Size of the Prize: How Bay Street could make $110 billion from climate change solutions.

Canada has set out ambitious targets for decarbonization under the Paris agreement[i]. The Pan-Canadian Framework on Clean Growth and Climate Change[ii] sets a clear trajectory for transition in the Canadian economy. This is in line with the global economic shift to a sustainable economy increasingly driven by cost-effective technologies that offer investors a positive net-present value (NPV), separate from any public policy considerations.

This clean transition will require average annual investments of $158 billion per year from 2019 to 2025 across the building, transportation, power and heavy industry sectors.

Given the capital-intensive nature of this transition, the Canadian financial sector has a critical role to play to finance these transactions. In an ambitious scenario, by 2025, this report estimates up to $110 billion in annual financial sector revenue is available for Canadian financial institutions across the personal banking, capital markets, insurance and wealth management businesses. This potential source of revenue is broken down more specifically in the below table.

Financial sector opportunity for transition to sustainable economy

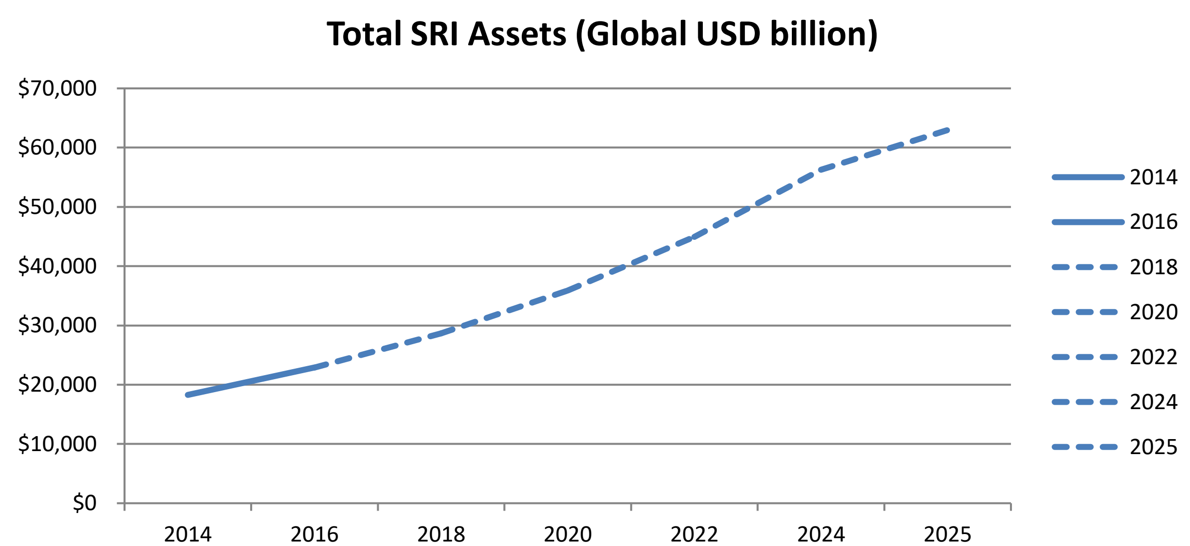
Sector source of funds		Opportunity range (millions)
Potential annual Canadian financial sector revenues by 2025 from sustainable finance activities	Greening and Green Residential Homes/Buildings (Interest)	$4,490 - $17,980
	Greening and Green Commercial Buildings (Interest)	$2,680 – $10,720
	Greening Personal Transportation (Interest)	$550 - $2,210
	Greening Public Transport Infrastructure (Interest)	$610 - $2,430
	Greening Heavy Freight Trucks (Interest)	$490 - $1,940
	Greening Electricity Generation (Interest)	$1,330 - $5,310
	Greening Oil, Natural Gas, Pipelines (Interest and Underwriting)	$1,470 - $5,890
	Greening All other Heavy Industry (Interest and Underwriting)	$1,120 - $4,480
Global Clean Infrastructure Investment (Yields)		$10,280 - $41,120
Labeled green bonds (underwriting)		$105 - $420
Wealth Management for Sustainable Finance (Fees)		$4,500 - $18,100
Total (numbers may not add due to rounding)		**$27,650 - $110,600**

To put these results in context, the top 12 biggest financial firms in Canada had revenue of approximately $435 billion in 2017[iii] – the $110 billion potential sustainable finance revenues could represent up to 14% of current revenue, according to Corporate Knights.

