



Value And Values In A Warming World

Disinvestment Supplement To The Third Edition Of
The Global Green Finance Index



March 2019



Introduction

Extracted from the third edition of the [Global Green Finance Index](#), the biannual assessment of the quality and depth of green finance offered by the world's financial centres. The GGFI is constructed by combing large amounts of quantitative data with the results of a global consultation with green finance professionals.

The standard questionnaire for the GGFI is designed to allow the addition of supplementary questions which can further explore trends and issues in green finance. For the third edition of the index, at the suggestion Client Earth (www.clientearth.org), the international non-profit environmental law organisation, a question was included which asked respondents for their views on disinvestment.

The results of this consultation prompted a deeper analysis of the quantitative data used to construct the index, and a paradox was discovered. Many of the financial centres near the top of the GGFI table are also leading centres for 'brown' finance. Centres that have long cultivated the financing of oil and gas companies now face questions about whether and how best to support those companies as they transition to more sustainable business models.

This paper explores the concept of a 'carbon bubble' - the concept that the valuation of companies dependent on fossil-fuel-based energy production is currently inflated, because investors are failing to take into account the stock market valuation implications of climate change. We examine some initial data that reveal which financial centres are most exposed to risks associated with a potential bursting of the carbon bubble or its on-going inflation, look at how fossil fuel disinvestment may catalyse these risks, and report survey findings that show enthusiasm for policymakers to support fossil fuel disinvestment with various policy tools.



Background

The use of investment decisions to support social causes has a long and proud history. From the stance taken on the abolition of slavery by the Society of Friends¹ in the 18th and 19th Centuries, through “Campaign GM” which forced the General Motors Company to take an active stance on social responsibility in the 1970s², to the Methodist Church’s leadership role on socially responsible investment³, and the rise of sharia finance in the 1990s and early 21st century⁴, investors have sought to use their power for good.

However, as the UN Secretary General stated in 2018, “Climate change is the defining issue of our time – and we are at a defining moment. We face a direct existential threat”⁵.

In the face of this threat, divestment has gained a new significance, and there is evidence that the fossil fuel divestment campaign may become the largest and most effective campaign of its type, with a lasting impact on the financial services sector.

Spotting The Carbon Bubble

In 2006, the Long Finance team questioned the sense of having fossil fuel assets on balance sheets at full value. Some straightforward calculations at that time, not taking account of fracking or shale gas, showed that burning the total fuel reserves then shown as assets on the balance sheets of listed companies, would result in CO₂ levels in the atmosphere around 1,200 parts per million (ppm). This is well above any 2 degree scenario which at the time projected that CO₂ levels would need to be restricted to around 450 ppm⁶.

In 2011, Carbon Tracker, a London-based financial services think tank, published ‘Unburnable Carbon’⁷. This ground-breaking piece of research calculated that all proven fossil fuel reserves owned by governments, and public and private companies were equivalent to 2,795 gigatonnes of CO₂. The report noted that if the world was to meet the objective of keeping global warming below 2°C, the total amount of CO₂ which could be released globally could not exceed 565 gigatonnes for the 40 years to 2050 – a fifth of this ‘carbon budget’.

The market valuation of fossil fuel company stocks is tied to their reserves. If 80% of these reserves have to remain in the ground, the value of their stocks will require readjustment. With some of the world’s leading stock exchanges having a significant fraction of their

¹ Freeman M, 2013 *Quakers, Business, and Philanthropy*, The Oxford Handbook Of Quaker Studies (Angell S & Dandelion B eds), Oxford University Press

² Schwartz D, 1971 *Proxy Power and Social Goals--How Campaign GM Succeeded* St. John's Law Review

³ UMC 1992 *Investment Ethics, Book of Resolutions* <http://www.umc.org/what-we-believe/investment-ethics1>

⁴ Osbourne H 2013 *Islamic Finance – The Lowdown On Sharia-Compliant Money*, The Guardian <https://www.theguardian.com/money/2013/oct/29/islamic-finance-sharia-compliant-money-interest>

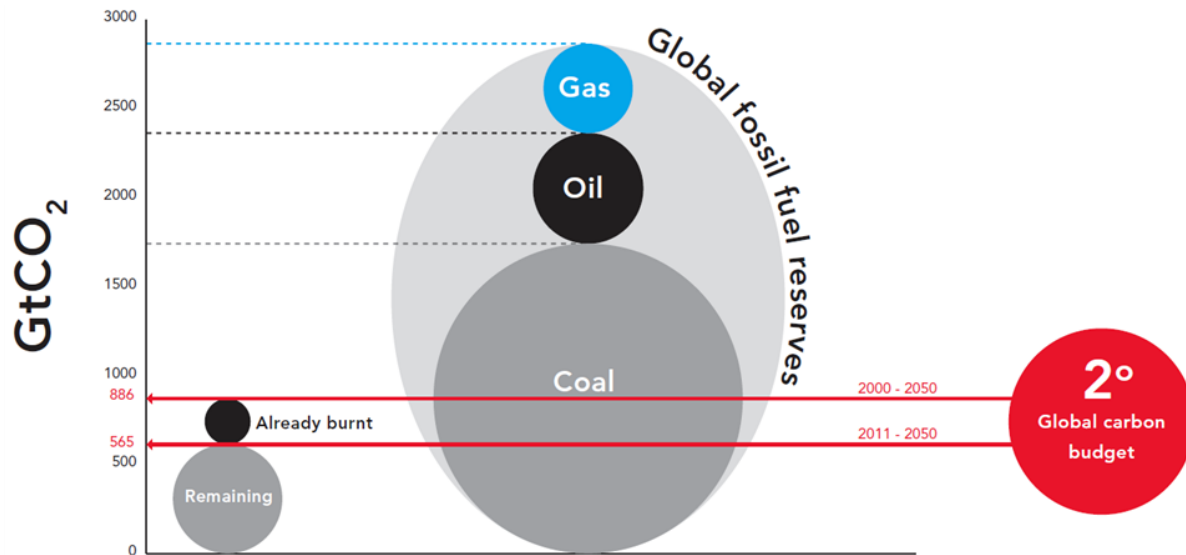
⁵ UN Secretary General 2018 <https://www.un.org/sg/en/content/sg/statement/2018-09-10/secretary-generals-remarks-climate-change-delivered>

