Trucost Portfolio Analytics

Trucost
ESG Analysis

S&P Global

Nathan Cummings 2020.06

NCF vs ACWI

November 06, 2020

About Trucost

Trucost is part of S&P Global. A leader in carbon and environmental data and risk analysis, Trucost assesses risks relating to climate change, natural resource constraints, and broader environmental, social, and governance factors. Companies and financial institutions use Trucost intelligence to understand their ESG exposure to these factors, inform resilience and identify transformative solutions for a more sustainable global economy. S&P Global's commitment to environmental analysis and product innovation allows us to deliver essential ESG investment-related information to the global marketplace. For more information, visit www.trucost.com.

About S&P Global

S&P Global (NYSE: SPGI) is a leading provider of transparent and independent ratings, benchmarks, analytics and data to the capital and commodity markets worldwide. For more information, visit www.spglobal.com.

Contacts

UK: trucostinfo@spglobal.com
North America: trucostnorthamerica@spglobal.com
Europe: trucostemea@spglobal.com
Asia: trucostasiapacific@spglobal.com
South America: trucostsouthamerica@spglobal.com
Telephone (UK): +44 (0) 20 7160 9800
Telephone (North America): +1 800 402 8774
www.trucost.com

Table of Contents

Benefits of Trucost Portfolio Analysis

It is well-documented that overuse of environmental resources and emission of pollutant gases is not only unsustainable for the planet but could also have widespread economic and social consequences. As governments, capital markets and consumers start to challenge the status quo, those companies that use resources less efficiently than peers, or are more carbon intensive, could lose their market share, licences to operate and ability to source from suppliers. This has possible operational and financial implications for revenues, profit, cost of capital and valuations.

Trucost's portfolio analysis provides investors with essential intelligence to appraise large numbers of holdings or investments for potential exposure to carbon and other environmental impacts, regardless of asset class, geography or investment style. This report provides an invaluable tool for investors to understand:

- Exposure to rising carbon costs
- Carbon performance of holdings within a sector
- Materiality of different environmental impacts
- Engagement opportunities
- Exposure to possible stranded assets
- The baseline against which to measure improvement over time

Summary of Coverage

Portfolio: NCF

Benchmark: ACWI

Analysis Date: November 06, 2020

Holdings Date: June 30, 2020

Asset Classes: Equity

Apportioning Factor: Market capitalization

Largest Contributor Level: Companies

	VoH Covered USDm	Coverage Rate (% of Starting VOH)	Number of Instruments Analysed	Number of Companies Analysed
Portfolio	183.264	91.86	1153/1215	1113
Benchmark	183.264	99.25	1927/1954	1908

Summary of Results

		Unit	Portfolio	Benchmark	Relative Efficiency
Carbon	Carbon to Revenue	tCO2e/mUSD	248.91	318.56	22%
	Absolute CO2e	tonnes	21,603	35,087	38%
Fossil Fuels & Stranded Assets	Extractive Industries Revenue Exposure (apportioned)	%	0.29	2.10	86%
	Extractive Industries Revenue Exposure (weighted average)	%	0.14	1.07	87%
	Extractive Industries Revenue Exposure (VOH)	%	0.46	4.19	89%
	Reserves Exposure (VOH)	%	0.30	3.26	91%
	Absolute CO2e from Reserves	tonnes	22,270	549,829	96%
	Absolute Fossil Fuel CAPEX	USD	60,050	543,164	89%
	Coal Revenue Exposure (apportioned)	%	0.15	0.57	73%
	Coal Revenue Exposure (weighted average)	%	0.11	0.44	76%
	Coal Revenue Exposure (VOH)	%	1.03	3.84	73%
Energy Transition	Absolute Fossil Fuel Power Generation	GWh	2.794	12.768	78%
	Absolute Renewable Power Generation	GWh	2.717	3.189	-15%
	Absolute Other Power Generation	GWh	1.435	3.384	58%
	Fossil Fuel Power Revenue Exposure (apportioned)	%	0.31	1.13	72%
	Fossil Fuel Power Revenue Exposure (weighted average)	%	0.27	0.89	70%
	Fossil Fuel Power Revenue Exposure (VOH)	%	1.42	3.92	64%
	Renewable Power Revenue Exposure (apportioned)	%	0.24	0.31	-23%
	Renewable Power Revenue Exposure (weighted average)	%	0.29	0.30	-3%
	Renewable Power Revenue Exposure (VOH)	%	1.42	4.13	-66%
	Other Power Revenue Exposure (apportioned)	%	0.19	0.28	30%
	Other Power Revenue Exposure (weighted average)	%	0.12	0.27	57%
	Other Power Revenue Exposure (VOH)	%	0.88	2.48	65%

Carbon

Introduction

Carbon exposure analysis offers a systematic assessment of the carbon risks and opportunities within a portfolio or index at a point in time. The analysis quantifies greenhouse gas emissions (GHG) embedded within a portfolio presenting these as tonnes of carbon dioxide equivalents (tCO2e). Comparing the total GHG emissions of each holding relative to either revenues generated or capital invested, gives a measure of carbon exposure that enables comparison between companies, irrespective of size or geography.

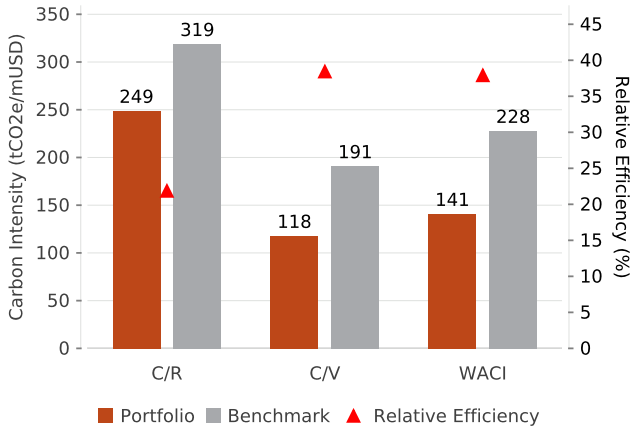
The **Total Carbon Emissions, Carbon to Value Invested (C/V), Carbon to Revenue (C/R),** and **Weighted Average Carbon Intensity (WACI)** are all presented below. For more information on methodological approaches please refer to Appendix 2 and 3.

The scope used in this analysis was Direct Emissions, First Tier Indirect Emissions. For more information on scopes please refer to Appendix 1.

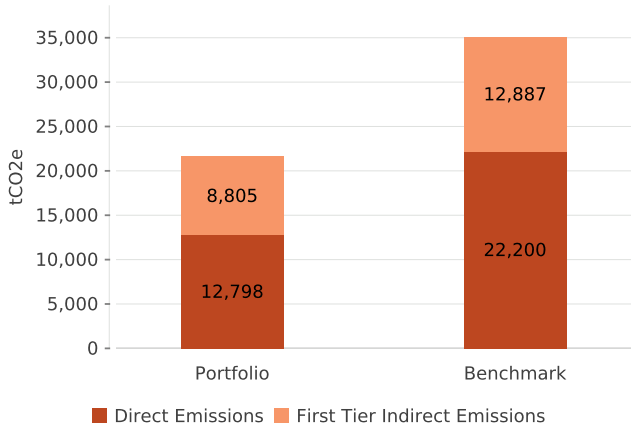
The disclosure rate is measured against the value of holdings (VOH), the share of apportioned GHGs, and number of companies. For details, please refer to Carbon Appendix 4.

