

Climate Related Portfolio Assessment



IVO Capital (2024.02)

15 February 2024



ABOUT SUSTAINABLE1

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Sustainable1 is part of S&P Global. A leader in carbon and environmental data and risk analysis, Sustainable1 assesses risks relating to climate change, natural resource constraints, and broader environmental, social, and governance (ESG) factors. Companies and financial institutions use Sustainable1 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 enables its team to deliver essential ESG investment-related information to the global marketplace.

For more information, visit www.sustainable1.com

ABOUT S&P GLOBAL

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INTRODUCTION TO CLIMATE-RELATED REPORTING

The effects of climate change pose considerable and far-reaching risks to the global economy. Among those most directly affecting businesses include physical risks posed by increased climate variability and more frequent extreme weather events, which may result in property damage, challenges linked to business continuity, and the disruption to global supply chains. Businesses also face risks associated with the transition to a low-carbon economy, including policy changes designed to discourage carbon-intensive energy use or favour more resource-efficient industries and operations.

At the request of the G20, the Financial Stability Board (FSB) reviewed how the reporting on climate-related issues in financial reporting could be improved in order to better reflect the risks and opportunities facing financial institutions and non-financial businesses alike. In June 2017, the FSB Taskforce for Climate-Related Financial Disclosure (TCFD) published recommendations on the disclosure of “information needed by investors, lenders, and insurance underwriters to appropriately assess and price climate-related risks and opportunities.”

The TCFD provides a voluntary disclosure framework organized around four themes, designed to facilitate better disclosure. These are **governance**, **strategy**, **risk management**, and **metrics and targets**. In order for organizations to disclose in line with TCFD recommendations, they must be able to quantify or qualify the risks and opportunities facing them, linked to climate-related issues, and be able to describe policies, procedures and systems in place to monitor and address climate-related issues on an on-going basis.

This report by Trucost provides both forward-looking and historical metrics that may be used by asset owners and/or asset managers to support their climate-related disclosures in line with TCFD recommendations, and inform internal processes for risk management and strategy development within an organization.

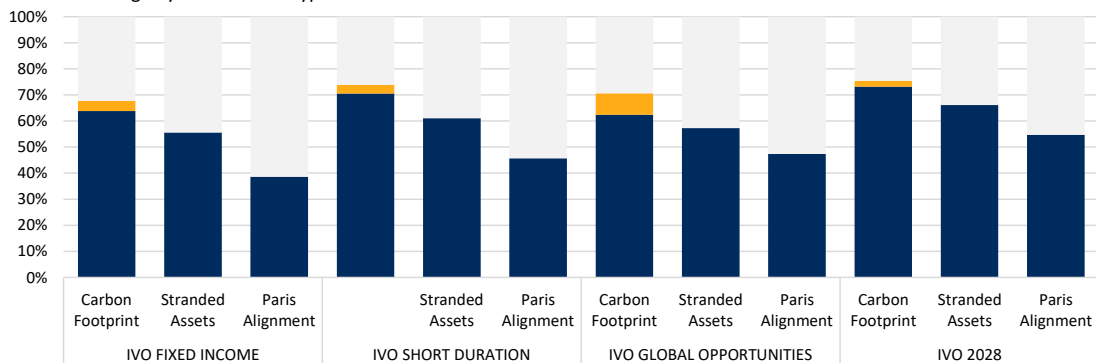
See Appendix 1 for more information on the TCFD recommended disclosures for asset owners and asset managers.

COVERAGE RATES

A Note on Mapping

- Equity instruments are mapped to the issuing entity. Debt instruments are mapped to the first publicly listed entity in the instrument's parent chain (starting with a bond's issuer, then its immediate parent, and finally its ultimate parent). Bonds with no public parent are mapped to the issuer.
- 'Out of Scope' indicates the portion of a portfolio relating to non-corporate equity, debt or loans.
- 'Trucost Data with [or without] apportioning' indicates the portion of a portfolio that was mapped to companies in the corresponding product dataset. For example, for the stranded assets module, the corresponding dataset is the Trucost Environmental Register (ER).
- 'Single Sector Modelling with [or without] apportioning' is applicable only to the carbon footprint module. Companies not in the Trucost ER may still have an emissions profile generated and be included in the analysis if both the GICS subindustry and revenues are available.
- Companies without an apportioning factor available will be excluded from portfolio-level metrics that require apportioning - such as absolute footprint - but included in metrics that do not - such as weighted-average carbon intensity (WACI).

Coverage by Method and Type



	Portfolio Size (mEUR)
IVO FIXED INCOME	481
IVO SHORT DURATION	128
IVO GLOBAL OPPORTI	18
IVO 2028	75

- Out of scope
- Single Sector Modelling with apportioning by EVIC, MC or TC
- Trucost Data with apportioning by EVIC, MC or TC
- Trucost Data without apportioning
- Single Sector Modelling without apportioning
- Not covered

CARBON

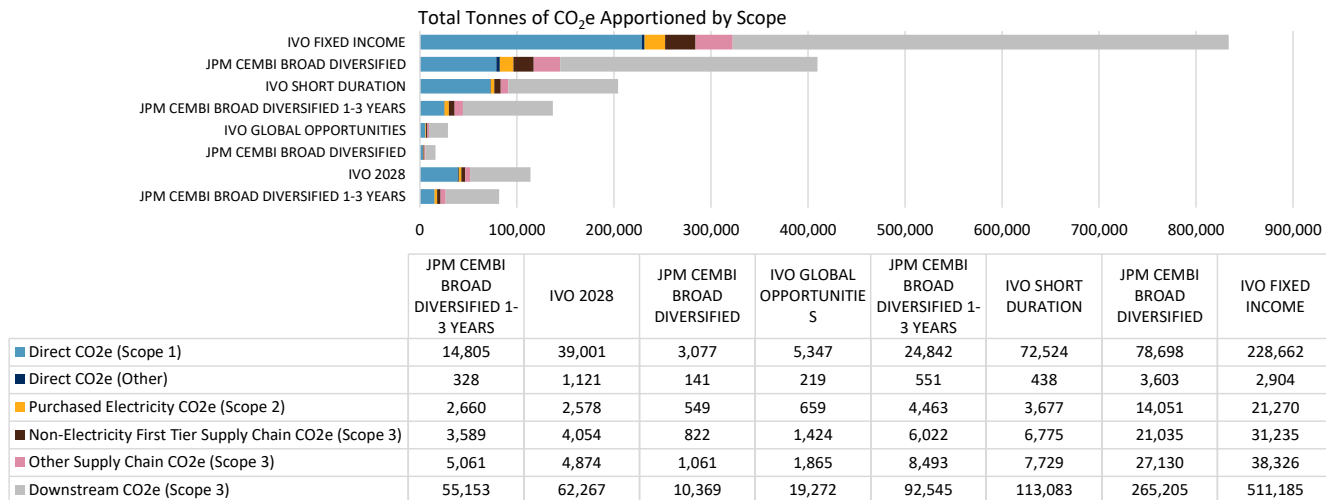
Carbon Apportioned by Scope

Carbon audits offer a systematic assessment of the carbon risks and opportunities within a portfolio or index at a given point in time. The first step of beginning an audit is to decide on the scope of the analysis. This may range from looking only at the operational emissions of investee companies - which avoids the risk of double counting - to looking at emissions throughout their entire supply chain for a more complete picture.