⁶ Long Finance 2006 *Burn It All* <https://www.zyen.com/research/our-research/sustainability/carbon-burn-it-all/>

⁷ Leaton J 2011 *Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble?* <https://www.longfinance.net/programmes/sustainable-futures/london-accord/reports/unburnable-carbon-are-the-worlds-financial-markets-carrying-a-carbon-bubble/>

market capitalisation connected to fossil fuels, this raised the spectre of an unsustainable carbon bubble and trillions of dollars-worth of fossil fuel assets becoming ‘stranded’. At a stroke, the issue of disinvestment from fossil fuels was no longer the preserve of concerned green activists, but a significant consideration for fund managers everywhere.

Figure 1: Global 2°C Carbon Budget Versus Fossil Fuel Reserves CO₂ Emissions Potential



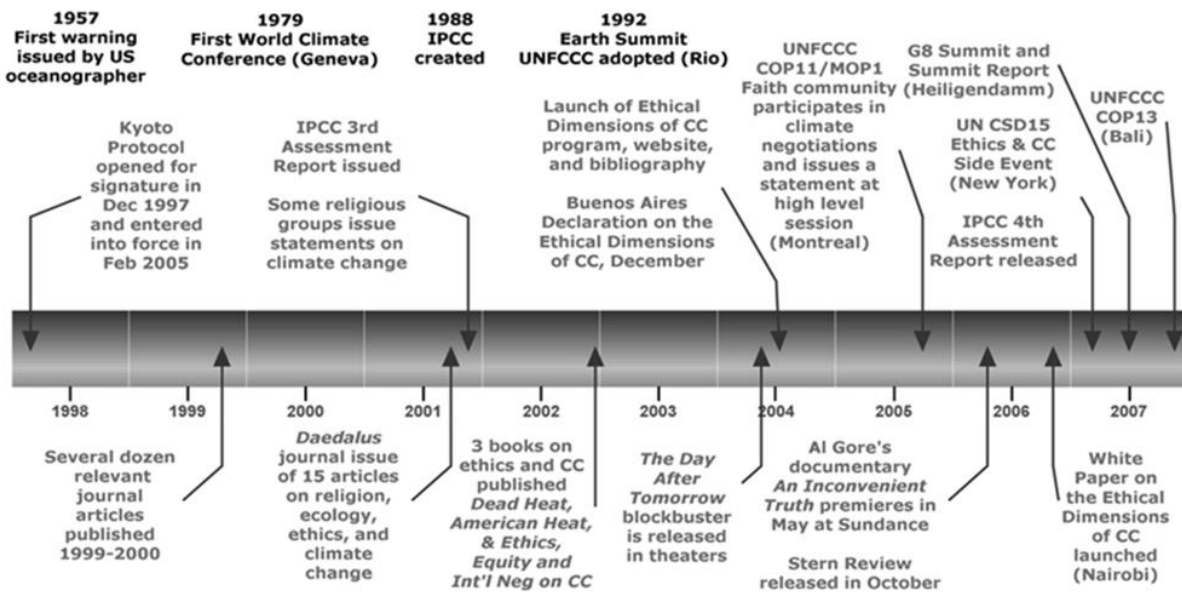
Source: Carbon Tracker Initiative 2011⁷

A Slow Burn

Carbon Tracker’s intervention came at a propitious moment for NGOs and pressure groups seeking traction on their long-running campaigns to reduce carbon emissions and tackle global warming. Between 1957 and 2007, momentum had begun to build for decisive action on climate change, and the United Nations Framework Convention on Climate Change conferences (COPs), designed to build on the 1997 Kyoto protocol, were beginning to make real progress.

However, following the 2008 global financial crisis, the winds of international politics changed and progress stalled. COP15 in Copenhagen was widely judged to have failed and, despite a steady cascade of scientific evidence showing that the world was getting warmer, progress on international action seemed in a state of paralysis. Politicians were reluctant to commit to any course of action which could be seen to add to the costs of industries in decline and a financial services sector still digesting the barrage of legislation designed to curb the excesses that led to the crash.

Figure 2: Milestones Relevant To International Climate Ethics 1957-2008



Source: Posas, P. 2009⁸

Beginning as a protest movement on US university campuses in 2011, social momentum for divestment began to gather pace following the publication of an article by Bill McKibben in Rolling Stone Magazine⁹, which popularised Carbon Trackers’ work and which was widely read and distributed.

Supported by the NGO, 350.org, pressure from students and academic staff initially convinced a number of small liberal arts colleges to divest from fossil fuels. Larger academic institutions began to follow suit. In 2013, the Board of Supervisors of the San Francisco Employees’ Retirement Scheme (SFERS) unanimously agreed a resolution to support divestment¹⁰, (although a divestment strategy for the \$25.5 billion fund was only approved in October 2018¹¹).

This was just the beginning. Today, more than 1,000 institutional investors with \$8 trillion in assets have committed to divest from fossil fuels¹². These include Norway’s recent announcement to exclude oil exploration and production companies from its huge \$1 trillion

⁸ Posas, P. 2007 *Roles of religion and ethics in addressing climate change*. Ethics in Science and Environmental Politics. 7

⁹ McKibben B. 2012, *Global Warming’s Terrifying New Math* Rolling Stone, August 2nd 2012 <https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550/>

¹⁰ <https://350.org/san-francisco-board-supervisors-unanimously-pass-resolution-urging-fossil-fuel/>

¹¹ Diamond R 2018 *Exclusive: San Francisco Pension System Approves Divestment of Five Fossil Fuel Companies* Chief Investment Officer <https://www.ai-cio.com/news/exclusive-san-francisco-pension-system-approves-divestment-five-fossil-fuel-companies/>

¹² Arabella Advisors 2018 *The Global Fossil Fuel Divestment and Clean Energy Investment Movement* <https://www.arabellaadvisors.com/wp-content/uploads/2018/09/Global-Divestment-Report-2018.pdf>

Government Pension Fund¹³, and complete divestment by the Republic of Ireland, which became the world's first country to sell off its investments in fossil fuel companies held by the €8 billion Irish national investment fund¹⁴. New York City mayor, Bill De Blasio, has moved to withdraw \$5 billion in carbon-based energy investments from the city's pension funds, and teamed up with London Mayor Sadiq Khan in September 2018 to call on other cities to divest their pension funds from fossil fuels, working through the C40 Climate Leadership Group¹⁵. Over the past year, several major banks, including the World Bank Group (WBG), have also made high-profile decisions to stop financing new fossil fuel projects.