Key Findings

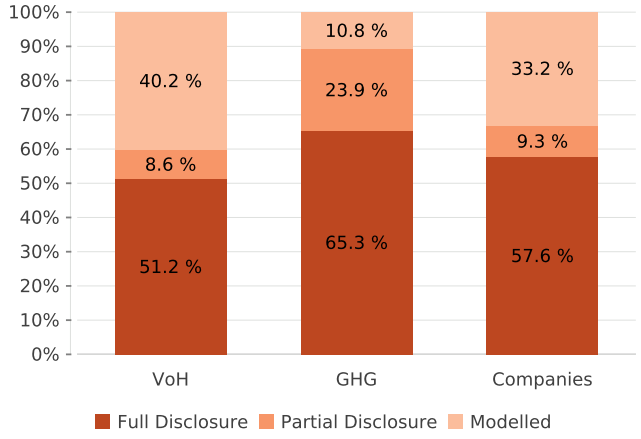
Carbon Intensity by Method



Carbon Apportioned by Scope



Portfolio Disclosure



The portfolio is less carbon intensive than the benchmark across all three methodologies used. The portfolio is 22% less carbon intensive in the Carbon to Revenue approach. The absolute footprint of the portfolio is 21,603 tCO2e, which is 40% lower than the benchmark (36,087 tCO2e). Like the benchmark, the majority (59%) of the absolute footprint is made up of direct emissions apportioned to the portfolio. The disclosure rates across all methodologies are relatively low, around 40%-60%, but improved versus the 2019.12 footprint.

Carbon

Attribution Analysis - Carbon to Revenue

	Carbon to Revenue (tCO2e/mUSD)		Attribution Analysis		
Sector Allocation	**Portfolio**	**Benchmark**	**Sector Allocation**	**Company Selection**	**Total Effect**
Communication Services	104.02	48.66	5.20%	-2.10%	3.10%
Consumer Discretionary	96.31	98.57	4.46%	0.14%	4.60%
Consumer Staples	224.83	230.88	-1.18%	0.11%	-1.08%
Energy	630.45	616.33	6.91%	-0.15%	6.76%
Financials	20.35	24.56	-6.70%	0.12%	-6.58%
Health Care	43.53	39.85	-0.53%	-0.09%	-0.62%
Industrials	170.37	191.79	2.04%	1.25%	3.29%
Information Technology	119.51	82.66	2.57%	-1.45%	1.12%
Materials	1,235.27	1,221.23	-1.40%	-0.34%	-1.75%
Real Estate	86.38	133.71	-0.11%	0.19%	0.08%
Utilities	1,879.54	2,166.41	11.31%	1.61%	12.93%
	248.91	318.56	22.57%	-0.71%	21.86%

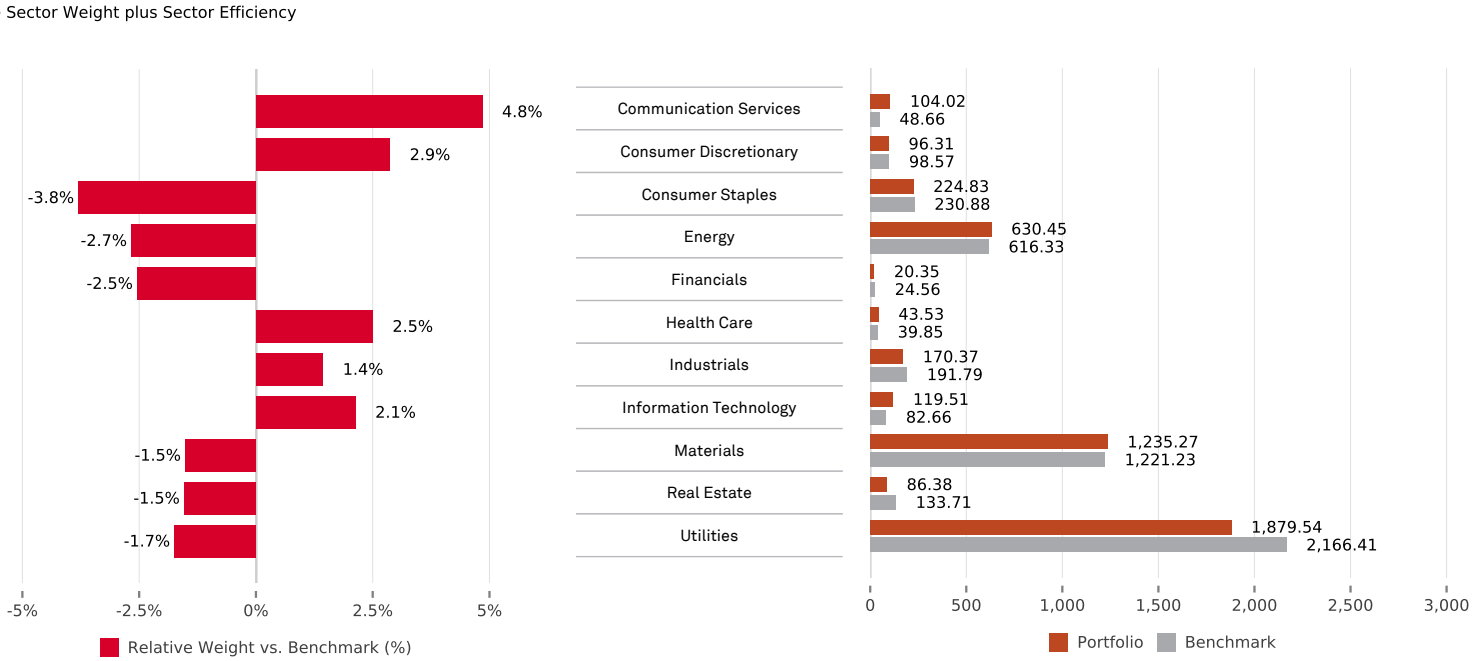
The two principal reasons why the carbon exposure of the portfolio may differ from the benchmark are due to sector allocation decisions and company allocation decisions.

Sector allocation decisions will cause the carbon intensity of the portfolio to diverge markedly from the benchmark where the sector/s are either carbon intensive or low carbon. If the portfolio is overweight in carbon intensive sectors the portfolio is likely to be more carbon intensive than the benchmark.

However, if the companies within a carbon intensive sector are the most carbon efficient companies, it is possible that the portfolio may still have a lower carbon footprint than the benchmark.

Overall, the portfolio is 22% more efficient than the benchmark when measured using the Carbon to Revenue approach. There is a positive sector allocation affect of 23%, meaning that the portfolio derives a greater share of its apportioned revenues from sectors with a lower intensity than the overall benchmark intensity.

There is a small negative company selection effect of 1%. This means that - assuming constant sector revenue weighting between the portfolio and benchmark - the sector intensities of the portfolio are on average slightly higher than those of the benchmark.



Carbon

Largest Contributors - Carbon to Revenue

The largest contributors to the portfolio's carbon intensity are shown below. Note that a company may appear due to the proportion owned/financed, rather than because it is the most carbon intensive held. The 'C/R Intensity Contribution' is the percentage change in the portfolio's intensity that would be caused by excluding the holding referenced. In other words, it is a measurement of how much a specific holding effects the carbon performance of the portfolio.

Company Name	Holding (mUSD)	Sector	Carbon Apportioned (% of total)	Company C/R Intensity (tCO2e/mUSD)	Rank in Benchmark Sector	C/R Intensity Contribution (%)	Data Source (Scope 1)
The Chemours Company	0.883	Materials	17.13	1,591.84	N/A	-14.85	Full Disclosure
Cementir Holding N.V.	0.231	Materials	8.54	6,409.30	N/A	-8.24	Partial Disclosure
DuPont de Nemours, Inc.	0.948	Materials	5.36	554.23	72/163	-3.03	Full Disclosure
Ryanair Holdings Plc	0.740	Industrials	3.17	1,348.72	N/A	-2.60	Partial Disclosure
Huaneng Power International,	0.013	Utilities	2.59	14,303.11	N/A	-2.55	Partial Disclosure
China Power International	0.017	Utilities	2.30	12,928.53	N/A	-2.25	Full Disclosure
Marathon Petroleum	0.193	Energy	2.50	709.06	61/79	-1.64	Full Disclosure
The Great Eastern Shipping	0.082	Energy	0.96	2,059.40	N/A	-0.85	Full Disclosure
Tyson Foods, Inc.	0.152	Consumer Staples	1.05	812.18	138/156	-0.73	Full Disclosure
Phillips 66	0.102	Energy	1.10	651.81	53/79	-0.68	Full Disclosure

Largest Modelled Contributors - Carbon to Revenue

In order to highlight for engagement purposes, we have identified the largest contributors for which up-to-date disclosures were not available. These are ranked according to the size of their impact on your carbon intensity as estimated by Trucost, using our proprietary environmental profiling model.