In the chart below, carbon has been apportioned to each of the portfolios analysed and broken out by the following scopes:

- **Direct (Scope 1):** CO₂e emissions based on the Kyoto Protocol, greenhouse gases generated by direct company operations.
- **Direct (Other):** Additional direct emissions, including those from CCl₄, C₂H₂Cl₂, CBrF₃, and CO₂ from Biomass.
- **Purchased Electricity (Scope 2):** CO₂e emissions generated by purchased electricity, heat or steam.
- **Non-Electricity First Tier Supply Chain (Scope 3):** CO₂e emissions generated by companies providing goods and services in the first tier of the supply chain.
- **Other Supply Chain (Scope 3):** CO₂e emissions generated by companies providing goods and services in the second to final tier of the supply chain.
- **Downstream (Scope 3):** CO₂e emissions generated by the distribution, processing and use of the goods and services provided by a company.

For more information on apportioning and scopes, please see Appendix 2 and 3 respectively.



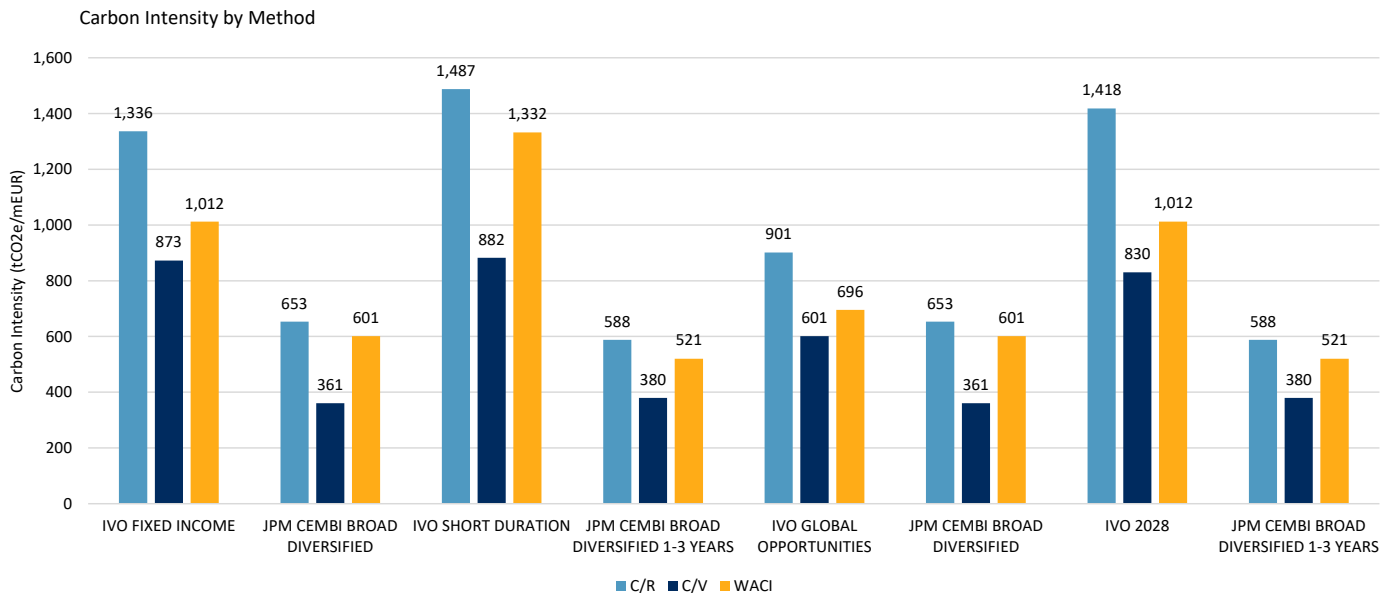
CARBON

Carbon Intensity by Method

Portfolios with larger assets under management will typically also have larger absolute carbon footprints than smaller portfolios due to their size. In order to facilitate fair comparison between portfolios, benchmarks and across years, it is therefore important to normalize the totals, either by revenues or by value invested. The three most common approaches to normalization are:

1. **Carbon to Revenue (C/R):** Dividing the apportioned CO₂e by the apportioned annual revenues.
2. **Carbon to Value Invested (C/V):** Dividing the apportioned CO₂e by the value invested.
3. **Weighted Average Carbon Intensity (WACI):** Summing the product of each holding's weight in the portfolio with the company level C/R intensity (no apportioning).

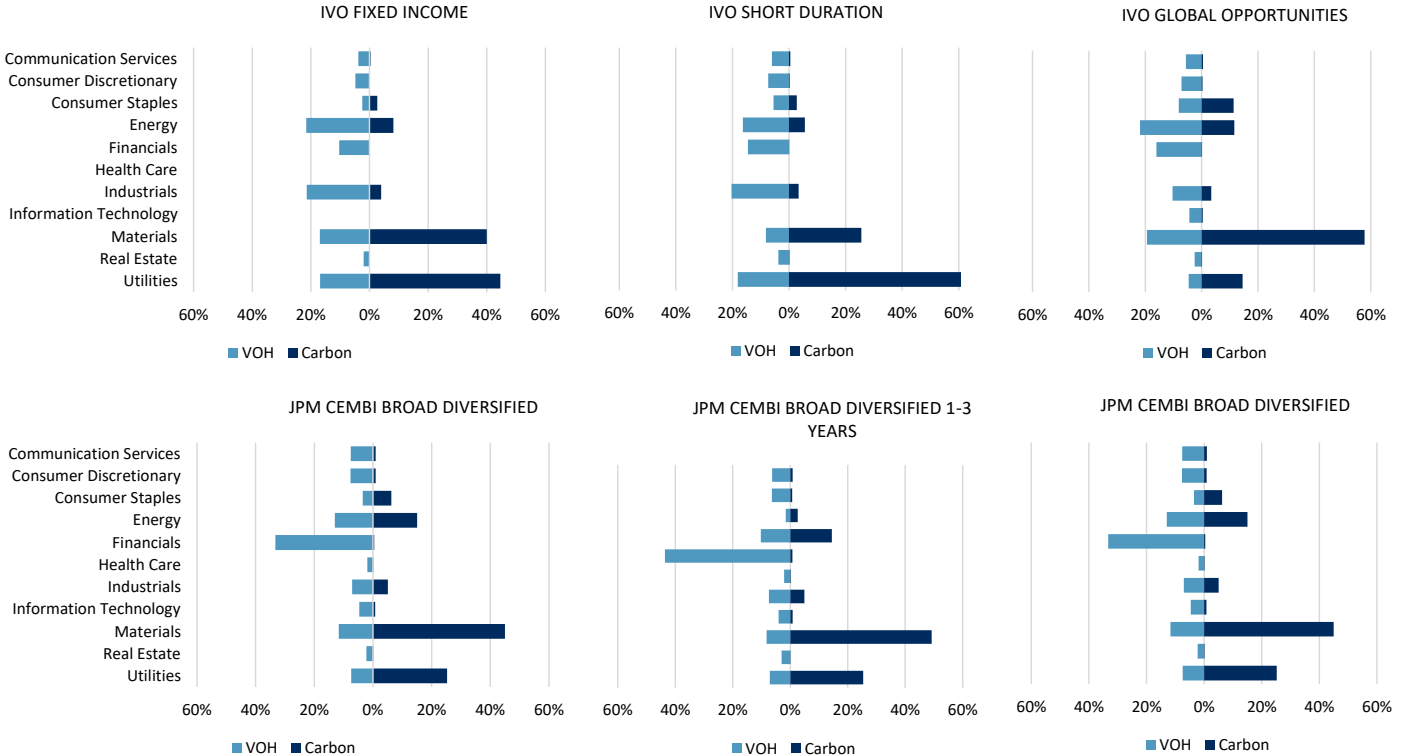
The chart below shows the intensity for portfolios using all three calculation methods. The scopes used for the intensity were **Direct** and **First Tier Indirect Emissions**.