Divest or engage?

While institutional investors mostly accept the urgency of climate change, many have opted not to divest but to try engaging with the management of fossil fuel companies, most notably through Climate Action 100+, a initiative by investors with \$30 trillion in assets, including Allianz, CalPERS, Caisse des Dépôts, HSBC Global Asset Management, M&G, PGGM, Skandia and many others, that pushes for change using voting rights and shareholder resolutions.

The group has obtained some high-profile commitments on climate change from Shell, Total, Glencore and others, although they only go so far. Glencore, for example, still plans to open new coal mining sites¹⁶, and Shell still plans to invest more than \$20 billion a year in hydrocarbon projects - and only \$1 to 2 billion in its low-carbon business¹⁷.

Some Climate Action 100+ investors have sought to combine engagement and divestment, treating them as complementary approaches. For example, the Church of England agreed in 2018 that its investment bodies could continue to engage with fossil fuel companies but should divest from any that are not on track to be Paris compliant by 2023¹⁸. The Norwegian government opted to divest only from pure Exploration & Production oil companies, while keeping its stakes in much larger integrated oil majors such as Shell and BP, which it hopes will drive renewable energy investment in future. The approach means selling \$8bn worth of E&P stocks rather than Norway's entire oil holding of \$37bn and has attracted some criticism¹⁹.

¹³ Government of Norway 2019 <https://www.regjeringen.no/en/aktuelt/excludes-exploration-and-production-companies-from-the-government-pension-fund-global/id2631707/>

¹⁴ The Guardian 2018 *Ireland becomes world's first country to divest from fossil fuels* <https://www.theguardian.com/environment/2018/jul/12/ireland-becomes-worlds-first-country-to-divest-from-fossil-fuels>

¹⁵ The Guardian 2018 <https://www.theguardian.com/commentisfree/2018/sep/10/london-new-york-cities-divest-fossil-fuels-bill-de-blasio-sadiq-khan>

¹⁶ The Guardian 2019 <https://www.theguardian.com/business/2019/feb/21/glencore-pressured-to-withdraw-from-new-coalmines-to-prove-climate-change-commitment>

¹⁷ The Guardian 2018 <https://www.theguardian.com/business/2018/dec/26/shell-says-it-wants-to-double-green-energy-investment>

¹⁸ Church of England 2018 <https://www.churchofengland.org/more/media-centre/news/national-investing-bodies-approach-climate-change-affirmed-general-synod>

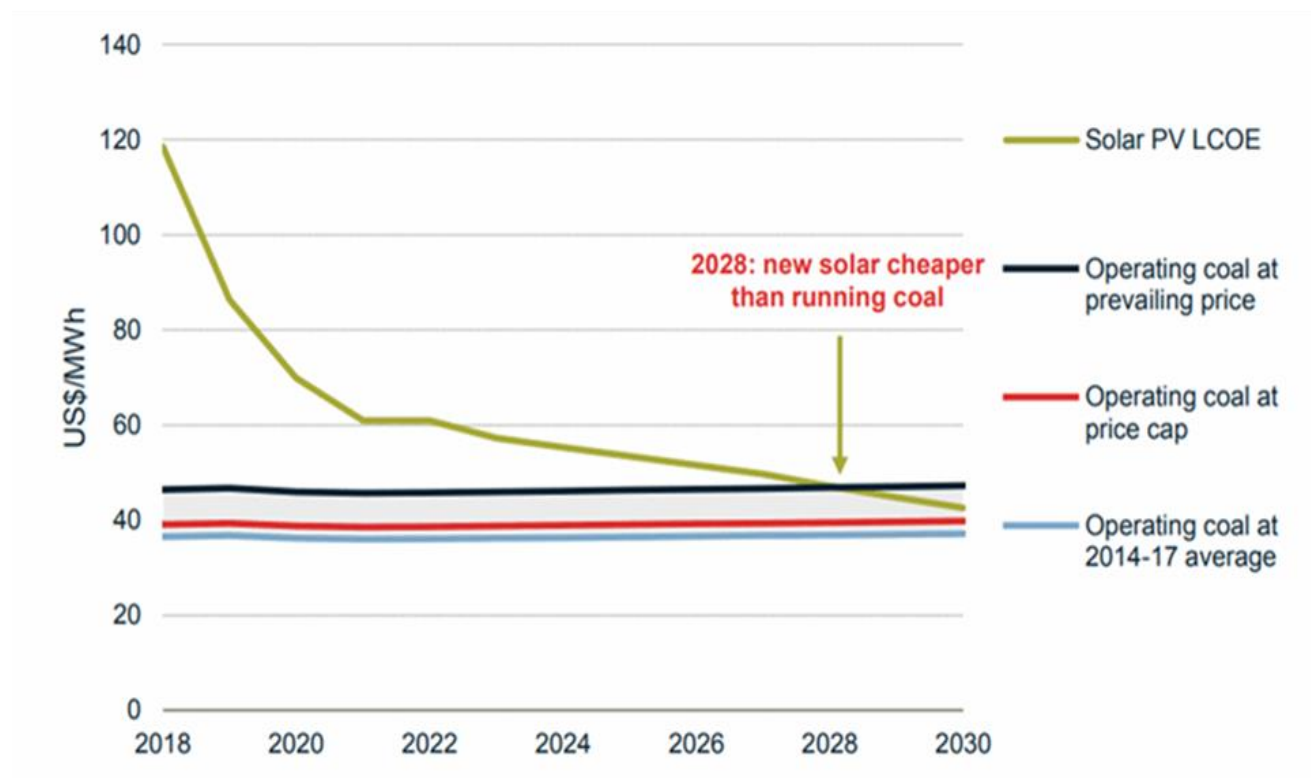
¹⁹ Bloomberg 2019 <https://www.bloomberg.com/opinion/articles/2019-03-08/norway-s-sovereign-wealth-fund-oil-divestment-descends-into-farce>