Company Name	Holding (mUSD)	Sector	Carbon Apportioned (% of total)	Company C/R Intensity (tCO2e/mUSD)	Rank in Benchmark Sector	C/R Intensity Contribution (%)	Data Source (Scope 1)
Beijing Oriental Yuhong	0.925	Materials	0.47	466.87	N/A	-0.22	Modelled
HollyFrontier Corporation	0.043	Energy	0.40	535.40	37/79	-0.21	Modelled
Ratnamani Metals & Tubes	0.025	Materials	0.20	2,922.18	N/A	-0.19	Modelled
Berkshire Hathaway Inc.	0.330	Financials	0.36	407.47	325/327	-0.14	Modelled
Teekay LNG Partners L.P.	0.057	Energy	0.17	1,274.18	N/A	-0.13	Modelled
Guangdong Haid Group Co.,	0.088	Consumer Staples	0.19	710.05	N/A	-0.12	Modelled
Steel Dynamics, Inc.	0.021	Materials	0.16	784.89	98/163	-0.11	Modelled
Kingenta Ecological Engineering	0.010	Materials	0.12	1,684.24	N/A	-0.10	Modelled
AIA Engineering Limited	0.417	Industrials	0.16	384.90	N/A	-0.06	Modelled
AdvanSix Inc.	0.036	Materials	0.25	320.75	N/A	-0.05	Modelled

Fossil Fuels & Stranded Assets

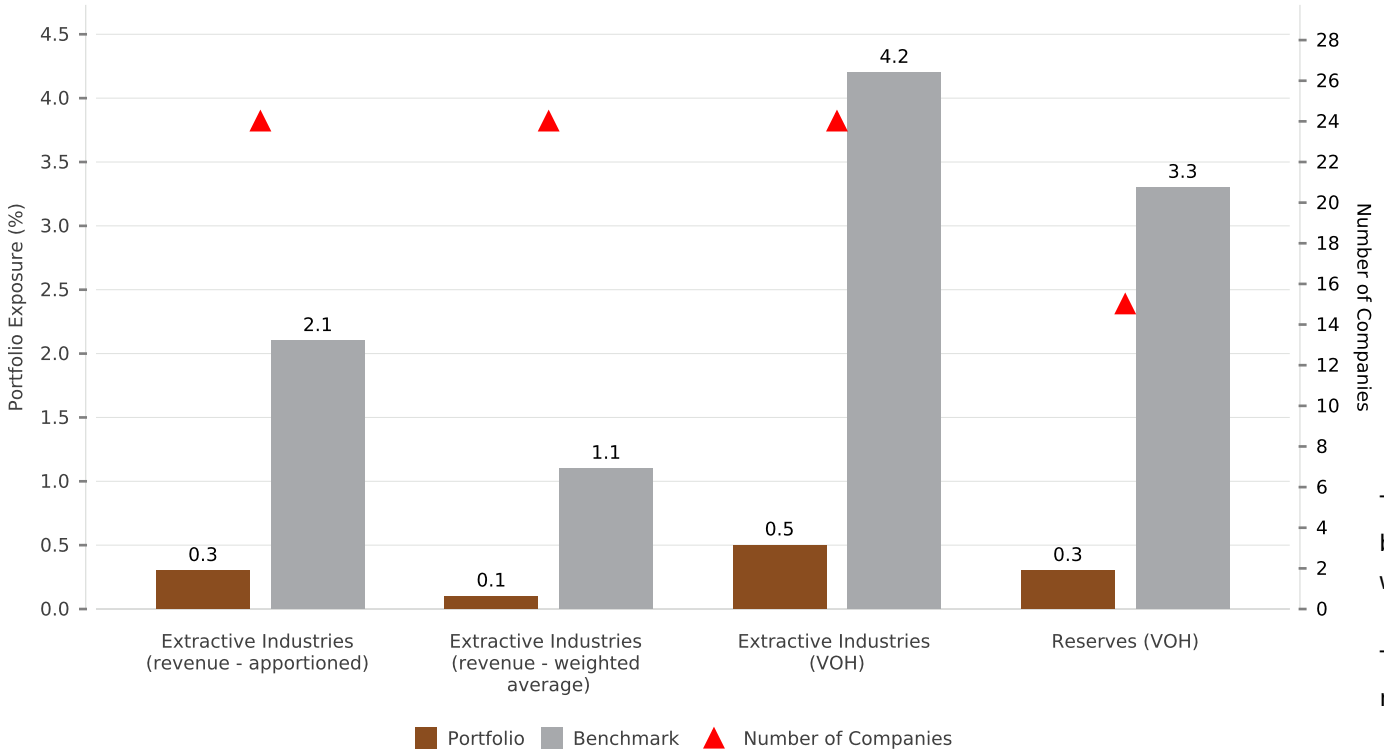
Introduction

Future emissions from fossil fuel reserves far outweigh the allowable carbon budget that will limit global warming to 2 degrees Celsius above pre-industrial levels. Industry experts refer to assets that may suffer from unanticipated or premature write-downs, devaluations or conversion to liabilities as 'stranded assets'. Trucost assesses exposure to such assets by highlighting holdings with business activities in extractive industries, as well as holdings in companies that have disclosed proven and probable fossil fuel reserves in the portfolio. This helps to identify potentially stranded assets that would become apparent as economies move towards a 2 degree alignment.

The portfolio's exposure to potentially stranded assets has been assessed on both a value of holdings (VOH) basis and a revenue basis. For the revenue exposure metric, both the apportioning and weighted average approach are presented. For the VOH exposure metric, the revenue threshold for inclusion was 0%. For more details on the methodology please refer to Appendix 5.

Key Findings

Exposure to Extractive Industries and Reserves



Extraction-related activities include the following sectors

- **Crude petroleum and natural gas extraction**
- **Tar sands extraction**
- **Natural gas liquid extraction**
- **Bituminous coal underground mining**
- **Bituminous coal and lignite surface mining**
- **Drilling oil and gas wells**
- **Support activities for oil and gas operations**

Fossil fuel reserves may include the following types:

- **Coal (metallurgical, thermal or other)**
- **Oil (conventional or unconventional)**
- **Gas (natural and shale)**
- **Oil and/or gas (where no specification has been provided)**

The portfolio is less exposed to extractive industries than the benchmark, when measured by both apportioned revenue and weighted average of revenues.

The portfolio is also less exposed to extractives and company reported reserves on a VOH basis compared to the benchmark.

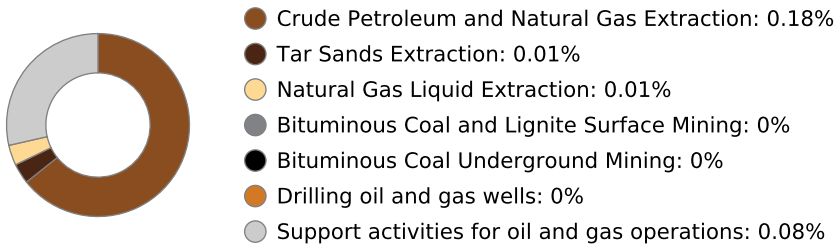
Fossil Fuels & Stranded Assets

Extractives Revenue Exposure by Sector

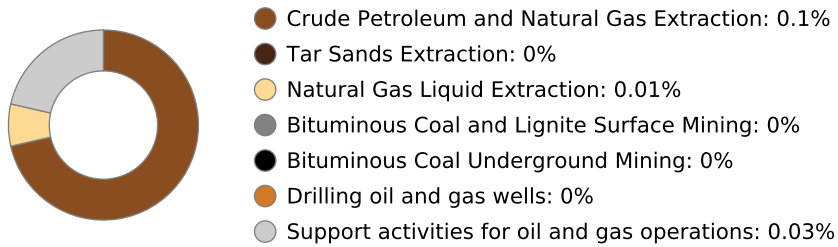
Below is a breakdown of the portfolio's extractive revenue exposure by sector, as a share of total revenue. Both the apportioning and the weighted average methods are displayed.