In an ambitious scenario, by 2025 there is an estimated $110 billion[iv] of financial sector revenue up for grabs for Canadian financial institutions across asset management, personal banking, capital markets, insurance and wealth management businesses. This $110 billion financial sector opportunity is about both growing and changing markets. It includes incremental domestic revenue, revenue from the "greening" of existing domestic markets, as well as global opportunities in wealth management, infrastructure investment and green bonds underwriting.

The $110 billion financial sector revenue opportunity breaks down as follows:

- "Greening" existing domestic financial services markets: $43.7b,
- Incremental interest earned from incremental domestic clean and climate adaptation financing requirements (estimated at $36 billion per year from 2019 to 2025): $7.5b
- Capitalizing on sustainable wealth management trends: $18b of fees by capturing 5% of the US$63 trillion in sustainable AUM in 2025[v],
- Yields from the global clean infrastructure build-out: $41b of yields based on Canadian institutional investors financing 5% of US$24.7 trillion of global clean infrastructure investments required between 2019 and 2025[vi],
- Capturing a 5% underwriting share of blossoming global green bond markets: $420m of underwriting fees from the estimated US$1 trillion green bond market by 2025[vii]



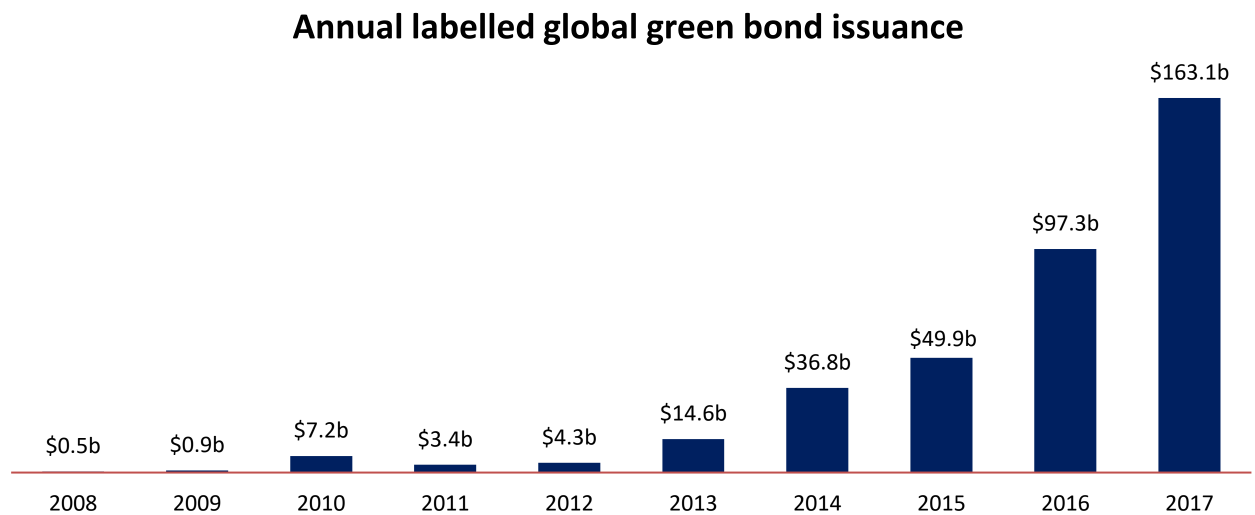
Source: Global Sustainable Investment Review

Total SRI Assets ($ billions). Projections based on 12% CAGR (including inflows)

With respect to wealth management, Canada's responsible investment market is continuing to experience rapid growth, estimated at 22% between 2014 and 2016.[viii] The Responsible Investment Association estimates that responsible investing represents 38% of the Canadian investment industry, with management of nearly $1.5 trillion of assets under management incorporating ESG integration strategies[ix]. Globally, this market is expected to reach US$63 trillion by 2025[x] driven by women, millennials and high net-worth individuals (HNWIs), with almost half of HNWIs expected to increase their social impact investments over the next two years.[xi] Many of the world's leading wealth managers have recently ramped up their sustainable product and service offerings including BNP Paribas, UBS, Morgan Stanley, and JP Morgan Asset Management.[xii] Taking a more holistic approach to values-based investing represents a growth opportunity for Canada's global banks and insurers to boost their already sizable assets under management (currently at $3.6 trillion[xiii]) in the coming years. In an ambitious scenario

Canadian financial institutions could reap $18 billion in annual wealth management fees by capturing 5% market share of the estimated US$63 trillion sustainable investment space by 2025, with cost-effective, holistic investment solutions that charge 0.5% in fees.

