738	5,037
O&G Outstanding loans in Scenario B	16,771	16,990	11,587	15,095	2,470	16,861

Source: Profundo, Refinitiv Eikon

Table 22 Impact of Scenario B with O&G outstanding loans on regulatory capital ratios (CAD mln)

Oil & Gas	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
BASE CASE							

Oil & Gas	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616	-
Tier 1 Capital	45,840	55,362	34,775	74,005	24,549	69,091	-
Tier 2 Capital	8,821	9,150	6,194	10,923	0	10,930	-
Tier 1 + Tier 2 Capital	54,661	64,512	40,969	84,928	24,549	80,021	-
RWA	336,607	417,138	254,871	546,242	113,861	478,909	-
CET 1 Ratio	11.9%	11.8%	12.1%	12.5%	21.6%	13.1%	13.8%
Tier 1 Capital Ratio	13.6%	13.3%	13.6%	13.5%	21.6%	14.4%	15.0%
Total Capital Ratio	16.2%	15.5%	16.1%	15.5%	21.6%	16.7%	16.9%
SCENARIO B							
CET 1 Capital	35,068	44,090	27,415	63,573	23,811	57,579	-
Tier 1 Capital	40,831	50,287	31,314	69,496	23,811	64,054	-
Tier 2 Capital	3,812	4,075	2,733	6,414	-738	5,893	-
Tier 1 + Tier 2 Capital	44,642	54,362	34,047	75,910	23,074	69,948	-
RWA	336,607	417,138	254,871	546,242	113,861	478,909	-
CET 1 Ratio	10.4%	10.6%	10.8%	11.6%	20.9%	12.0%	12.7%
Tier 1 Capital Ratio	12.1%	12.1%	12.3%	12.7%	20.9%	13.4%	13.9%
Total Capital Ratio	13.3%	13.0%	13.4%	13.9%	20.3%	14.6%	14.7%

Source: Profundo, Refinitiv Eikon.

Thanks to solid fundamentals and sound financial health, the CET 1 Ratio also remains well above the required level in Scenario B, with an average 12.7%.

Finally, the simulation was done with the whole fossil fuel figures from our financing research.

Table 23 Impact of Scenario B on FF Outstanding loans from our financing research (CAD mln)

Fossil Fuel	BMO	Scotiabank	CIBC	RBC	DG	TD
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020
BASE CASE						
Fossil Fuel Outstanding loans	23,974	26,581	18,100	23,951	4,159	25,801
SCENARIO B						
Loss in Scenario B on FF Outstanding loans	5,514	6,114	4,163	5,509	957	5,934
FF Outstanding loans in Scenario B	18,460	20,467	13,937	18,442	3,203	19,867

Source: Profundo, Refinitiv Eikon

Table 24 Impact of Scenario B with FF outstanding loans on regulatory capital ratios (CAD mln)

Fossil Fuel	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
Date	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/12/2019	31/10/2020	
BASE CASE							
CET 1 Capital	40,077	49,165	30,876	68,082	24,549	62,616	
Tier 1 Capital	45,840	55,362	34,775	74,005	24,549	69,091	
Tier 2 Capital	8,821	9,150	6,194	10,923	0	10,930	
Tier 1 + Tier 2 Capital	54,661	64,512	40,969	84,928	24,549	80,021	
RWA	336,607	417,138	254,871	546,242	113,861	478,909	
CET 1 Ratio	11.9%	11.8%	12.1%	12.5%	21.6%	13.1%	13.8%
Tier 1 Capital Ratio	13.6%	13.3%	13.6%	13.5%	21.6%	14.4%	15.0%
Total Capital Ratio	16.2%	15.5%	16.1%	15.5%	21.6%	16.7%	16.9%
SCENARIO B							
CET 1 Capital	34,563	43,051	26,713	62,573	23,592	56,682	
Tier 1 Capital	40,326	49,248	30,612	68,496	23,592	63,157	
Tier 2 Capital	3,307	3,036	2,031	5,414	-957	4,996	
Tier 1 + Tier 2 Capital	43,633	52,285	32,643	73,910	22,636	68,153	
RWA	336,607	417,138	254,871	546,242	113,861	478,909	
CET 1 Ratio	10.3%	10.3%	10.5%	11.5%	20.7%	11.8%	12.5%
Tier 1 Capital Ratio	12.0%	11.8%	12.0%	12.5%	20.7%	13.2%	13.7%
Total Capital Ratio	13.0%	12.5%	12.8%	13.5%	19.9%	14.2%	14.3%

Source: Profundo, Refinitiv Eikon.

Even when considering the whole fossil fuel industry, the CET 1 Ratio remains well above the required level in Scenario B, with an average of 12.5%. This means that the banks' financial stability would not be heavily hurt by a decline of 23% in the fossil fuel industry.

The most impacted banks are Scotiabank, CIBC and BMO, as they lose around 100 to 160 basis points (0.1% to 0.15%) in their CET 1 Ratio. RBC, DG and TD are less impacted, as their CET 1 Ratio generally lose less than 100 basis points.