	Bituminous Coal and Lignite Surface Mining	Bituminous Coal Underground Mining	Crude Petroleum and Natural Gas Extraction	Natural Gas Liquid Extraction	Drilling oil and gas wells	Tar Sands Extraction	Support activities for oil and gas operations	Total Extractives Exposure
Portfolio - apportioned	+0.00	+0.00	0.18	+0.00	+0.00	+0.00	0.08	0.29
Benchmark - apportioned	0.15	0.03	1.32	0.19	+0.00	0.15	0.26	2.10
Portfolio - weighted	+0.00	+0.00	0.10	+0.00	+0.00	+0.00	0.03	0.14
Benchmark - weighted	0.09	0.02	0.71	0.06	+0.00	0.08	0.12	1.07

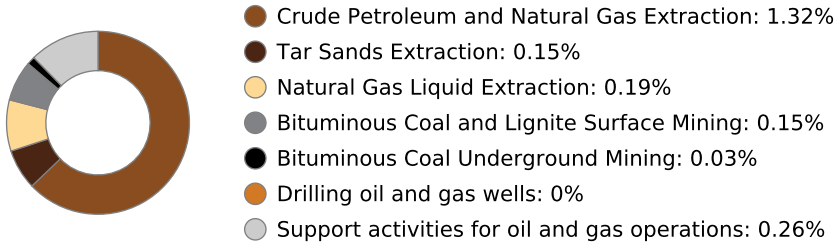
Portfolio - Apportioning Method



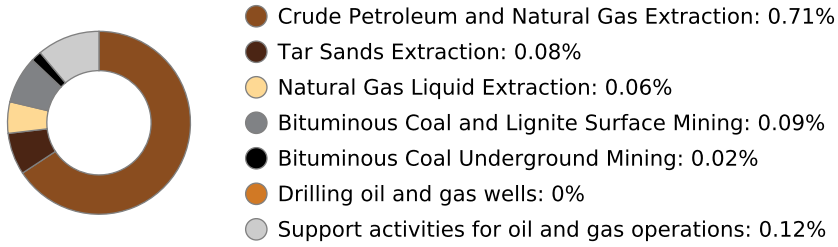
Portfolio - Weighted Average Method



Benchmark - Apportioning Method



Benchmark - Weighted Average Method



Fossil Fuels & Stranded Assets

Embedded Emissions

Trucost is able to analyse the carbon emissions embedded within the fossil fuel reserves which have been disclosed by companies in the portfolio or benchmark. Companies may disclose both 1P and 2P reserves (1P refers to those held with 90% confidence, 2P are those held with 50% confidence). Both 1P and 2P are used when assigning embedded emissions to a company.

The chart below shows the total tonnes of apportioned CO2 from reserves, broken down by reserve type. It also shows the reserves 'intensity' by normalizing the apportioned embedded emissions by the VOH.

The total embedded CO2 emissions from reserves is 0.022 m tonnes.

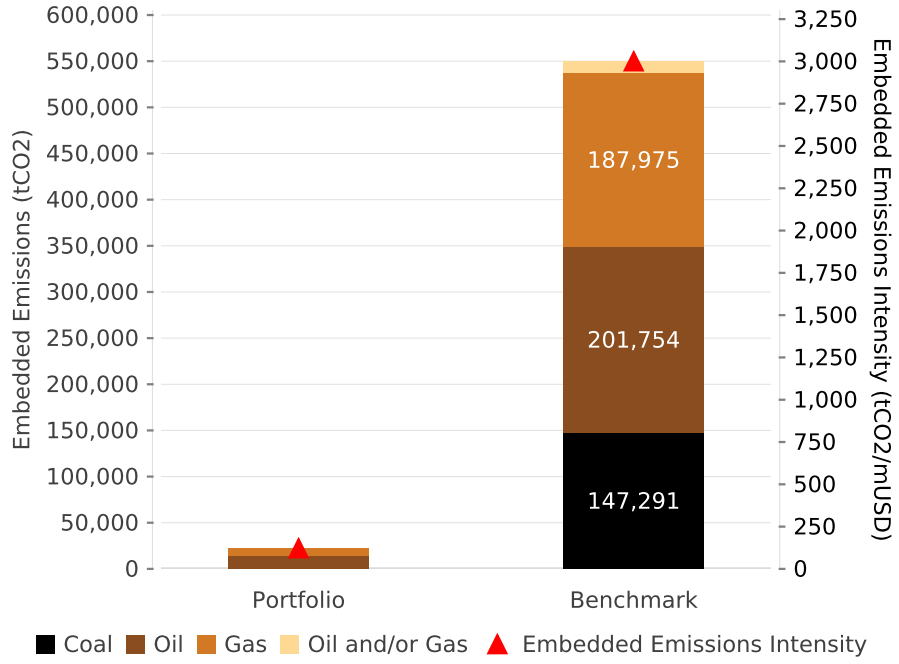
Fossil Fuel CAPEX

In addition to reserves, Trucost collects data on the capital expenditure set aside for fossil fuel related activities such as further exploration and extraction in order to provide additional quantitative insights on stranded asset risk.

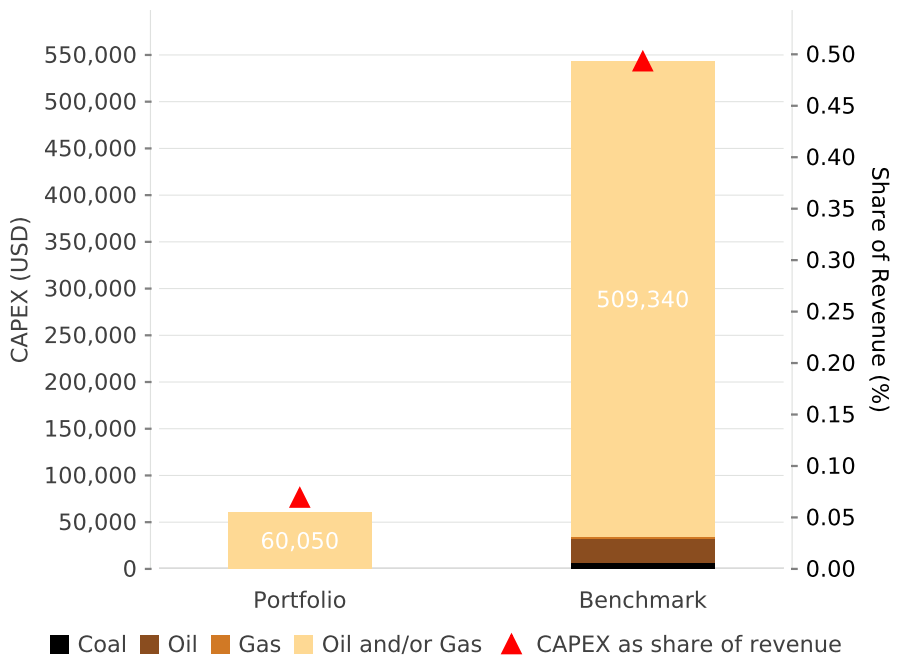
The chart below shows the total apportioned capital expenditure on fossil fuel related activities by reserve type. It also normalizes the CAPEX by showing it as a share of apportioned revenue.

The total apportioned fossil fuel CAPEX is 0.060 mUSD.

Apportioned Future Emissions by Reserve Type



Apportioned CAPEX by Reserve Type



Fossil Fuels & Stranded Assets

Largest Contributors - Extractives Revenue & Embedded Emissions

The table below shows the largest contributors towards the portfolio's apportioned **extractives** revenue. It is displayed as a percentage of the portfolio's total apportioned revenue. The degree to which the company's own revenues are derived from extractive activities is also shown in the adjacent column.

Company Name	Holding (mUSD)	Sector	Portfolio level extractives revenue exposure (% of total)	Company level extractives revenue exposure (% of total)	Portfolio Level Future Emissions From Reserves (MtCO2)	Company Level Future Emissions From Reserves (MtCO2)
Chevron Corporation	0.159	Energy	0.06%	31.75%	0.004	4,670.240
ConocoPhillips	0.043	Energy	0.04%	100.00%	0.002	2,007.680
Schlumberger Limited	0.024	Energy	0.03%	84.50%		
Exxon Mobil Corporation	0.180	Energy	0.03%	9.14%	0.009	9,326.040
Halliburton Company	0.011	Energy	0.03%	100.00%		
EOG Resources, Inc.	0.028	Energy	0.02%	100.00%	0.001	1,170.170
Occidental Petroleum	0.016	Energy	0.01%	75.17%	+0.000	1,039.760
Baker Hughes Company	0.010	Energy	0.01%	50.78%		
Apache Corporation	0.005	Energy	+0.00%	100.00%	+0.000	456.110
Marathon Oil Corporation	0.005	Energy	+0.00%	100.00%	+0.000	477.160

The table below shows the largest contributors towards the portfolio's apportioned **embedded emissions**. The absolute contributions are shown in the second to last column, while final column shows the company's total level of emissions from reserves.