CARBON

Sector VOH Share vs. Carbon Share

The charts below compare each sector's value-based weight in a portfolio or benchmark to its share of the total apportioned carbon emissions.

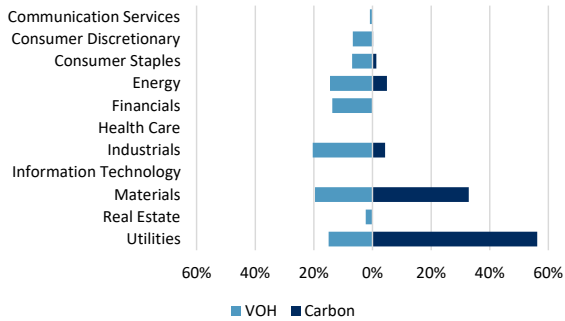


CARBON

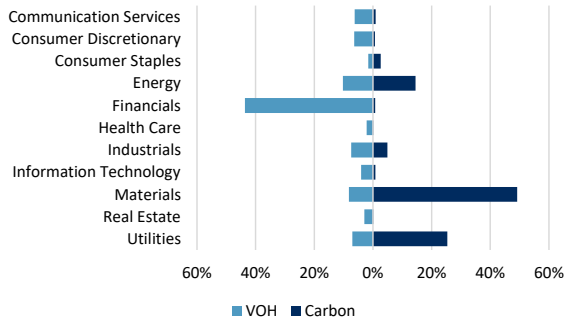
Sector VOH Share vs. Carbon Share

The charts below compare each sector's value-based weight in a portfolio or benchmark to its share of the total apportioned carbon emissions.

IVO 2028



JPM CEMBI BROAD DIVERSIFIED 1-3 YEARS



CARBON

Sector Carbon Intensities

The table below shows the C/R intensities of the portfolios and benchmarks at the GICS sector level.

	Communication Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities
IVO FIXED INCOME	168	84	1,011	448	17		383		1,548	80	4,044
JPM CEMBI BROAD DIVERSIFIED	110	137	592	544	16	59	495	94	1,069	108	3,008
IVO SHORT DURATION	173	84	355	386	17		367		2,169	122	4,522
JPM CEMBI BROAD DIVERSIFIED 1	137	89	513	583	16	60	466	84	1,035	89	3,096
IVO GLOBAL OPPORTUNITIES	199	51	780	393	17		370	152	1,604	86	4,536
JPM CEMBI BROAD DIVERSIFIED	110	137	592	544	16	59	495	94	1,069	108	3,008
IVO 2028	304	73	210	431	18		313		1,731	87	4,293
JPM CEMBI BROAD DIVERSIFIED 1	137	89	513	583	16	60	466	84	1,035	89	3,096

Carbon Intensity (tCO₂e/mEUR)



CARBON

Top C/R Contributors

The tables below show the top contributors to the carbon intensity of the portfolios analysed. Note that if the method used is C/R or C/V, then a company may appear due to the proportion owned/financed, rather than because it is the most carbon intensive held. The '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 affects the carbon performance of the portfolio.

IVO FIXED INCOME

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
Sasol Limited	Materials	3.54%	20.65%	4,049	-14.85%	Full Disclosure	Yes
MVM Energetika Zártkörűen Működő Részvénytársaság	Utilities	1.51%	17.62%	4,483	-13.05%	Modelled	-
Bulgarian Energy Holding EAD	Utilities	2.11%	9.90%	4,274	-7.02%	Modelled	No
Empresas Públicas de Medellín E.S.P.	Utilities	2.65%	6.66%	4,274	-4.68%	Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	1.75%	4.31%	4,961	-3.19%	Modelled	-
The AES Corporation	Utilities	3.56%	4.18%	3,555	-2.65%	Full Disclosure	Yes
Pampa Energía S.A.	Utilities	1.12%	1.25%	4,574	-0.89%	Full Disclosure	No
Anexo Guacolda Energía S.A.	Utilities	0.09%	0.55%	6,913	-0.44%	Modelled	No
Suzano S.A.	Materials	0.58%	0.58%	2,709	-0.30%	Full Disclosure	No
OCP S.A.	Materials	2.10%	2.09%	1,399	-0.10%	Modelled	No

IVO SHORT DURATION

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
MVM Energetika Zártkörűen Működő Részvénytársaság	Utilities	2.09%	24.12%	4,483	-17.52%	Modelled	-
Sasol Limited	Materials	3.32%	19.12%	4,049	-13.01%	Full Disclosure	Yes
Bulgarian Energy Holding EAD	Utilities	3.38%	15.69%	4,274	-10.82%	Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	2.85%	6.94%	4,961	-4.96%	Modelled	-
Empresas Públicas de Medellín E.S.P.	Utilities	1.83%	4.55%	4,274	-3.02%	Modelled	No
JSW Energy Limited	Utilities	2.04%	3.15%	16,679	-2.88%	Full Disclosure	No
The AES Corporation	Utilities	3.63%	4.21%	3,555	-2.49%	Full Disclosure	Yes
Anexo Guacolda Energía S.A.	Utilities	0.26%	1.49%	6,913	-1.18%	Modelled	No
PT Cikarang Lestari Tbk	Utilities	0.38%	1.09%	5,574	-0.80%	Full Disclosure	No
JSW Steel Limited	Materials	0.49%	0.85%	2,899	-0.42%	Full Disclosure	No

*Climate Action 100+ is an investor initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. The companies include 100 'systemically important emitters', accounting for two-thirds of annual global industrial emissions, alongside more than 60 others with significant opportunity to drive the clean energy transition. For more information see <http://www.climateaction100.org>.

CARBON

Top C/R Contributors

The tables below show the top contributors to the carbon intensity of the portfolios analysed. Note that if the method used is C/R or C/V, then a company may appear due to the proportion owned/financed, rather than because it is the most carbon intensive held. The '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 affects the carbon performance of the portfolio.