Fossil Fuel Companies Under Pressure

Analysts are finding that the threat of stranded assets is not the only issue bedeviling fossil fuel companies. It now looks as though fossil fuel companies may be facing a perfect storm, as values, technology and value begin to align:

- Electric vehicles are beginning to take a substantial bite out of fossil fuel demand, particularly in China, where consumer demand for electric vehicles is soaring²⁰;
- The price of renewables technology has fallen precipitously²¹ in the last few years, and on-shore wind and solar energy generation are now cheaper than some coal and gas plants in the United States²².

Figure 3: The Changing Costs of Renewable Energy



Source: Bloomberg New Energy Finance – New Energy Outlook 2018

Fossil fuel companies are beginning to wake up to the threat that disinvestment may hold: climate change featured prominently in Shell’s 2017 annual report and sustainability report, where the oil and gas major acknowledged that, along with other climate-related risks, fossil

²⁰ Domm P 2018 *Electric vehicles: The little industry that could take a bite out of oil demand* CNBC <https://www.cnbc.com/2018/02/28/soon-electric-vehicles-could-cause-an-oil-crisis.html>

²¹ IRENA 2018 Renewable Power Generation Costs in 2017 https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jan/IRENA_2017_Power_Costs_2018.pdf

²² USA Today 2018 *Energy costs: Renewables close in on fossil fuels, challenging on price* <https://eu.usatoday.com/story/money/energy/2018/04/04/energy-costs-renewables-close-fossil-fuels-challenging-price/485210002/>

fuel divestment could materially affect the price of Shell's shares and its ability to access equity capital markets²³.

Little Impact So Far On Oil And Gas Share Prices or Capex

Shareholders have not yet suffered, according to a 2018 study that found little price impact from eleven disinvestment announcements on oil and gas shares. The study noted that the divesting entities are typically small and that, so long as oil and gas companies remain profitable, they can attract other investors²⁴. However, these conditions could change in future, as they did with coal, and the study ended before the Norwegian Government Pension Fund's 8 March 2019 announcement, when the shares of companies affected fell around 3%.

This relative lack of share price impact may help to explain why transition plans within the oil and gas sector as a whole have been so disappointing. The world's top 24 publicly-listed oil and gas companies spent *only* 1.3% of their combined \$260 billion capital expenditure on low carbon energy in 2018²⁵.

Even Norway's Equinor, the oil and gas company judged by CDP as most business-ready for a low carbon transition, plans to devote only 15 to 20% of its capital expenditure on low carbon energy by 2030 while Shell, which has the biggest plans for low carbon investment in its peer group at \$1 to 2 billion a year, will continue allocating most of its \$25 to \$30 billion capital expenditure budget to hydrocarbons²⁶.

Low carbon investment has been even lower among oil majors in China, Russia, and the US (see figure 4), perhaps reflecting local factors. Given the changing mood among international investors, the most surprising aspect of the chart is how little low-carbon investment has taken place among all oil companies.

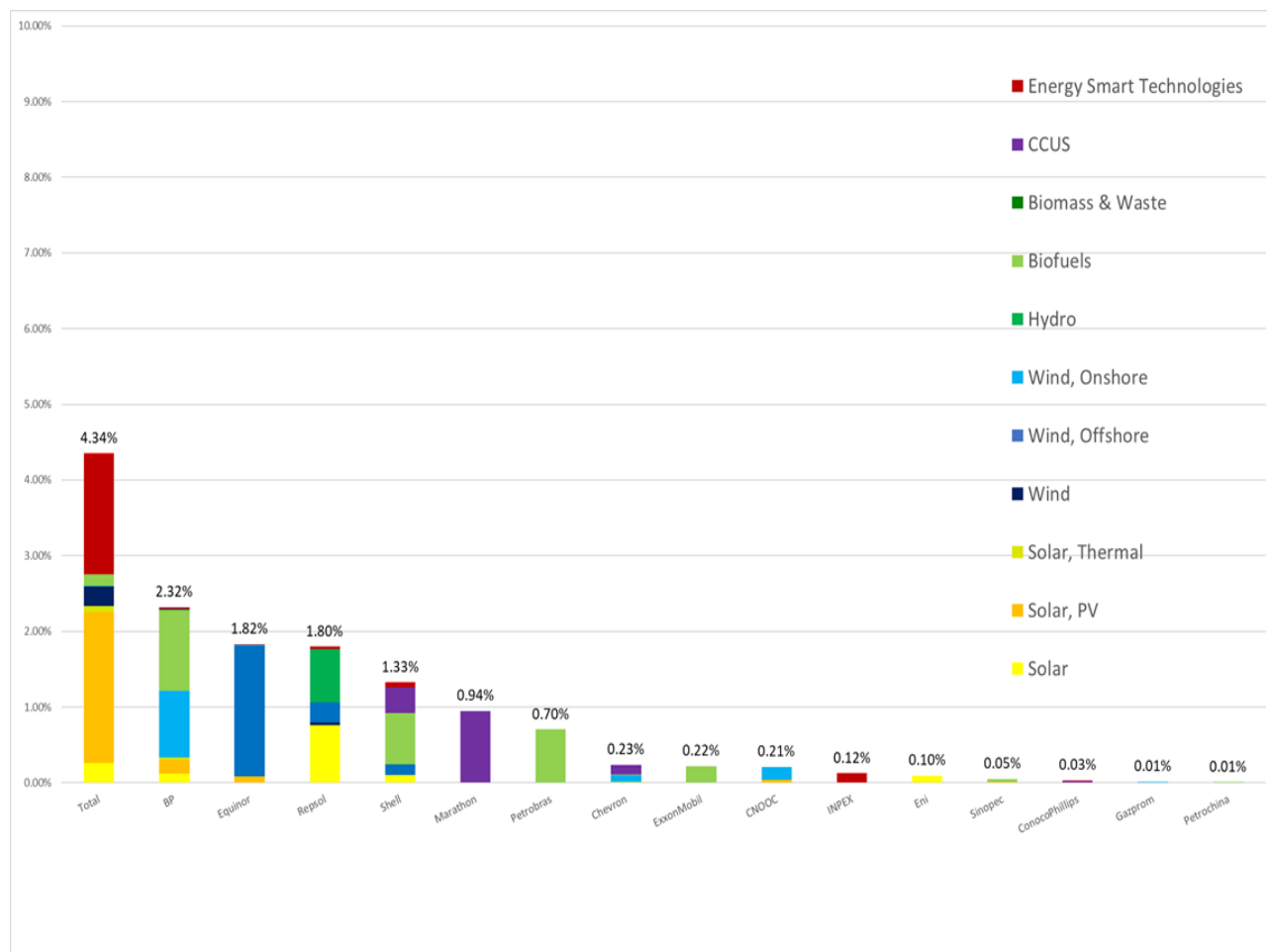
²³Shell 2018 <https://reports.shell.com/annual-report/2017/strategic-report/strategy-business-and-market-overview/strategy-and-outlook.php>