Company Name	Holding (mUSD)	Sector	Portfolio level extractives revenue exposure (% of total)	Company level extractives revenue exposure (% of total)	Portfolio Level Future Emissions From Reserves (MtCO2)	Company Level Future Emissions From Reserves (MtCO2)
Exxon Mobil Corporation	0.180	Energy	0.03%	9.14%	0.009	9,326.040
Chevron Corporation	0.159	Energy	0.06%	31.75%	0.004	4,670.240
ConocoPhillips	0.043	Energy	0.04%	100.00%	0.002	2,007.680
Devon Energy Corporation	0.004	Energy	+0.00%	52.89%	0.001	1,203.700
EOG Resources, Inc.	0.028	Energy	0.02%	100.00%	0.001	1,170.170
Occidental Petroleum	0.016	Energy	0.01%	75.17%	+0.000	1,039.760
Noble Energy, Inc.	0.004	Energy	+0.00%	87.97%	+0.000	720.810
Cabot Oil & Gas	0.007	Energy	+0.00%	100.00%	+0.000	671.280
Marathon Oil Corporation	0.005	Energy	+0.00%	100.00%	+0.000	477.160
Concho Resources Inc.	0.010	Energy	+0.00%	100.00%	+0.000	465.890

Fossil Fuels & Stranded Assets

Coal Exposure

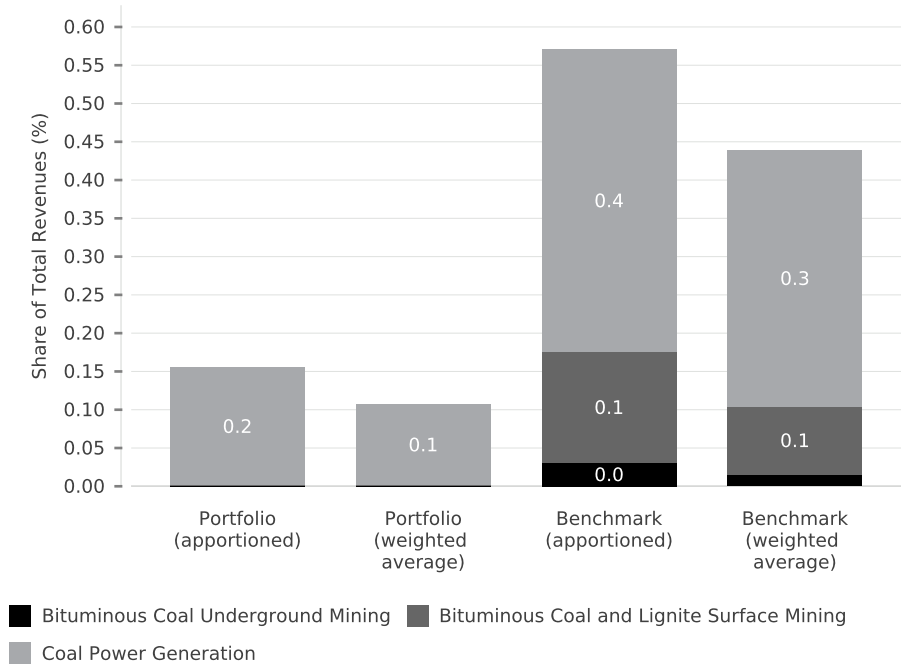
Coal related activities are widely understood to be among the largest contributors to anthropogenic carbon emissions. As such, an increasing number of investors are strategizing around coal exposure and positioning for a transition to a low carbon economy. This may include strategies such as implementing reduction targets for exposure to the embedded emissions, or adopting an assess-engage-monitor-divest approach to individual holdings involved in coal mining or coal power activities.

Trucost has assessed both the VOH and revenue exposure at the portfolio level to the following activities:

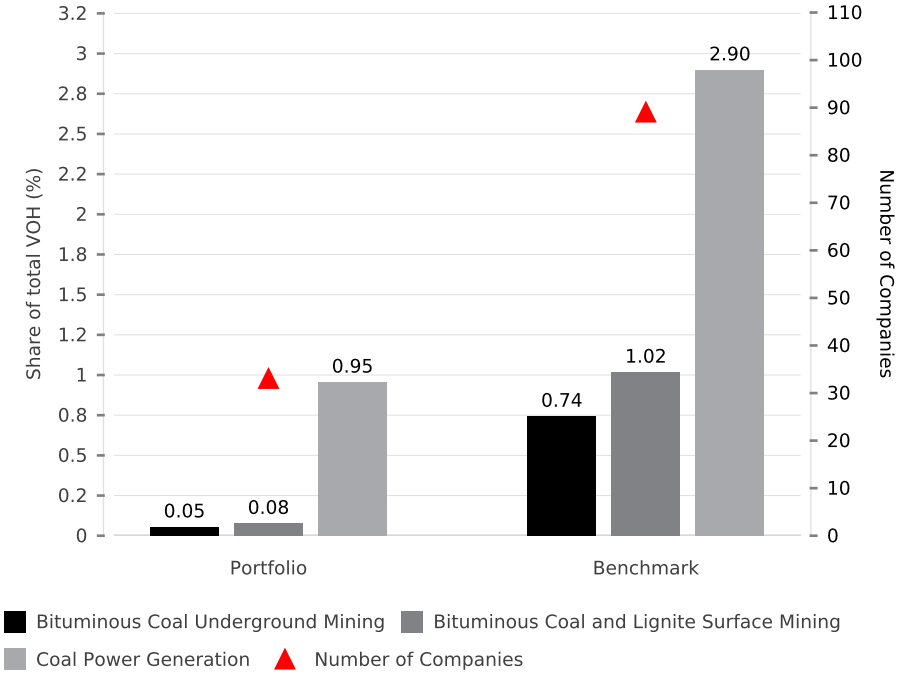
- **Bituminous coal underground mining**
- **Bituminous coal and lignite surface mining**
- **Coal power generation**

For the revenue exposure metric, both the apportioning and weighted average approach are presented. For the VOH exposure metric, the revenue threshold for inclusion was 0%. For more details on the methodology please refer to Appendix 5.

Coal Revenue Exposure by Sector



Coal VOH Exposure by Sector



Fossil Fuels & Stranded Assets

Largest Contributors - Coal Revenue

The table below shows the largest contributors towards the portfolio's apportioned coal revenue. The absolute contributions are shown in the final column, while the second to last column shows the degree to which the company's own revenues are derived from coal mining and/or power generation.