IVO GLOBAL OPPORTUNITIES

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
Sasol Limited	Materials	2.96%	25.03%	4,049	-20.60%	Full Disclosure	Yes
Anexo Guacolda Energía S.A.	Utilities	0.95%	8.15%	6,913	-7.16%	Modelled	No
Empresas Públicas de Medellín E.S.P.	Utilities	1.24%	4.51%	4,274	-3.60%	Modelled	No
Loma Negra Compañía Industrial Argentina Socie	Materials	0.38%	2.88%	3,445	-2.14%	Partial Disclosure	No
Suzano S.A.	Materials	1.85%	2.69%	2,709	-1.81%	Full Disclosure	No
Nitrogénmuvek Zrt.	Materials	1.03%	5.64%	1,204	-1.48%	Modelled	-
The AES Corporation	Utilities	1.08%	1.84%	3,555	-1.38%	Full Disclosure	Yes
Cementos Pacasmayo S.A.A.	Materials	0.27%	1.40%	4,505	-1.12%	Partial Disclosure	No
OCP S.A.	Materials	2.04%	2.94%	1,399	-1.06%	Modelled	No
GCC, S.A.B. de C.V.	Materials	0.49%	0.96%	3,963	-0.75%	Partial Disclosure	No

IVO 2028

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
MVM Energetika Zártkörűen Működő Részvénytár	Utilities	1.76%	21.53%	4,483	-15.80%	Modelled	-
Sasol Limited	Materials	3.51%	21.53%	4,049	-15.13%	Full Disclosure	Yes
Bulgarian Energy Holding EAD	Utilities	3.86%	19.07%	4,274	-13.60%	Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	3.77%	9.76%	4,961	-7.17%	Modelled	-
The AES Corporation	Utilities	4.70%	5.80%	3,555	-3.57%	Full Disclosure	Yes
Suzano S.A.	Materials	2.02%	2.13%	2,709	-1.02%	Full Disclosure	No
Companhia Siderúrgica Nacional	Materials	0.64%	0.77%	1,604	-0.09%	Full Disclosure	No
Klabin S.A.	Materials	0.33%	0.28%	2,057	-0.09%	Full Disclosure	No
Gol Linhas Aéreas Inteligentes S.A.	Industrials	0.14%	0.04%	1,039	0.01%	Partial Disclosure	No
Shamran Petroleum Corp.	Energy	0.14%	0.06%	703	0.07%	Modelled	-

*Climate Action 100+ is an investor initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. The companies include 100 'systemically important emitters', accounting for two-thirds of annual global industrial emissions, alongside more than 60 others with significant opportunity to drive the clean energy transition. For more information see <http://www.climateaction100.org>.

CARBON

Attribution Analysis

The principal reasons for the carbon intensity of a portfolio to differ from the benchmark are a) **sector allocation** decisions and b) **company selection** decisions. Sector allocation decisions can cause the carbon intensity of a portfolio to diverge from its benchmark when it is over or underweight markedly high or markedly low carbon sectors. For example, if a portfolio is overweight a high carbon sector, then it is more likely to have a higher overall intensity than the benchmark. However, if the companies selected within a high carbon sector are the most carbon efficient, then it is still possible that the portfolio may have a lower overall intensity.

The tables below show the relative contribution of **sector allocation** and **company selection** effects towards the 'Total Effect' of each portfolio versus their respective benchmark. Sector allocation effects are determined using the 11 GICS Sector classifications, and the analysis uses the Carbon-to-Revenue intensity metric.

IVO FIXED INCOME

JPM CEMBI BROAD DIVERSIFIED

	C/R Intensity		Attribution Effect		Total
	Portfolio	Bench.	Sector	Investee	
Communication Services	168	110	-2.25%	-0.26%	-2.51%
Consumer Discretionary	84	137	-2.42%	0.11%	-2.32%
Consumer Staples	1,011	592	-0.32%	-2.23%	-2.55%
Energy	448	544	1.02%	3.55%	4.58%
Financials	17	16	-13.17%	-0.01%	-13.18%
Health Care		59	-1.46%		-1.46%
Industrials	383	495	1.76%	2.40%	4.16%
Information Technology		94	-4.62%		-4.62%
Materials	1,548	1,069	-4.51%	-25.36%	-29.87%
Real Estate	80	108	-0.05%	0.04%	-0.01%
Utilities	4,044	3,008	-33.44%	-23.41%	-56.85%
	1,336	653	-59.46%	-45.16%	-104.63%

IVO SHORT DURATION

JPM CEMBI BROAD DIVERSIFIED 1-3 YEARS

	C/R Intensity		Attribution Effect		Total
	Portfolio	Bench.	Sector	Investee	
Communication Service	173	137	0.42%	-0.26%	0.16%
Consumer Discretionary	84	89	-0.71%	0.03%	-0.68%
Consumer Staples	355	513	1.10%	3.14%	4.24%
Energy	386	583	0.06%	7.24%	7.30%
Financials	17	16	-20.87%	-0.01%	-20.88%
Health Care		60	-1.38%		-1.38%
Industrials	367	466	1.56%	2.32%	3.88%
Information Technology		84	-4.93%		-4.93%
Materials	2,169	1,035	7.92%	-33.78%	-25.86%
Real Estate	122	89	0.63%	-0.10%	0.54%
Utilities	4,522	3,096	-66.08%	-49.24%	-115.33%
	1,487	588	-82.28%	-70.67%	-152.95%

CARBON

Attribution Analysis

The principal reasons for the carbon intensity of a portfolio to differ from the benchmark are a) **sector allocation** decisions and b) **company selection** decisions. Sector allocation decisions can cause the carbon intensity of a portfolio to diverge from its benchmark when it is over or underweight markedly high or markedly low carbon sectors. For example, if a portfolio is overweight a high carbon sector, then it is more likely to have a higher overall intensity than the benchmark. However, if the companies selected within a high carbon sector are the most carbon efficient, then it is still possible that the portfolio may have a lower overall intensity.

The tables below show the relative contribution of **sector allocation** and **company selection** effects towards the 'Total Effect' of each portfolio versus their respective benchmark. Sector allocation effects are determined using the 11 GICS Sector classifications, and the analysis uses the Carbon-to-Revenue intensity metric.

IVO GLOBAL OPPORTUNITIES

JPM CEMBI BROAD DIVERSIFIED

	C/R Intensity		Attribution Effect		Total
	Portfolio	Bench.	Sector	Investee	
Communication Services	199	110	-2.81%	-0.30%	-3.12%
Consumer Discretionary	51	137	1.20%	0.78%	1.97%
Consumer Staples	780	592	0.58%	-3.79%	-3.20%
Energy	393	544	1.41%	6.14%	7.55%
Financials	17	16	-11.70%	-0.01%	-11.71%
Health Care		59	-1.46%		-1.46%
Industrials	370	495	0.37%	1.58%	1.95%
Information Technology	152	94	-2.85%	-0.18%	-3.04%
Materials	1,604	1,069	-3.18%	-26.61%	-29.79%
Real Estate	86	108	0.13%	0.04%	0.17%
Utilities	4,536	3,008	9.37%	-6.75%	2.61%
	901	653	-8.94%	-29.11%	-38.05%

IVO 2028

JPM CEMBI BROAD DIVERSIFIED 1-3 YEARS

	C/R Intensity		Attribution Effect		Total
	Portfolio	Bench.	Sector	Investee	
Communication Service	304	137	-2.41%	-0.17%	-2.58%
Consumer Discretionary	73	89	-0.11%	0.11%	0.00%
Consumer Staples	210	513	0.73%	4.53%	5.26%
Energy	431	583	0.01%	4.17%	4.19%
Financials	18	16	-22.19%	-0.01%	-22.20%
Health Care		60	-1.38%		-1.38%
Industrials	313	466	2.75%	5.08%	7.83%
Information Technology		84	-4.93%		-4.93%
Materials	1,731	1,035	0.79%	-31.84%	-31.06%
Real Estate	87	89	0.08%	0.00%	0.08%
Utilities	4,293	3,096	-58.62%	-37.76%	-96.38%
	1,418	588	-85.29%	-55.89%	-141.18%