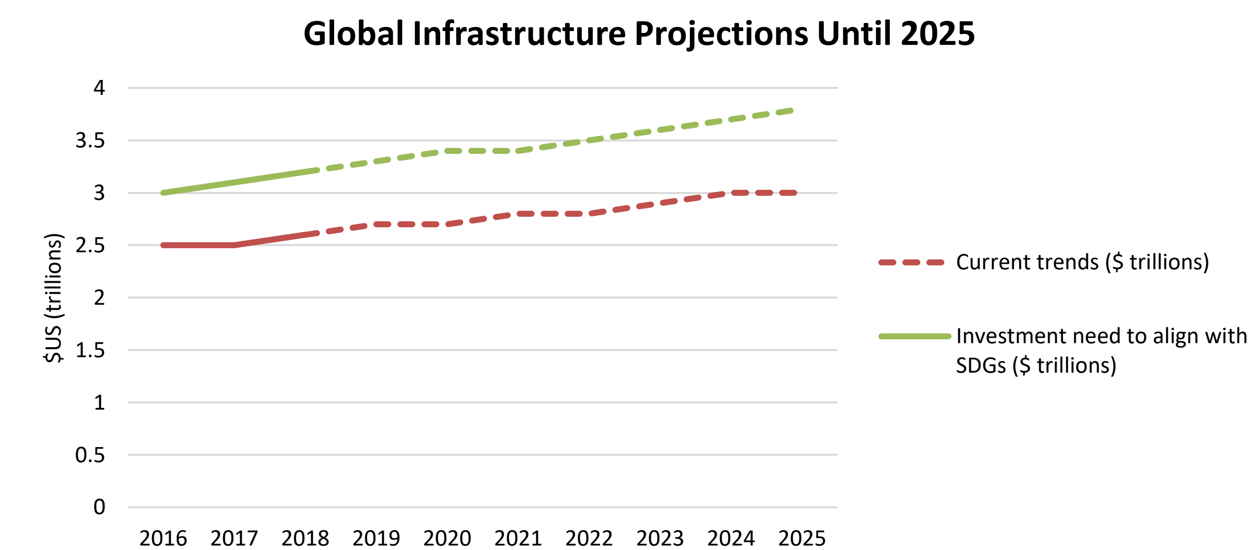
Canadian outstanding bond issues explicitly labelled as “green” stood at over $10 billion in August 2018, with close to $5 billion of that issued in 2018 alone. This increase follows trends globally, which saw green bond issuances more than triple since 2015, as shown below.



Source: Bloomberg New Energy Finance

[Annual labelled global green bond issuances]

This trend is expected to continue, with the global market for green bonds expected to hit up to US$1 trillion by 2025[xiv]. In an ambitious scenario, where Canadian FI’s capture 5% market share of the global green bond underwriting market, this represents $420 million in annual underwriting fees by 2025[xv].



Source: Global Infrastructure Hub Annual Global Infrastructure Investments

With respect to infrastructure, a global build-out valued at over US$90 trillion is anticipated between 2018-2040[xvi], including a specific focus on emerging markets with superior yields that will account for the biggest share of investments over this period.

Six of the top 12 infrastructure investors in the world are from Canada (including Toronto-based Brookfield, CPPIB, Ontario Municipal Employees Retirement System (OMERS), and Ontario Teachers' Pension Plan (OTPP)). Leading pension funds that set the standard for how Canada's $3.6 trillion pension assets[xvii] are managed are already leveraging this opportunity with PSP Investments[xviii] and OTPP[xix] each deploying $1.6 billion into renewable energy assets in 2017. PSP for instance already has allocated 12% of total assets to infrastructure, a substantial portion of which qualifies as sustainable. Notably, PSP has generated annualized five-year performance from this allocation of 11% beating the benchmark which returned 5% over the same period[xx].