Company Name	Holding (mUSD)	Company Level Coal Extracted (m tonnes)	Company Level Coal Surface Mining Exposure (% of revenues)	Company Level Coal Underground Mining (% of revenues)	Company Level Coal Power Generation Exposure (% of revenues)	Company Level Total Coal Exposure (% of revenues)	Portfolio Level Apportioned Revenues From Coal (USDm)
Huaneng Power International,	0.013				85.10%	85.10%	0.033
China Power International	0.017				66.20%	66.20%	0.025
Duke Energy Corporation	0.084				24.55%	24.55%	0.009
China Longyuan Power Group	0.067				14.28%	14.28%	0.008
American Electric Power	0.038				36.72%	36.72%	0.006
Ameren Corporation	0.036				36.94%	36.94%	0.005
DTE Energy Company	0.035				19.53%	19.53%	0.005
The Southern Company	0.052				20.50%	20.50%	0.005
Evergy, Inc.	0.034				32.11%	32.11%	0.004
Xcel Energy Inc.	0.045				21.99%	21.99%	0.003

Energy Transition

Introduction

While carbon footprints can help to identify the most carbon efficient companies within a portfolio, they do not recognise those companies that are contributing positively to the low carbon economy by offering climate-mitigation or adaptation solutions. As the energy generating sectors are critical to this transition, Trucost has analysed physical units of power production embedded within the portfolio to highlight aggravators (fossil fuels) vs. mitigators (renewables). The generation types within each category are as follows:

- **Renewable Energy Generation:** solar, wind, wave & tidal, geothermal, hydroelectric, biomass
- **Fossil Fuel Energy Generation:** coal, petroleum, natural gas
- **Other Energy Generation:** nuclear, landfill gas, any other unclassified power generation

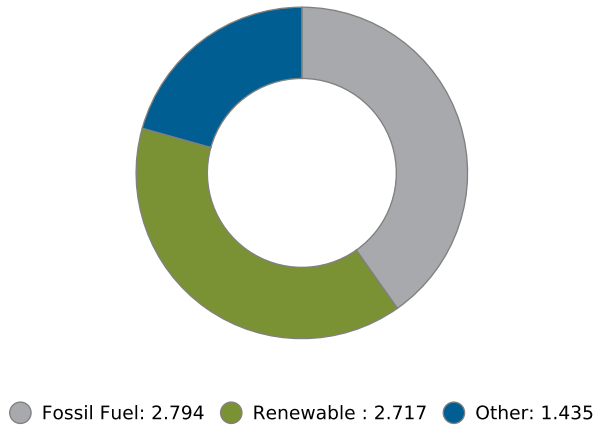
For more details on the apportioning methodology please refer to Appendix 2.

Generation Mix

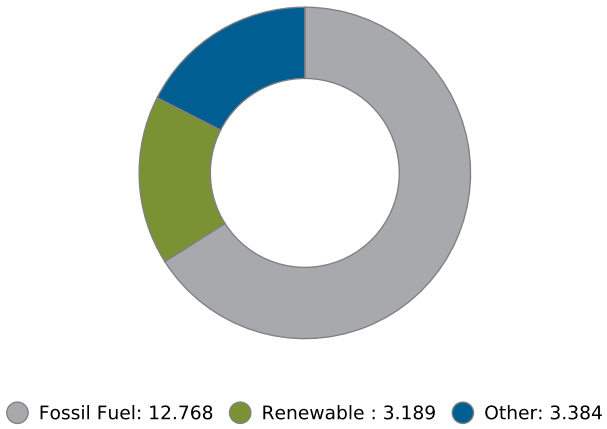
The table below breaks out the apportioned Gigawatt hours (GWh) by generation type. Hydroelectric and biomass have been separated from the 'Other renewables' due to their potential for controversy relating to implementation or sourcing, which can bring in to question their 'sustainability' credentials.

	Fossil Fuels			Renewable			Other	
	Coal (GWh)	Petroleum (GWh)	Natural Gas (GWh)	Hydroelectric (GWh)	BioMass (GWh)	Other Renewables (GWh)	Nuclear (GWh)	Other Sources (GWh)
Portfolio	1.493	0.035	1.267	1.658	0.042	1.017	1.433	0.001
Benchmark	5.269	0.231	7.268	1.934	0.088	1.166	3.378	0.007

Portfolio - Apportioned GWh



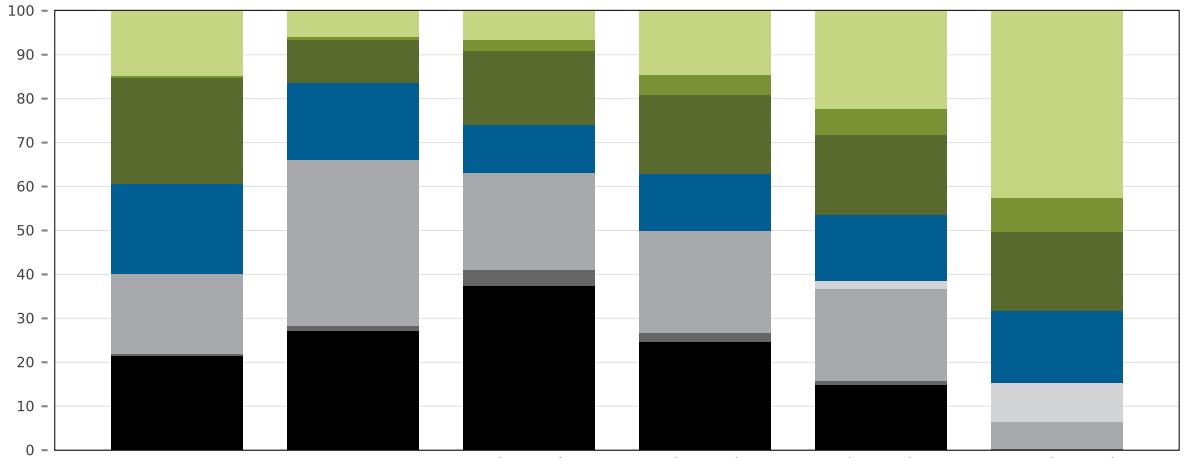
Benchmark - Apportioned GWh



Energy Transition

2 Degree Alignment

Investors are increasingly asking how they can align their portfolio with globally agreed forward-looking targets to mitigate climate change - so called two degree targets. Historically, portfolios have been measured against traditional financial benchmarks which generally reflect the economy today rather than the low carbon economy - as suggested by the International Energy Agency (IEA) - we need for tomorrow. This over-represents traditional fossil fuel energy sectors and under-represents greener energy providers. To overcome this issue, Trucost compares the current energy mix of a portfolio to the IEA's two degree scenarios, showing investors how to work toward an energy transition goal. This allows them to redirect capital to have the highest "transition" impact and help to finance the low carbon economy.



	Portfolio	Benchmark	IEA (World) 2016 2 Degree Scenario	IEA (World) 2025 2 Degree Scenario *	IEA (World) 2030 2 Degree Scenario *	IEA (World) 2050 2 Degree Scenario *
Other renewables	14.64%	6.03%	6.39%	14.60%	22.31%	42.52%
Biomass	0.60%	0.46%	2.63%	4.65%	5.92%	7.91%
Hydroelectric	23.87%	10.00%	16.67%	17.84%	18.16%	17.91%
Other sources (incl. landfill gas)	0.02%	0.03%	0.05%			
Nuclear	20.63%	17.47%	11.14%	12.97%	15.06%	16.29%
Fossil energy with CCS			0.04%	0.19%	1.62%	8.98%
Natural Gas	18.24%	37.58%	21.94%	23.07%	21.04%	6.04%
Petroleum	0.50%	1.19%	3.84%	2.00%	0.96%	0.27%
Coal	21.49%	27.24%	37.31%	24.68%	14.94%	0.08%

The chart to the left shows the percent share in the overall mix of each unit of energy apportioned to the portfolio and benchmark, by type. These are compared to the IEA's '2 degree aligned' energy mix scenarios for the world in 2016, 2025, 2030 and 2050 respectively.

It is worth noting that the portfolio and benchmark generation mixes are based only on disclosed energy production data. Companies operating in the energy sector but not disclosing units of energy produced are not included in the grid mix presented here. Such companies will, however, be captured in the revenue exposure analysis below.

* The content within table above was prepared by S&P Trucost Limited, with data derived from the 2 Degree Scenarios developed by the International Energy Agency. ©OECDIEA 2017. The content within the table above does not necessarily reflect the views of the International Energy Agency.