Table 25 Summary of Impact of Scenario B on CET 1 Capital Ratio

CAD mln	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
CET 1 in BASE CASE	11.9%	11.8%	12.1%	12.5%	21.6%	13.1%	13.8%
CET 1 in SCENARIO B							

CAD mln	BMO	Scotiabank	CIBC	RBC	DG	TD	Average
With Loans and acceptances as published by banks, O&G	11.0%	10.9%	11.3%	12.1%	21.5%	12.6%	13.2%
With Outstanding loans from our financing research, O&G	10.4%	10.6%	10.8%	11.6%	20.9%	12.0%	12.7%
With Outstanding loans from our financing research, Fossil Fuel	10.3%	10.3%	10.5%	11.5%	20.7%	11.8%	12.5%
Impact on CET 1 (in basis points)							
With Loans and acceptances as published by banks, O&G	-86	-90	-81	-32	-7	-45	-57
With Outstanding loans from our financing research, O&G	-149	-122	-136	-83	-65	-105	-110
With Outstanding loans from our financing research, Fossil Fuel	-164	-147	-163	-101	-84	-124	-130

Source: Profundo, Refinitiv Eikon.

4

Summary and conclusions

The commitment of the Parties to the 2015 Paris Agreement to limit global temperature increase to 1.5°C versus pre-industrial levels and the connected NDCs mean that the fossil fuel sector will be confronted with two types of impacts. Firstly, the fossil fuel industry will need to reduce emissions in its processes (scope 1 and 2) and supply chains (scope 3). Secondly, the sector will be confronted with declining demand and potentially regulation on supply.

Consequently, fossil fuel companies might be confronted with stranded assets. Subsequently, their asset values might decline, and they might not be able to repay their debts. In this way, the financial stability in some countries might be impacted by regulation on 1.5°C and by market consequences of 1.5°C.

CTI has calculated for many fossil fuels companies how their current investment plans could be affected by 1.5°C, and how their production might be affected. In this study, the translation of this is made to the Canadian fossil fuel companies' property, plant, and equipment (PPE) value. This item includes capitalized exploration costs of developed and undeveloped proven reserves as well as plants and equipment related to this. Also, a calculation is made of the impact on the present and future earnings potential of developed and undeveloped proven reserves. These make up the discounted cash flow (DCF).

This study contains seven case studies. This selection belongs to the top-20 fossil fuel companies with the largest identified loans, shares and bond holdings held by the selected Canadian financial institutions. The top-20 takes 43% of all the identified financing instruments and is representative for a 'stress test' at the six leading financial institutions.

The seven case studies show that a 1.5°C scenario can lead to a value loss which is equivalent to 51% of the shareholders' value. Concerning debt (loans and bonds), financial institutions can find a way out without losses by not renewing loans at maturity. However, if financial institutions continue to renew their loans in the coming decade, the value impact on debt could be a negative 23%. In this report, the 23% number is 'stress' tested versus the capital ratios of the financial institutions.

The financial analysis of the selected Canadian financial institutions conducted in this research indicates solid financial stability in a business-as-usual scenario, thus without the impact of a 1.5°C scenario. This overestimates stability, as it does not attempt to account for the impacts of higher levels of global warming (e.g. more extreme weather, higher sea levels, etc.) on the broader economy. The equity and capital ratios, including the CET 1 Ratio, stand well above the levels required by the regulator, which implies relatively safe capitalization and solvency.

This study evaluates the exposure of the Canadian financial institutions to the fossil fuel industry, with a focus on the oil & gas sector, through the loans they provide and the investments they make. The analysis drew on different sources, namely the reports published by the banks, and the financing research completed internally. Most of the exposure is coming from the provision of loans, as they account on average for around half of the assets.

Loans granted to the oil & gas sector, and more broadly to the fossil fuel industry, are significant and represent a high proportion of the CET 1 Capital. On average, loans and acceptances to the fossil fuel industry, as published by the banks, represent 40% of the CET 1 Capital of the banks. Outstanding loans to the fossil fuel industry, as calculated in our financing research, account for 44% of the CET 1 Capital on average.

The regulatory capital ratio remains well above the required level in a 1.5°C scenario. The 23% value impact on debt does not put the banks at risk. Based on the banks' own categorization of oil & gas loans, the CET 1 Ratio of 13.8% in the base case would decline to 13.2%. Based on the applied loan methodology from Profundo, the stress test of a 23% loan value decline from the fossil fuel industry leads to an average CET 1 ratio of 12.5%, versus an average 13.8% reported at the latest reporting date. **Of the six financial institutions, Bank of Montréal, Bank of Nova Scotia and CIBC are most impacted in a 1.5°C scenario, as their CET 1 Capital Ratio is the most affected.**

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Profundo

Research & advice

Radarweg 505
1043 NZ Amsterdam
The Netherlands
+31-20-8208320
profundo@profundo.nl
www.profundo.nl