In an ambitious scenarios, Canadian investors could be generating $41 billion in annual yields by 2025 by boosting exposures to sustainable infrastructure in emerging markets and providing 5% of the US$24 trillion infrastructure investment requirements between from 2019-2025.[xxi]

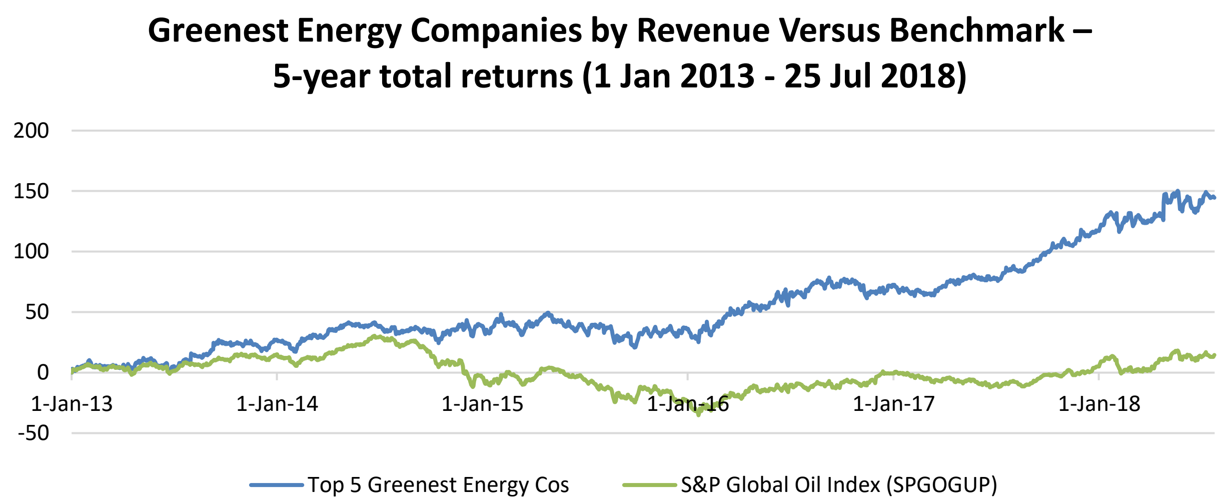
Activity of this scale would also represent additional opportunities for the capital markets teams at the banks to facilitate this large allocation of capital with investment vehicles, derivatives and currency hedging instruments.

Focus on financing the energy transition

One significant opportunity for capital markets teams and energy investment bankers in particular is to help identify strategic opportunities for Canadian energy companies to tap into growing markets for sustainable commodities. The vast feedstock contained in the oil sands combined with existing petrochemical infrastructure is a competitive differentiator for Canada. This offers a jumping off point to diversify income and boost revenues via the extraction and value-added processing including the productions of synthetic and bio-based sustainable materials and fuels[xxii].

Some examples of existing success stories include:

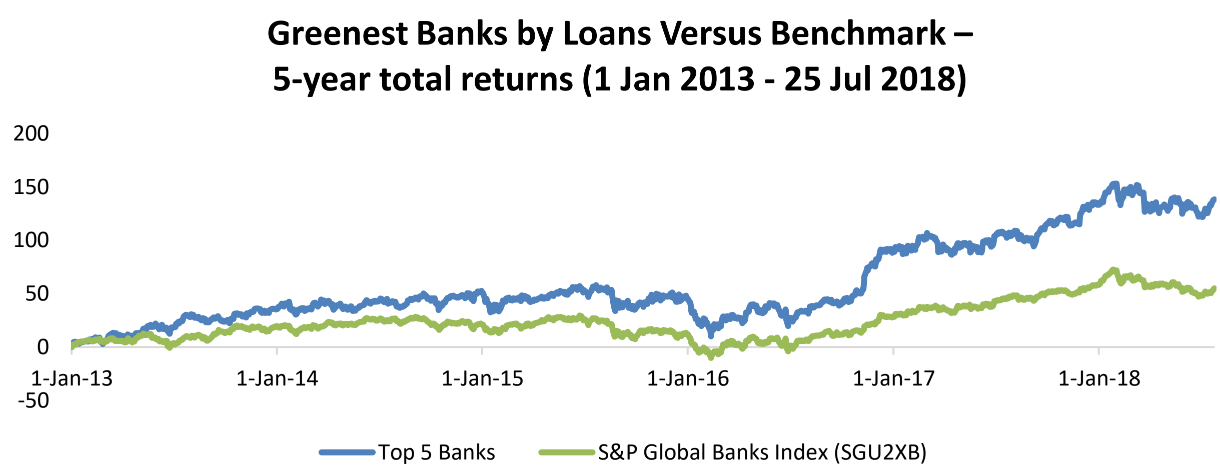
- Alberta-based **TransAlta Corp.**, in 2013, spun off **TransAlta Renewables** in an initial public offering (IPO) on the TSX. Five years later, TransAlta Renewables, once a side-business, has tripled in value and is now worth over $3 billion[xxiii], a third more than the parent corporation. TransAlta retained a 70% stake in TransAlta Renewables, which arguably helped it weather recent changes in the energy market, and it is now resurgent as it recalibrates to fit in with Alberta's energy transition away from coal power. Those transactions, the IPO, the ownership stake, the tripling in value, all represent opportunities for the financial sector which are yet to be realized on the scale they could be in a sustainable economy.
- **Neste Oil**, a traditional fossil fuel refiner from Finland now earns 25% of its annual 11.7 billion EUR revenues (and close to half its profits) from refining biofuels. Over the past five years, Neste Oil has generated a total return of 640%[xxiv], outpacing the S&P Global Oil Index benchmark by more than a factor of 40.
- Over the course of a decade, the **Danish National Oil and Gas Company** invested heavily in onshore and offshore wind to the point where renewable power now comprises 60% of its revenue. It has since rebranded as **Ørsted**, generating a 79.6% total return since its IPO in 2015, besting its traditional benchmark over that period by a factor of three.[xxv]