²⁴ Pollin R and Hansen T 2018 *Economics and Climate Justice Activism: Assessing the Fossil Fuel Divestment Movement* <https://www.peri.umass.edu/economists/robert-pollin/item/1076-economics-and-climate-justice-activism-assessing-the-fossil-fuel-divestment-movement>

²⁵ Carbon Disclosure Project 2019 <https://www.cdp.net/en/articles/investor/european-oil-majors-spending-up-to-7-on-low-carbon-but-wider-industry-needs-to-step-up>

²⁶ Carbon Disclosure Project, 'Beyond the cycle', 12 Nov 2018 ; Reuters 2018 *Big Oil Spent 1 Percent On Green Energy In 2018* <https://www.reuters.com/article/us-oil-renewables/big-oil-spent-1-percent-on-green-energy-in-2018-idUSKCN1NH004>

Figure 4: Oil Majors' Disclosed Low-Carbon Investment As A Proportion Of Total Capital Expenditure (2010-Q3 2018)



Note: Includes Asset Finance, M&A and Venture Capital spend. No disclosed investment for Anadarko, Apache, Hess, Noble Energy, Occidental, OMV, Rosneft and Woodside

Source: CDP, company reports, BNEF

A Risk For Financial Centres

The share of fossil fuels in global energy supply investment increased slightly to 59% in 2017, according to the International Energy Agency²⁷. Global subsidies for fossil fuels were still around 6.5% of GDP in 2015²⁸, three times the 1 to 2% of world GDP that Lord Stern estimated would be needed to avert climate catastrophe²⁹.

The longer such hydrocarbon investment continues, the more fossil fuel companies will be exposed to losses if their assets cannot be exploited commercially due to technological progress in renewable energy, policy interventions designed to limit climate change, or the physical impacts of climate change. The global financial exposure of such stranded assets

²⁷ IEA 2018 World Energy Investment 2018

<https://webstore.iea.org/download/direct/1242?fileName=WEI2018.pdf>

²⁸ Coady et al 2017 How Large Are Global Fossil Fuel Subsidies? World Development Volume 91, March 2017, Pages 11-27 Elsevier

²⁹ The Stern Review estimated these costs at 1% of world GDP, later revised to 2%

<https://www.theguardian.com/environment/2008/jun/26/climatechange.scienceofclimatechange>

has been estimated in the range \$1 to 4 trillion on the basis of the technological trajectory alone, with Russia, the US or Canada among the countries most at risk³⁰.

This potential destruction of value is bound to impact on financial centres with a large exposure to fossil fuel sectors. Just over ten years ago, the energy sector accounted for around 16% of the Standard and Poor's 500 market capitalization; by 2018 that figure had fallen to around 6%³¹. A similar fall in value among oil and gas companies could have knock-on effects in some financial centres.

Which Financial Centres Are Most At Risk From A Carbon Bubble?

Disclaimer: This section is based on an initial analysis of selected data sources. Variations in the definitions used, and in the availability and quality of data, mean that further analysis is advisable in order to add to the conclusions. The analysis here is illustrative only and should not be used for investment purposes.

According to available data on the revenue of companies listed in a given financial centre, in some financial centres a significant fraction of their listed companies' revenues comes from fossil fuels.

The GGFI centres hosting the highest percentage of corporate revenues from fossil fuels, as a share of all the revenues reported by companies listed there, are shown in Table A. It is notable that the list includes centres from the top and the bottom of the GGFI rankings, suggesting that perception of green finance is not currently affected by a centre's exposure to fossil fuel revenues.

Much of this fossil fuel revenue often comes from a handful of companies; Gazprom, Rosneft, and Lukoil in Moscow; PTT in Bangkok; PKN Orlen in Warsaw; Royal Dutch Shell in Amsterdam; KOC Holding in Istanbul; and OMV in Vienna. Each account for more than 10% of total corporate revenue reported on their exchanges. BP and Glencore in London, and Sinopec and Petrochina in Shanghai each account for between 7% and 9%. In Bombay and Toronto, by contrast, the exposure is more thinly spread over a larger number of smaller fossil fuel companies.