CARBON DISCLOSURE

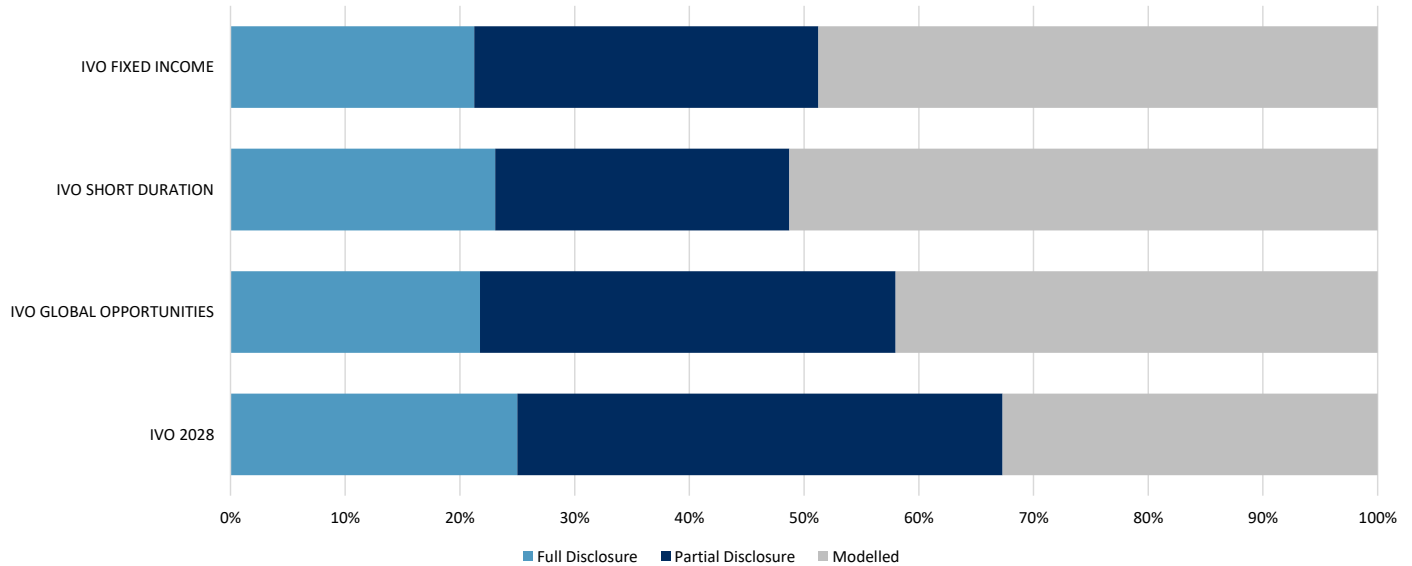
Disclosure Analysis

In the charts below, the overall level of disclosure in each portfolio is assessed using the following three methods:

1. **VOH:** The sum of the weights of each holding within each of the three disclosure categories.
2. **GHG:** The sum of each holding's share of the total apportioned Scope 1 CO₂e within each of the three disclosure categories.
3. **Companies:** The number of companies, shown as a percent of all companies analysed, within each of the three disclosure categories.

For more information on data collection and disclosure categories, please refer to Appendix 4.

Disclosure Levels by Company Count



CARBON DISCLOSURE

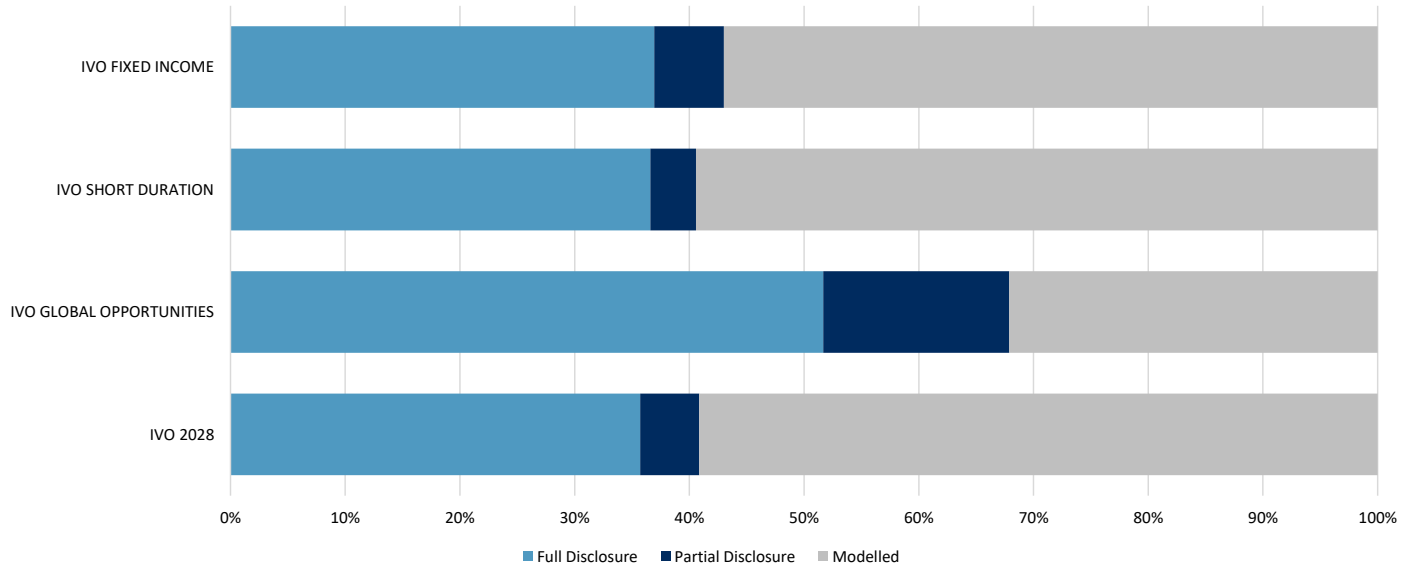
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Disclosure Levels by GHG