Source: Corporate Knights, Bloomberg[xxvi]

Greenest Energy Companies by Revenue Versus Benchmark – 5-year total returns

Developing expertise in navigating, lining up capital and financing these diversification success stories would be invaluable for Canada's resource sector. It could also be an exportable skill for Canada's capital market teams for resource companies around the world who are struggling with strategy and strained balance sheets, but looking for ways to align their businesses with the long-term growing demand for sustainable commodities.



Source: Corporate Knights, Bloomberg[xxvii]

"Green finance is a major opportunity"

In the ambitious opportunity scenario, it is assumed that Canadian institutional investors take Mark Carney's invitation to heart and provide debt capital at scale to fuel the global sustainable infrastructure boom while earning attractive yields, bringing their overall portfolio exposures to sustainable infrastructure up to as high as 10% by 2025.

"Theory suggests capital should flow from advanced to emerging economies–where the returns are highest. For long spells, however, the opposite has happened, confounding the textbooks and further driving down advanced economy bond yields. And on the occasions when capital has flowed to emerging markets, it has been too volatile, amplified cycles, distorted asset prices and fed credit imbalances in recipient countries. In this context, green finance is a major opportunity. By ensuring that capital flows finance long -term projects in countries where growth is most carbon intensive, financial stability can be promoted. By absorbing excess global saving, equilibrium interest rates can be raised and macroeconomic stability enhanced. And by allocating capital to green technologies, the prospects for an environmentally sustainable recovery in global growth will increase."[xxviii]

-Mark Carney

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[i] CANADA'S INDC SUBMISSION TO THE UNFCCC. (n.d.). Retrieved from http://www4.unfccc.int/Submissions/INDC/Published Documents/Canada/1/INDC - Canada - English.pdf

[ii] PAN-CANADIAN FRAMEWORK on Clean Growth and Climate Change. (n.d.). Retrieved from https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

[iii] Numbers have been aggregated from Financial Post 500 data. See here for more information: https://business.financialpost.com/features/fp500-the-premier-ranking-of-corporate-canada

[iv] These estimates were generated using generally conservative proxies for fees from reliable sources detailed in their methodology for interest charges, yields, leasing rates, underwriting fees and investment management fees.

[v] https://www.bloomberg.com/professional/blog/global-sustainable-investments-grow-25-23-trillion/ ($23t in AUM in 2016 with CAGR of 12%)

[vi]https://outlook.gihub.org/?utm_source=CWA%20trade%20media%20release&utm_medium=Media%20release&utm_campaign=CWA%20update

[vii] https://www.reuters.com/article/greenbonds-issuance/global-green-bond-issuance-hit-record-155-5-billion-in-2017-data-idUSL8N1P5335

[viii] https://www.bloomberg.com/professional/blog/global-sustainable-investments-grow-25-23-trillion/

[ix] Trends Report. Retrieved from https://www.riacanada.ca/trendsreport/

[x] https://www.bloomberg.com/professional/blog/global-sustainable-investments-grow-25-23-trillion/

[xi] World Wealth Report (2016)

[xii] https://am.jpmorgan.com/private-bank/public/gl/en/sustainable-investing-highlight-reel, http://www.morganstanley.com/auth/content/dam/msdotcom/en/assets/pdfs/articles/investing-with-impact.pdf, https://wealthmanagement.bnpparibas/asia/en/expert-voices/the-importance-of-sri-and-how-it-adds-value-to-investors.html, https://www.ubs.com/global/en/asset-management/investment-capabilities/sustainability.html