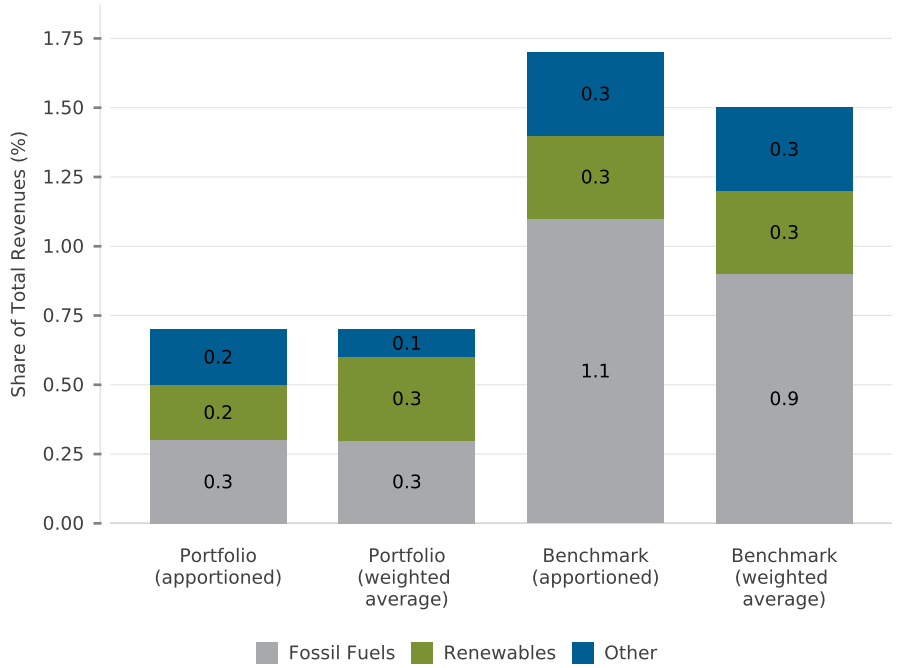
Energy Transition

Energy Generation Revenue Exposure

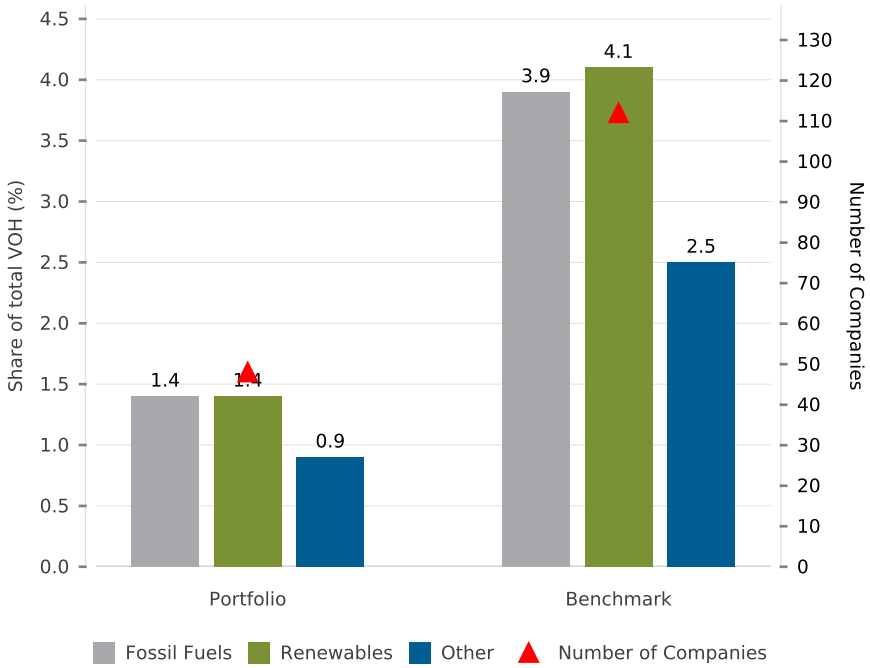
The analysis above has focused on the physical units of power generated by companies within the portfolio. As not all energy companies disclose this information, it is also useful to determine exposure to 'aggravators' and 'mitigators' based on sources of revenue. Trucost has assessed both the value of holding (VOH) and revenue exposure to fossil fuel, renewable, other power generation for the portfolio and benchmark.

For the revenue exposure metric, both the apportioning and weighted average approach are presented. For the VOH exposure metric, the revenue threshold for inclusion was 0%. For more details on the methodology please refer to Appendix 5.

Revenue Exposure to Energy Generation



VOH Exposure to Energy Generation



Energy Transition

Largest Contributors - Renewable & Fossil Fuel Energy Revenue

The table below shows the largest contributors towards the portfolio's apportioned renewable energy revenue. The absolute contributions are shown in the final column, while the second to last column shows the degree to which the company's own energy revenues are derived from renewable generation.

Company Name	Holding (mUSD)	Company Level Renewables Revenue (% of total)	Company Level Fossil Fuels Revenue (% of total)	Company Level Other Revenue (% of total)	Company Level Total Energy Revenue (% of total)	Renewables Share (% of total energy revenue)	Portfolio Level Total Apportioned Renewables Revenue (USDm)
PG&E Corporation	0.282	7.73%	6.01%	17.41%	31.15%	24.80%	0.043
China Longyuan Power	0.067	71.25%	14.28%		85.53%	83.31%	0.042
China Yangtze Power Co.,	0.254	99.82%			99.82%	100.00%	0.033
Orsted	0.237	35.23%	4.71%		39.94%	88.21%	0.021
China Power International	0.017	33.50%	66.20%		99.71%	33.60%	0.013
Cia Energetica de Minas	0.011	28.21%	0.04%		28.26%	99.84%	0.006
NextEra Energy, Inc.	0.175	23.62%	47.59%	25.24%	96.45%	24.49%	0.006
EDP - Energias de Portugal,	0.020	19.68%	9.51%	0.49%	29.68%	66.31%	0.004
Berkshire Hathaway Inc.	0.330	1.93%	3.45%	0.08%	5.46%	35.32%	0.004
Xcel Energy Inc.	0.045	16.66%	41.31%	8.66%	66.64%	25.00%	0.003

The table below shows the largest contributors towards the portfolio's apportioned fossil fuel energy revenue. The absolute contributions are shown in the final column, while the second to last column shows the degree to which the company's own energy revenues are derived from fossil fuel generation.

Company Name	Holding (mUSD)	Company Level Renewables Revenue (% of total)	Company Level Fossil Fuels Revenue (% of total)	Company Level Other Revenue (% of total)	Company Level Total Energy Revenue (% of total)	Fossil Fuel Share (% of total energy revenue)	Portfolio Level Total Apportioned Fossil Fuel Revenue (USDm)
Huaneng Power	0.013	2.85%	95.24%		98.09%	97.10%	0.037
PG&E Corporation	0.282	7.73%	6.01%	17.41%	31.15%	19.29%	0.034
China Power International	0.017	33.50%	66.20%		99.71%	66.40%	0.025
Duke Energy Corporation	0.084	4.46%	50.76%	26.11%	81.32%	62.42%	0.018
NextEra Energy, Inc.	0.175	23.62%	47.59%	25.24%	96.45%	49.34%	0.012
Entergy Corporation	0.034	0.26%	60.20%	29.26%	89.72%	67.10%	0.012
The Southern Company	0.052	6.15%	51.93%	10.25%	68.32%	76.00%	0.012
China Longyuan Power	0.067	71.25%	14.28%		85.53%	16.69%	0.008
SSE plc	0.063	4.15%	22.87%		27.02%	84.64%	0.008
Dominion Energy, Inc.	0.117	7.76%	31.99%	10.87%	50.61%	63.20%	0.007

APPENDIX

1. Scopes

Before beginning a carbon or environmental audit, an investor must decide on what scopes to include in their analysis. Some believe that only operational impacts/emissions should be considered when calculating a company's exposure, i.e. the resources/pollutants owned or controlled by the reporting entity. This casts the net around impacts that the investee (and, to a lesser extent, the investor) has a direct sphere of influence over. It also avoids the possibility of double counting. However, as risks may be passed on through the supply chain in the form of higher prices, it may sometimes be more pragmatic to include emissions originating from suppliers.

CARBON: Trucost collects greenhouse gas data covering Scopes 1, 2 and 3 upstream emissions, as well as additional data relating to non-Kyoto Protocol greenhouse gases. Definitions of the available scopes are shown below:

- **Scope 1** = CO2e emissions based on the Kyoto Protocol greenhouse gases generated by direct company operations.
- **Scope 2** = CO2e emissions generated by purchased electricity, heat or steam.
- **Scope 3** (upstream) = CO2e emissions generated by a company's non-electricity supply chain.
- **Direct** = Scope 1 plus CO2e emissions from four additional sources, CCl4, C2H3Cl3, CBrF3, and CO2 from Biomass.
- **First Tier Indirect** = Scope 2 plus emissions from direct (or "Tier 1") upstream Scope 3 emissions.
- **Remaining Indirect** = Tier 2 and onward upstream Scope 3 emissions.