CARBON DISCLOSURE

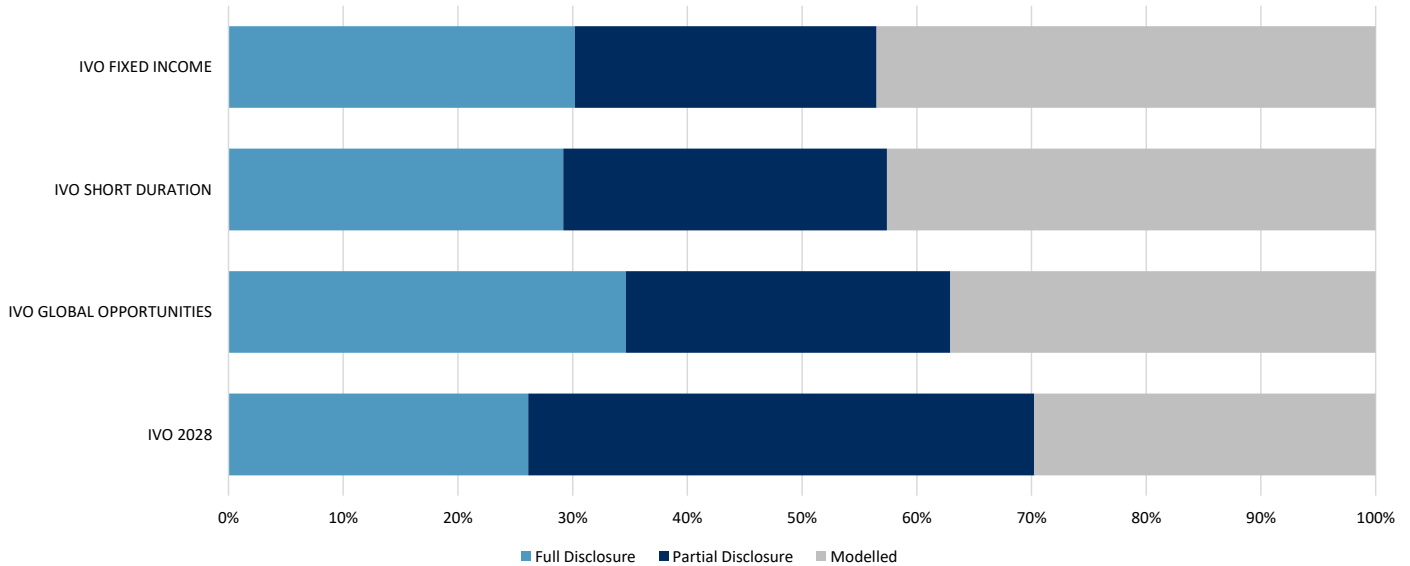
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In the charts below, the overall level of disclosure in each portfolio is assessed using the following three methods:

1. **VOH:** The sum of the weights of each holding within each of the three disclosure categories.
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3. **Companies:** The number of companies, shown as a percent of all companies analysed, within each of the three disclosure categories.

For more information on data collection and disclosure categories, please refer to Appendix 4.

Disclosure Levels by VOH



CARBON DISCLOSURE

Top Modelled C/R Contributors

The level of carbon disclosure is based on each company's Scope 1 emissions, which can be classified as **fully disclosed**, **partially disclosed**, or **modelled**. The table below shows the top contributors to each portfolio's C/R intensity whose Scope 1 carbon is classified as **modelled**. These may be prime candidates for company engagement.

IVO FIXED INCOME

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
MVM Energetika Zártkörűen Működő Részvénytársaság	Utilities	1.51%	17.62%	4,483	-13.05%	Modelled	-
Bulgarian Energy Holding EAD	Utilities	2.11%	9.90%	4,274	-7.02%	Modelled	No
Empresas Públicas de Medellín E.S.P.	Utilities	2.65%	6.66%	4,274	-4.68%	Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	1.75%	4.31%	4,961	-3.19%	Modelled	-
Anexo Guacolda Energía S.A.	Utilities	0.09%	0.55%	6,913	-0.44%	Modelled	No
OCP S.A.	Materials	2.10%	2.09%	1,399	-0.10%	Modelled	No
Nova Austral S.A.	Consumer Staples	0.15%	0.04%	1,353	0.00%	Modelled	No
Unifin Financiera, S. A. B. de C. V.	Financials	0.01%	0.00%	16	0.00%	Modelled	No
Credivalores-Crediservicios S.A.	Financials	0.03%	0.00%	16	0.00%	Modelled	No
Jingrui Holdings Limited	Real Estate	0.01%	0.00%	68	0.00%	Modelled	No

IVO SHORT DURATION

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Contribution	Disclosure	Climate 100+*
MVM Energetika Zártkörűen Működő Részvénytársaság	Utilities	2.09%	24.12%	4,483	-17.52%	Modelled	-
Bulgarian Energy Holding EAD	Utilities	3.38%	15.69%	4,274	-10.82%	Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	2.85%	6.94%	4,961	-4.96%	Modelled	-
Empresas Públicas de Medellín E.S.P.	Utilities	1.83%	4.55%	4,274	-3.02%	Modelled	No
Anexo Guacolda Energía S.A.	Utilities	0.26%	1.49%	6,913	-1.18%	Modelled	No
Nova Austral S.A.	Consumer Staples	0.01%	0.00%	1,353	0.00%	Modelled	No
ACI Airport Sudamerica S.A.	Industrials	0.86%	0.00%	103	0.00%	Modelled	-
PT Sri Rejeki Isman Tbk	Consumer Discretionary	0.03%	0.01%	482	0.01%	Modelled	No
Operadora de Servicios Mega, S.A. de C.V. SOF	Financials	0.21%	0.00%	11	0.02%	Modelled	No
Shimao Group Holdings Limited	Real Estate	0.05%	0.00%	65	0.02%	Modelled	No

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CARBON DISCLOSURE

Top Modelled C/R Contributors

The level of carbon disclosure is based on each company's Scope 1 emissions, which can be classified as **fully disclosed**, **partially disclosed**, or **modelled**. The table below shows the top contributors to each portfolio's C/R intensity whose Scope 1 carbon is classified as **modelled**. These may be prime candidates for company engagement.

IVO GLOBAL OPPORTUNITIES

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Disclosure Contribution	Climate 100+*
Anexo Guacolda Energia S.A.	Utilities	0.95%	8.15%	6,913	-7.16% Modelled	No
Empresas Públicas de Medellín E.S.P.	Utilities	1.24%	4.51%	4,274	-3.60% Modelled	No
Nitrogénmuvek Zrt.	Materials	1.03%	5.64%	1,204	-1.48% Modelled	-
OCP S.A.	Materials	2.04%	2.94%	1,399	-1.06% Modelled	No
Metinvest B.V.	Materials	0.87%	5.16%	1,040	-0.72% Modelled	No
Nova Austral S.A.	Consumer Staples	0.21%	0.07%	1,353	-0.02% Modelled	No
Unifin Financiera, S. A. B. de C. V.	Financials	0.05%	0.00%	16	0.00% Modelled	No
ACI Airport Sudamerica S.A.	Industrials	2.78%	0.00%	103	0.01% Modelled	-
Controladora Axtel S.A.B. de C.V.	Communication Service	0.01%	0.00%	149	0.01% Modelled	-
Minejesa Capital BV	Financials	1.24%	0.00%	11	0.01% Modelled	No

IVO 2028

Name	Sector	VOH Weight	Carbon Weight	Company C/R (tCO2e/mEUR)	Portfolio C/R Disclosure Contribution	Climate 100+*
MVM Energetika Zártkörűen Működő Részvénytársaság	Utilities	1.76%	21.53%	4,483	-15.80% Modelled	-
Bulgarian Energy Holding EAD	Utilities	3.86%	19.07%	4,274	-13.60% Modelled	No
Empresa Generadora de Electricidad Haina, S. A.	Utilities	3.77%	9.76%	4,961	-7.17% Modelled	-
ShaMaran Petroleum Corp.	Energy	0.14%	0.06%	703	0.07% Modelled	-
Kondor Finance PLC	Financials	0.66%	0.00%	16	0.07% Modelled	-
Transportadora de Gas del Sur S.A.	Energy	0.32%	0.02%	249	0.09% Modelled	-
JSW Infrastructure Limited	Industrials	2.58%	0.01%	82	0.13% Modelled	No
Vedanta Resources Finance II PLC	Financials	1.14%	0.00%	15	0.18% Modelled	-
Cydsa, S.A.B. de C.V.	Materials	0.64%	0.28%	730	0.27% Modelled	-
GMR Hyderabad International Airport Limited	Industrials	2.42%	0.02%	82	0.33% Modelled	No

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STRANDED ASSETS & ENERGY TRANSITION

Financial Exposure to Fossil Fuel Activities

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 showing the combined weight of holdings with business activities in either fossil fuel extraction or fossil fuel energy generation industries. This helps to identify potentially stranded assets that would become more apparent as economies move towards a low carbon economy.