³⁰ Mercure, J., Pollitt, H., Vinuales, J., Edwards, N., Holden, P., Chewpreecha, U., Salas, P., et al. (2018). Macroeconomic impact of stranded fossil-fuel assets. *Nature Climate Change* <https://doi.org/10.1038/s41558-018-0182-1>

³¹ Carbon Tracker 2018 IEEFA Update: Oil And Gas Industry Caught In A Capex Conundrum <https://www.carbontracker.org/ieefa-update-oil-and-gas-industry-caught-in-a-capex-conundrum/>

Table A: Percentage of Listed Companies Revenues Derived From Fossil Fuels³²

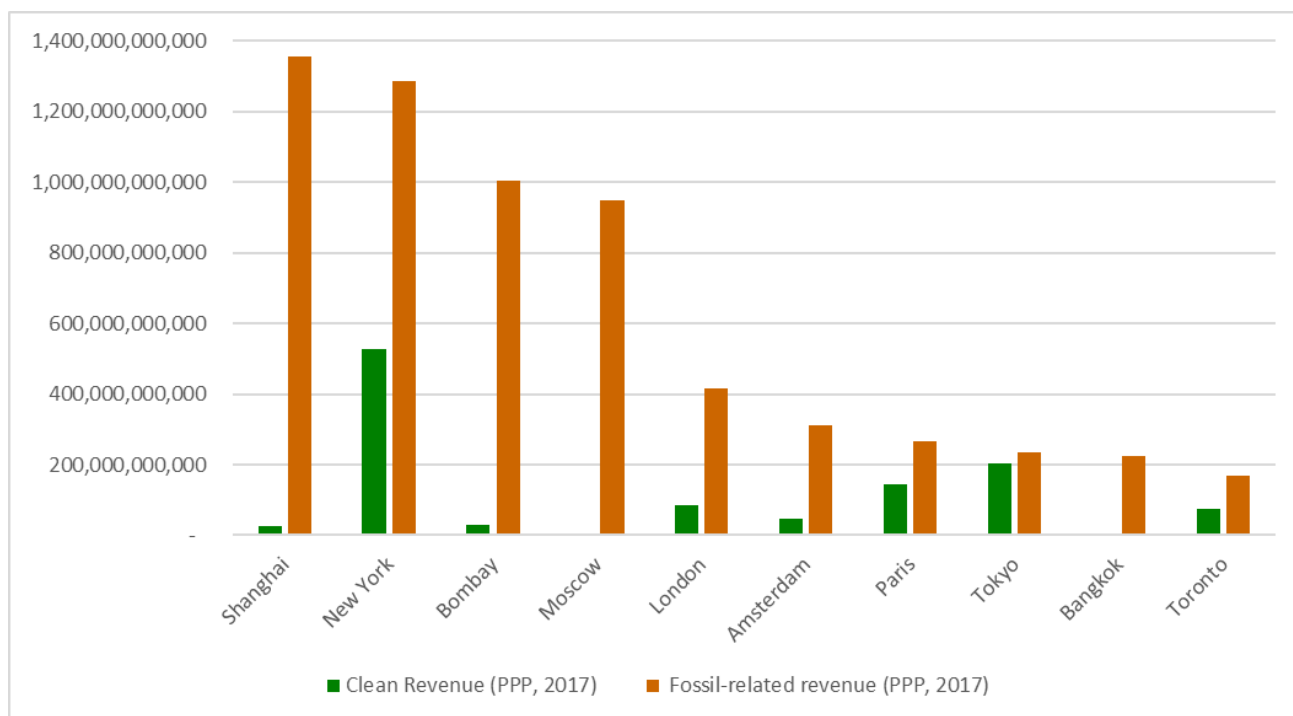
Financial Centre	Percentage of Revenue Derived From Fossil Fuels	Ranking in GGFI 3	
		Depth	Quality
Moscow	58%	56	59
Bangkok	36%	59	57
Warsaw	33%	50	39
Amsterdam	32%	1	3
Bombay	23%	63	61
London	21%	5	1
Shanghai	18%	11	19
Istanbul	18%	60	58
Vienna	17%	27	20
Toronto	16%	17	20

Source: Corporate Knights / Finance Watch

Figure 5 shows which financial centres have the highest dollar amount of fossil fuel-related revenues. The large numbers for fossil fuel revenues raise commercial and environmental concerns, even if they are a small percentage of total revenue. The data also highlight the extent by which fossil fuel revenues dwarf ‘clean’ revenues.

³² Based on Corporate Knights data series “Financial centre corporate sustainability performance”. Includes uranium mining. Fossil fuel revenues are the sum of total 2017 revenues from large companies (revenue \$>1bn) in eight Corporate Knights Industry Codes: Coal and uranium mining; Fossil fuel exploration and production; Integrated oil and gas; LPG, Propane and Other Distributors; Midstream Energy; Natural Gas Utilities; Petroleum Refineries; Support activities for oil and gas.

Figure 5: Fossil-Fuel Related vs Clean Company Revenues, By Primary Listing Location³³