[xiii] Assets under management of Canada's big 5 banks combined with Manulife and Sun Life stood at $3.6 trillion according to latest figures available as of August, 2018. http://www.rbc.com/investisseurs/pdf/rbcglance.pdf (q2 2018) $655b, https://www.bmo.com/gam/us ($260b), https://www.td.com/about-tdbfg/corporate-information/corporate-profile/profile.jsp ($355b), https://www.cibc.com/ca/asset-management/pdf/news-publications/research/news-release-cam-en.pdf ($125b), http://www.scotiabank.com/ca/en/files/17/11/BNS_Annual_Report_-_2017.pdf ($207b),http://www.sunlife.com/Global/Investors/Financial+news/Announcement/Sun+Life+Financial%27s+2017+Annual+Report+and+2018+Management+Information+Circular+now+available?vgnLocale=en_CA&id=123179 ($975b), http://www.manulife.com/servlet/servlet.FileDownload?file=00P50000010BL5xEAG&ver=10 ($1,040b)

[xiv] https://www.reuters.com/article/greenbonds-issuance/global-green-bond-issuance-hit-record-155-5-billion-in-2017-data-idUSL8N1P5335

[xv] Based on underwriting fees of 37 basis points, http://www.columbia.edu/~dn75/Debt%20issue%20costs%20...%20Melnik%20and%20Nissim%20-%20final.pdf.

[xvi] https://www.un.org/pga/71/wp-content/uploads/sites/40/2017/02/New-Climate-Economy-Report-2016-Executive-Summary.pdf

[xvii] https://www150.statcan.gc.ca/n1/daily-quotidien/171215/dq171215d-eng.htm

[xviii] https://www.investpsp.com/media/filer_public/03-our-performance/01-reports/content-2/PSP-AR-2017-complete.pdf

[xix] https://www.otpp.com/documents/10179/786418/Responsible+Investing+Report/b61561d3-c285-4f2e-bebc-0aa252bf4ff6,

[xx] https://www.investpsp.com/media/filer_public/documents/PSP-2018-annual-report-en.pdf

[xxi] The average EM external debt yield, as measured by the JP Morgan Emerging Markets Bond Index Plus (EMBI+), is currently at 5.8%. https://schroders.com/en/us/private-investor/insights/fixed-income/outlook-2018-emerging-market-debt-absolute-return/

[xxii] A review of technology and policy deep decarbonization pathway options for making energy-intensive industry production consistent with the Paris Agreement. (2018, March 13). Retrieved from https://www.sciencedirect.com/science/article/pii/S0959652618307686

[xxiii] Bloomberg Terminal

[xxiv] Ibid from January 1 2013 to July 24, 2018

[xxv] Ibid

[xxvi] Methodology: Top 5 green Energy sector companies are those with highest calculated 2017 clean revenue (biofuels, renewable energy) as per cent of total revenues determined via their public disclosures from a universe of 15 major energy companies from G7 ex Japan countries (because of reporting cycles 2017 numbers are not available yet for Japanese companies). Bloomberg's PORT function was used to calculate the total returns. Portfolios are set to "Drifting weights" which sets the portfolio constituents expressed as a percentage of market weights. Once set, the security weights float over time until the portfolio is rebalanced. Weights change at the beginning of each day to reflect the prior day's closing prices. Companies evaluated for this analysis: Ørsted A/S (formerly DONG Energy), Neste Oyj, ExxonMobil, TOTAL SA, Enbridge, Suncor, Husky Energy, BP PLC, Equinor (formerly Statoil), PETROBRAS - PETROLEO BRAS-PR, ROYAL DUTCH SHELL PLC-A SHS, CHEVRON CORP, ENI SPA, Canadian Natural Resources Limited, and Cenovus

[xxvii] Methodology: Top 5 banks are those with highest calculated 2017 clean interest revenue (using Clean Finance Taxonomy--see Corporate Knights Appendix) as per cent of total revenues determined via their public disclosures from a universe of 35 major global banks from G7 ex Japan countries (because of reporting cycles 2017 numbers are not available yet for Japanese banks). Bloomberg's PORT function was used to calculate the total returns. Portfolios are set to "Drifting weights" which sets the portfolio constituents expressed as a percentage of market weights. Once set, the security weights float over time until the portfolio is rebalanced. Weights change at the beginning of each day to reflect the prior day's closing prices.

[xxviii] News, publications and events. (n.d.). Retrieved from http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech923.pdf]