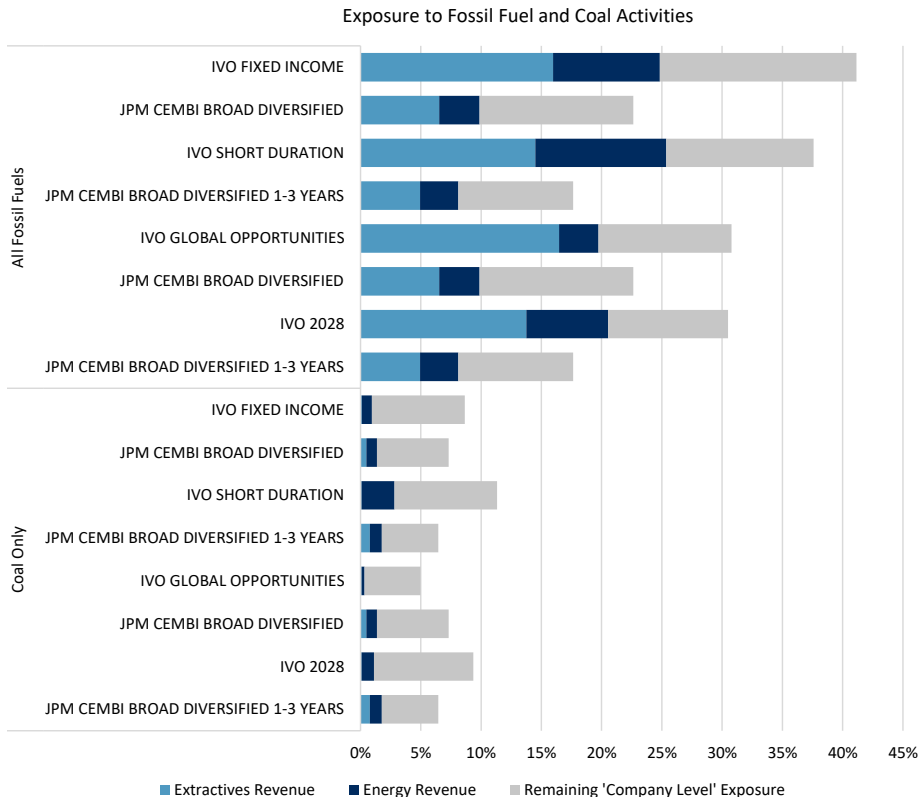
Extraction-related activities include the following:

- **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**

Energy-related activities include the following:

- **Coal power generation**
- **Petroleum power generation**
- **Natural gas power generation**

The right-hand chart gives an indication of exposure to companies engaged in any fossil fuel activities (top), as well as coal only (bottom). The total bar size represents the combined weight in the portfolio or benchmark of companies deriving any revenues from fossil fuel related activities, while the blue segments indicate the weighted average exposure to the revenues themselves.



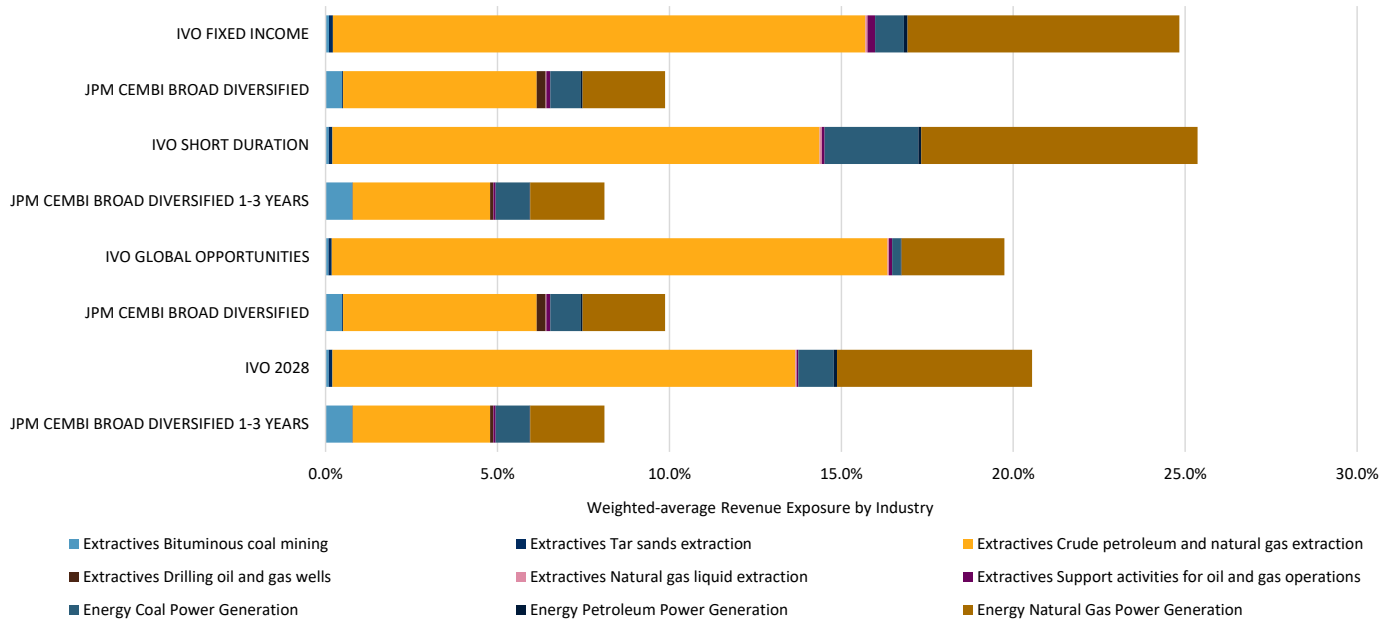
STRANDED ASSETS & ENERGY TRANSITION

Fossil Fuel Activities Breakdown by Sector

The chart below breaks down the 'extractives' and 'energy' revenue exposure into specific industry exposures.

Given coal's status as a highly substitutable energy source, while also a major contributor global GHG emissions, investors may see divestment from these companies as a 'quick-win' on the path to meeting the goals of the Paris Agreement.

Fossil Fuel-Related Revenue Exposure by Industry



STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Fossil Fuel Revenues

The tables below show the top 10 contributors to the portfolio's weighted average fossil fuel revenues exposure.