Source: Corporate Knights

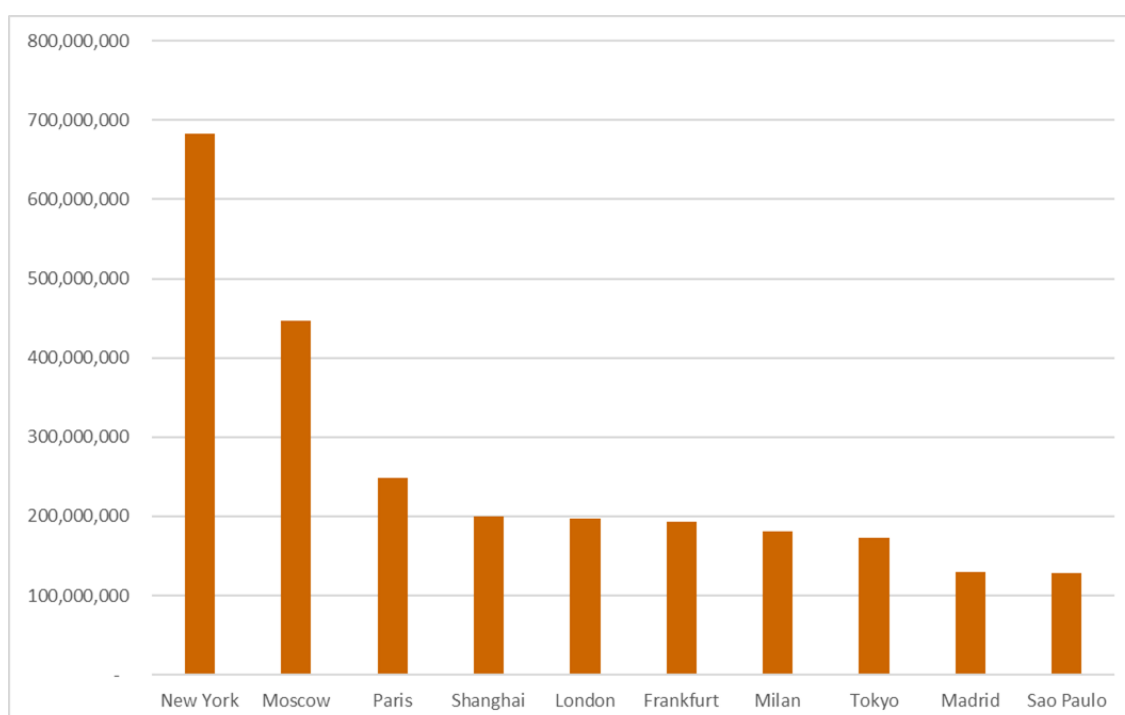
Figure 6 looks at financial centres according to the scope 1 and 2 Greenhouse Gas (GHG) emissions disclosed by the large companies listed on their exchanges. If data on scope 3 (indirect) emissions were available, it would change the picture again, given that most oil and gas products are used downstream for energy production by other entities.

For centres with a large historical involvement in fossil fuels, the speed of transition may be a more useful measure. Table B compares lending for clean vs brown (i.e. fossil fuel) energy projects.

Unfortunately, disclosure around bank lending by the industry sector remains extremely poor and the following table may say more about disclosure practices than about the underlying activity. This data was not included in the GGFI Instrumental Factors but is presented here for interest.

³³ Based on Corporate Knights data series “Financial centre clean to fossil-fuel related revenue”, where ‘clean’ is the sum of 2017 revenues from large companies (revenue \$>1bn) listed in a given financial centre ascribed to activities in the CK Clean Revenue Taxonomy, and ‘fossil-related’ is the sum of revenues ascribed to activities in the FactSet Economy = Energy group, excluding renewables and uranium. NB the definitions for fossil fuel revenue used in Table A and Figure 5 are not the same.

Figure 6: Disclosed GHG Emissions Of Companies (Primary Listing Location (Scope 1 + 2))³⁴



Source: Corporate Knights

Table B: Comparison Of Green And Brown Lending USDm, 2014-2018³⁵

Centre	Brown \$m	Centre	Clean \$m
Tokyo	22,851	Tokyo	31,066
New York	7,740	Paris	21,078
Shanghai	7,714	Frankfurt	16,748
Paris	6,436	Madrid	14,153
London	6,154	New York	14,039
Frankfurt	6,121	London	10,523
Toronto	1,632	Toronto	6,014
Amsterdam	1,590	Amsterdam	4,714
Singapore	1,529	Milan	3,764
Riyadh	1,494	Sydney	2,904

Source: Corporate Knights

³⁴ Based on Corporate Knights data series "Financial Centre Carbon Intensity".

³⁵ Based on Corporate Knights data series "Financial Institutions Conventional To New Energy Finance Score", which includes new loans arranged over 2014-2018 for new energy (renewable sources excl. hydro) and for conventional (oil, natural gas and coal), taken from company disclosures and industry sources. Syndicated loans are allocated proportionately among participating banks.

According to the data underlying table B, the top 10 financial institutions providing financing for brown energy projects, based on available disclosures, were:

Table C: Top 10 Institutions Financing Brown Energy

Financial Institution	Brown Energy Financing (US\$ Millions)
Mitsubishi UFJ Financial	9,510
Sumitomo	7,072
Industrial & Commercial Bank of China Ltd	6,619
Mizuho Financial	4,857
Deutsche Bank	3,092
KfW	2,587
HSBC	2,586
BNP Paribas	2,576
Credit Agricole	2,071
General Electric	1,592

Source: Corporate Knights

The data in this section also make an interesting contrast to the GGFI rankings. In some cases, the centres perceived as having high quality and depth of green finance are also the ones with the highest fossil revenue or GHG emissions.

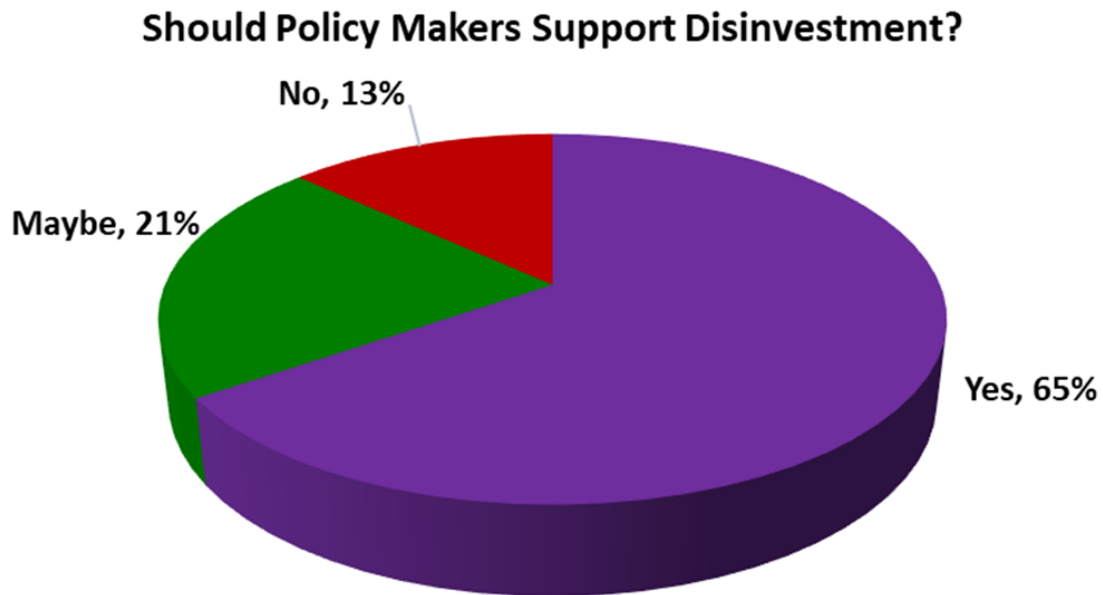
The data in this section also make an interesting contrast to the GGFI rankings. In some cases, the centres perceived as having high quality and depth of green finance are also the ones with the highest fossil revenue or GHG emissions.