ENVIRONMENT: As with carbon analysis, the scopes available for an environmental audit are Direct, First Tier Indirect, and Remaining Indirect impacts. Direct impacts result from a company's own operations and include emissions from fuel combustion (boilers and company owned vehicles), pollution from water abstracted, natural resource use, and waste generated from industrial production. Indirect impacts from supply chains occur because of the goods or services a company procures. Indirect impacts are broken down between those in the first tier of the supply chain and those in the remaining tiers.

2. Apportioning

Many of the exposure metrics calculated by Trucost rely on the apportioning of company owned resources/pollutants to the portfolio or benchmark. Apportioning, as an approach, is built on the principle of ownership. That is, if an investor owns - or in the case of debt holdings, finances - 1% of a company, then they also 'own' 1% of the company's resources/pollutants.

For equity only portfolios the apportioning factor is usually obtained by dividing the value of holding by the company's market capitalisation on the date of analysis. For debt only, or mixed portfolios, enterprise value usually replaces market capitalization as the denominator. The company level resources/pollutants are then multiplied by the apportioning factor to arrive at resource/pollutant quantities specific to each holding. The portfolio level resources/pollutants is the sum of all of these quantities.

APPENDIX

3. Carbon & Environmental Intensity Calculation

Portfolios with larger assets under management will typically have a higher amount of total apportioned resources/pollutants than smaller portfolios because of their size. As most portfolios have a remit to grow assets under management, it is important to normalise these absolute quantities to allow for fair comparison year on year against other portfolios or benchmarks. The three most common approaches to normalizing emissions/impacts are:

1. Dividing the apportioned emissions/impacts by the amount invested.
2. Dividing the apportioned emissions/impacts by the apportioned annual revenues.
3. Summing the product of each holding's weight in the portfolio with the company level carbon/environmental revenue intensity.

For ease of reference, Trucost has defined these as **Carbon to Value Invested, Carbon to Revenue,** and **Weighted Average Carbon Intensity** respectively.

The first gives an indication of carbon or environmental 'efficiency' with respect to shareholder value creation. The second gives an indication of 'efficiency' with respect to output (as revenues are closely linked to productivity). The third approach circumvents the need for apportioning ownership of carbon, revenue or environmental impacts to individual holdings. Whilst the first two methods act as indicators of an investor's contribution to climate change or ecosystem damage, the weighted average method seeks to show an investor's exposure to carbon/environmentally intensive companies, i.e. is not an additive in terms of carbon budgets.

4. Carbon Disclosure

The level of carbon disclosure is based on each company's Scope 1 emissions, and can be classified as fully disclosed, partially disclosed, or modelled.
- **Full Disclosure** refers to when exact figures have been extracted from annual reports, 10Ks, financial account disclosures, CDP disclosures, environmental/CSR reports, or from personal communication with a company.
- **Partial Disclosure** refers to when Trucost has needed to derive, adjust, or scale any of the data acquired from the sources described above.
- **Modelled** refers to when Trucost has calculated estimates using its proprietary environmentally enhanced input-output model, due to the unavailability or unreliability of up-to-date disclosures.

The overall level of disclosure in the portfolio is assessed using the following three approaches:

- **Value of Holdings**: This is the sum of the weights of each holding within each of the three disclosure categories.
- **GHG**: This is the sum of the portfolio's apportioned Scope 1 CO_2e within each of the three disclosure categories.
- **Number of companies/instruments**: This is the number of companies/instruments within each of the three disclosure categories.

APPENDIX

5. Revenue & Reserves Exposure

When assessing exposure to extractive industries, coal, or energy generation revenues, three approaches are used.

1. Apportioned Revenue Exposure
2. Weighted Average Revenue Exposure
3. VOH Exposure

The first represents the share of apportioned revenues from the sectors in question as a percentage of the total apportioned revenues from any sector (for more information on apportioning please refer to Appendix 2). The second is calculated by summing the product of each holding's weight in the portfolio with the company level revenue dependency on the sector in question. The third is calculated by summing the weights of any holdings in companies that have a revenue dependency on the sectors in question above a predefined threshold. The reason for the threshold is to allow users to exclude companies whose revenue dependency on the sectors in question may not be considered material.

In the case of reserves, holdings in any company disclosing any amount of reserves is included in the VOH exposure metric. Companies that have reserves, but do not disclose them, will not be captured by the analysis.

6. CO2 Equivalent (CO2e)

Each greenhouse gas differs in its ability to absorb heat in the atmosphere. HFCs and PFCs are the most heat-absorbent. Calculations of greenhouse gas emissions are presented in units of millions of metric tons of carbon equivalents (MMTCE), which weights each gas by its GWP value, or Global Warming Potential. The Global Warming Potentials used in Trucost analysis are:

Carbon Dioxide - 1
Methane - 21
Nitrous Oxide - 310
Sulphur Hexaflouride - 23,900
Per Fluoro Carbons - 7,850
Hydro Flouro Carbons - 5,920

These conversion figures are taken from the publically available 2006 Intergovernmental Panel on Climate Change's (IPCC) 'Guidelines for National Greenhouse Gas Inventories'.

APPENDIX

7. Environmental Valuation

Why apply valuations to environmental impacts? Traditional approaches to environmental impact measurement provide a variety of different metrics. For example, carbon and other pollutants are measured in tonnes, for water it is cubic meters. This makes it difficult to compare the relative contribution of each impact and therefore prioritise risks. Trucost addresses this problem by applying monetary valuations to each impact, thereby providing an overarching common metric to assess risk and opportunity across companies and portfolios.

The analysis applies the chosen valuations to the impacts associated with a company's own business activities and those of its upstream suppliers, all the way back to raw material extraction. Environmental impacts are often concealed within global supply chains, therefore we use environmentally extended input output (EEIO) modelling to reveal liabilities at each tier of the value chain for holistic risk and opportunity analysis.

ENVIRONMENTAL KPIs:

Greenhouse Gases:
The categories included in the environmental footprint are carbon dioxide, methane, nitrous oxide, sulphur hexaflouride, per fluoro carbons as well as hydro flouro carbons and nitrogen trifluoride.

Water Abstraction:
The categories included in the environmental footprint are direct cooling and direct process water, as well as purchased water (i.e. the water acquired from utility companies).

Waste Generation:
The categories included in the environmental footprint are waste incineration, landfill waste, nuclear waste (e.g. from the manufacture of products, the combustion of nuclear fuel or other industrial and medical processes) and recycled waste.

Air Pollutants:
The categories included in the environmental footprint are all emissions released to air by the consumption of fossil fuels and production processes which are owned or controlled by the company. This includes acid rain precursors (e.g. nitrogen oxide, sulphur dioxide, sulphuric acid, ammonia), ozone depleting substances (HFCs and CFCs), dust and particles, metal emissions, smog precursors and VOCs. Each has a set of impacts on human health, buildings and/or crop and forest yields.

Land & Water Pollutants:
The categories included in the environmental footprint are pollutants from fertiliser and pesticides, metal emissions to land and water, acid emissions to water, and nutrient and acids pollutant.

Natural Resource Use:
The categories included in the environmental footprint are extraction of minerals, metals, natural gas, oil, coal, forestry, agriculture and aggregates.

Disclaimer

The materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including text, data, reports, images, photos, graphics, charts, animations, videos, research, valuations, models, software or other application or output therefrom or any part thereof ("Content") may be modified, reverse engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of Trucost or its affiliates (collectively, S&P Global). S&P Global, its affiliates and their licensors do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Global, its affiliates and their licensors are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P GLOBAL, ITS AFFILIATES AND LICENSORS DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, CONDITIONS, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Global, its affiliates or their licensors be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

Trucost's opinions, quotes and credit-related and other analyses are statements of opinion as of the date they are expressed and not statements of fact or recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. Trucost assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions.

S&P Global keeps certain activities of its divisions separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain divisions of S&P Global may have information that is not available to other S&P Global divisions. S&P Global has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P Global may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P Global reserves the right to disseminate its opinions and analyses. S&P Global's public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge) and www.ratingsdirect.com (subscription), and may be distributed through other means, including via S&P Global publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.