What GGFI Respondents Think

So, should more be done to encourage deflation of the carbon bubble, taking account of the fact that many stock exchanges have a high proportion of their total investment value tied up in carbon-related investment?

For the third edition of the Global Green Finance Index, a supplementary question was included in the questionnaire in association with Client Earth (www.clientearth.org), the international non-profit environmental law organisation, asking respondents for their views on divestment. The results of this consultation, based on the responses of the 182 individuals who chose to answer, are summarised in figure 7. While the sample size is small, there is a clear preference for policy intervention in favour of fossil fuel divestment.

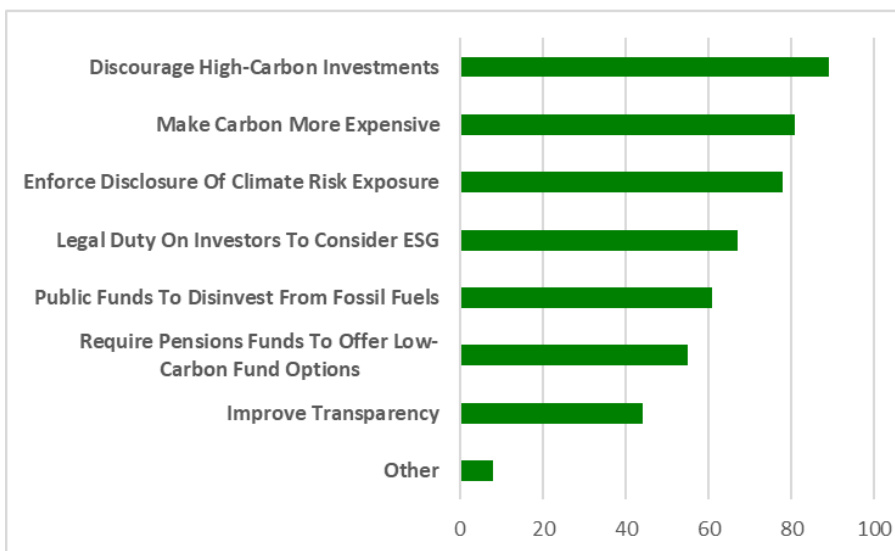
Figure 7: Do You Think Policymakers Should Support Disinvestment From Fossil Fuels?



Individuals who chose to answer ‘yes’, or ‘maybe’ were then asked to consider which policy measures they thought would be effective in their jurisdiction in supporting disinvestment. The results are illustrated in figure 8.

The active discouragement of high carbon investment and carbon pricing were the most popular choices, and the mandatory disclosure of climate risk came a close third. This was reflected in several of the free text comments associated with this section of the questionnaire, with particular note made of the role that fossil fuels have to play in transitioning to a low carbon economy.

Figure 8: Most Frequently Mentioned Policy Interventions



Getting Warmer

Whilst the divestment movement remains small, relative to total funds managed, the issue of divestment is likely to remain a hot topic for some time to come, with the ongoing work on the IPCC's next synthesis report, and high hopes for COP 25 in Chile this year and COP 26, which London and Italy are bidding to host in 2020.

Recent research by the Grantham Institute seems to indicate that portfolios do not suffer harm to long-term returns by divesting from fossil fuels³⁶, which may indicate that the momentum to divest will continue, especially if the financial impacts of climate change on broader investment portfolios are considered.

The European Securities and Markets Authority has been asked by the European Commission to review how to incorporate Environmental, Social and Governance (ESG) issues into the Undertakings for Collective Investment and Transferable Securities Directive and Alternative Investment Fund Managers Directive. This is likely to focus the attention of European fund managers on climate risks. If fiduciary or legal duties with respect to ESG issues are strengthened in these and other ways, and stakeholder pressure is increasing from other quarters, including from central banks in the Network For Greening The Financial System (NGFS), fund managers may find that the divestment option becomes more compelling.

While the survey on divestment is only a small sample, central banks and policymakers should take note of the message it sends: if the trickle of divestment becomes a flood, steps may have to be taken to manage the world's carbon bubble so it does not burst or get even bigger.

This document was produced as a supplement focusing on divestment, as part of the third edition of the Global Green Finance Index. The data it contains is drawn from a variety of sources, and in some cases may be fragmentary or incomplete. No part of this paper should be used as a basis for investment decisions.

³⁶ Grantham J 2018 *The mythical peril of divesting from fossil fuels*
<http://www.lse.ac.uk/GranthamInstitute/news/the-mythical-peril-of-divesting-from-fossil-fuels/>

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Long Finance is a Z/Yen initiative designed to address the question **"When would we know our financial system is working?"** This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance timeframe is roughly 100 years.



www.greenfinanceindex.net

Financial Centre Futures is a programme within the Long Finance initiative that initiates discussion on the changing landscape of global finance, seeking to explore how finance might work in the future. Financial Centre Futures comprises the Global Green Finance Index and other research publications that explore major changes to the way we will live and work in the financial system of the future.