IVO FIXED INCOME

Name	Sector	VOH Weight	Company Level Fossil Fuel Extractives Rev.	Company Level Fossil Fuel Energy Rev.	Company Level Total Fossil Fuel Rev.	Portfolio Level Weighted Avg. Fossil Fuel Rev.	Climate 100+*
Seplat Energy Plc	Energy	4.37%	100.00%	0.00%	100.00%	4.366%	No
Kosmos Energy Ltd.	Energy	3.25%	100.00%	0.00%	100.00%	3.246%	No
Empresas Públicas de Medellín E.S.P.	Utilities	3.23%	0.00%	100.00%	100.00%	3.227%	No
GeoPark Limited	Energy	2.80%	99.10%	0.00%	99.10%	2.780%	No
Bulgarian Energy Holding EAD	Utilities	2.57%	0.00%	100.00%	100.00%	2.565%	No
Ecopetrol S.A.	Energy	5.44%	39.80%	0.00%	39.80%	2.165%	Yes
The AES Corporation	Utilities	4.34%	0.00%	42.23%	42.23%	1.833%	Yes
Delek Group Ltd.	Energy	1.79%	37.07%	12.36%	49.42%	0.886%	No
DNO ASA	Energy	0.83%	100.00%	0.00%	100.00%	0.830%	No
Pampa Energía S.A.	Utilities	1.36%	28.98%	31.49%	60.47%	0.823%	No

IVO SHORT DURATION

Name	Sector	VOH Weight	Company Level Fossil Fuel Extractives Rev.	Company Level Fossil Fuel Energy Rev.	Company Level Total Fossil Fuel Rev.	Portfolio Level Weighted Avg. Fossil Fuel Rev.	Climate 100+*
Bulgarian Energy Holding EAD	Utilities	4.08%	0.00%	100.00%	100.00%	4.083%	No
Kosmos Energy Ltd.	Energy	4.00%	100.00%	0.00%	100.00%	4.005%	No
GeoPark Limited	Energy	3.21%	99.10%	0.00%	99.10%	3.185%	No
Seplat Energy Plc	Energy	2.85%	100.00%	0.00%	100.00%	2.849%	No
Empresas Públicas de Medellín E.S.P.	Utilities	2.21%	0.00%	100.00%	100.00%	2.214%	No
DNO ASA	Energy	2.07%	100.00%	0.00%	100.00%	2.072%	No
The AES Corporation	Utilities	4.39%	0.00%	42.23%	42.23%	1.853%	Yes
JSW Energy Limited	Utilities	2.47%	0.00%	72.04%	72.04%	1.777%	No
Ecopetrol S.A.	Energy	4.24%	39.80%	0.00%	39.80%	1.689%	Yes
PT Cikarang Listrindo Tbk	Utilities	0.46%	0.00%	85.22%	85.22%	0.395%	No

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STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Fossil Fuel Revenues

The tables below show the top 10 contributors to the portfolio's weighted average fossil fuel revenues exposure.

IVO GLOBAL OPPORTUNITIES

Name	Sector	VOH Weight	Company Level Fossil Fuel Extractives Rev.	Company Level Fossil Fuel Energy Rev.	Company Level Total Fossil Fuel Rev.	Portfolio Level Weighted Avg. Fossil Fuel Rev.	Climate 100+*
GeoPark Limited	Energy	5.91%	99.10%	0.00%	99.10%	5.852%	No
Kosmos Energy Ltd.	Energy	3.37%	100.00%	0.00%	100.00%	3.369%	No
Seplat Energy Plc	Energy	3.32%	100.00%	0.00%	100.00%	3.322%	No
Ecopetrol S.A.	Energy	5.25%	39.80%	0.00%	39.80%	2.090%	Yes
Empresas Públicas de Medellín E.S.P.	Utilities	1.53%	0.00%	100.00%	100.00%	1.525%	No
Anexo Guacolda Energía S.A.	Utilities	1.18%	0.00%	100.00%	100.00%	1.178%	No
DNO ASA	Energy	0.94%	100.00%	0.00%	100.00%	0.944%	No
Shell plc	Energy	4.30%	16.55%	0.00%	16.55%	0.711%	Yes
The AES Corporation	Utilities	1.33%	0.00%	42.23%	42.23%	0.561%	Yes
Sasol Limited	Materials	3.65%	5.13%	0.00%	5.13%	0.187%	Yes

IVO 2028

Name	Sector	VOH Weight	Company Level Fossil Fuel Extractives Rev.	Company Level Fossil Fuel Energy Rev.	Company Level Total Fossil Fuel Rev.	Portfolio Level Weighted Avg. Fossil Fuel Rev.	Climate 100+*
Bulgarian Energy Holding EAD	Utilities	4.40%	0.00%	100.00%	100.00%	4.400%	No
Kosmos Energy Ltd.	Energy	4.30%	100.00%	0.00%	100.00%	4.299%	No
GeoPark Limited	Energy	3.73%	99.10%	0.00%	99.10%	3.696%	No
Seplat Energy Plc	Energy	3.64%	100.00%	0.00%	100.00%	3.643%	No
The AES Corporation	Utilities	5.36%	0.00%	42.23%	42.23%	2.261%	Yes
Ecopetrol S.A.	Energy	2.86%	39.80%	0.00%	39.80%	1.140%	Yes
Delek Group Ltd.	Energy	1.10%	37.07%	12.36%	49.42%	0.542%	No
DNO ASA	Energy	0.36%	100.00%	0.00%	100.00%	0.360%	No
Sasol Limited	Materials	4.00%	5.13%	0.00%	5.13%	0.206%	Yes
Companhia Siderúrgica Nacional	Materials	0.73%	0.00%	0.05%	0.05%	0.000%	No

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STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Coal Revenues

The tables below show the top 10 contributors to the portfolio's weighted average coal revenues exposure.

IVO FIXED INCOME

Name	Sector	VOH Weight	Company Level Coal Extractives Rev.	Company Level Coal Energy Rev.	Company Level Total Coal Rev.	Portfolio Level Weighted Avg. Coal Rev.	Climate 100+*
The AES Corporation	Utilities	4.34%	0.00%	19.29%	19.29%	0.838%	Yes
Sasol Limited	Materials	4.32%	2.31%	0.00%	2.31%	0.100%	Yes

IVO SHORT DURATION

Name	Sector	VOH Weight	Company Level Coal Extractives Rev.	Company Level Coal Energy Rev.	Company Level Total Coal Rev.	Portfolio Level Weighted Avg. Coal Rev.	Climate 100+*
JSW Energy Limited	Utilities	2.47%	0.00%	72.04%	72.04%	1.777%	No
The AES Corporation	Utilities	4.39%	0.00%	19.29%	19.29%	0.847%	Yes
PT Cikarang Listrindo Tbk	Utilities	0.46%	0.00%	23.76%	23.76%	0.110%	No
Sasol Limited	Materials	4.01%	2.31%	0.00%	2.31%	0.093%	Yes

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STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Coal Revenues

The tables below show the top 10 contributors to the portfolio's weighted average coal revenues exposure.

IVO GLOBAL OPPORTUNITIES

Name	Sector	VOH Weight	Company Level Coal Extractives Rev.	Company Level Coal Energy Rev.	Company Level Total Coal Rev.	Portfolio Level Weighted Avg. Coal Rev.	Climate 100+*
The AES Corporation	Utilities	1.33%	0.00%	19.29%	19.29%	0.256%	Yes
Sasol Limited	Materials	3.65%	2.31%	0.00%	2.31%	0.084%	Yes

IVO 2028

Name	Sector	VOH Weight	Company Level Coal Extractives Rev.	Company Level Coal Energy Rev.	Company Level Total Coal Rev.	Portfolio Level Weighted Avg. Coal Rev.	Climate 100+*
The AES Corporation	Utilities	5.36%	0.00%	19.29%	19.29%	1.033%	Yes
Sasol Limited	Materials	4.00%	2.31%	0.00%	2.31%	0.093%	Yes

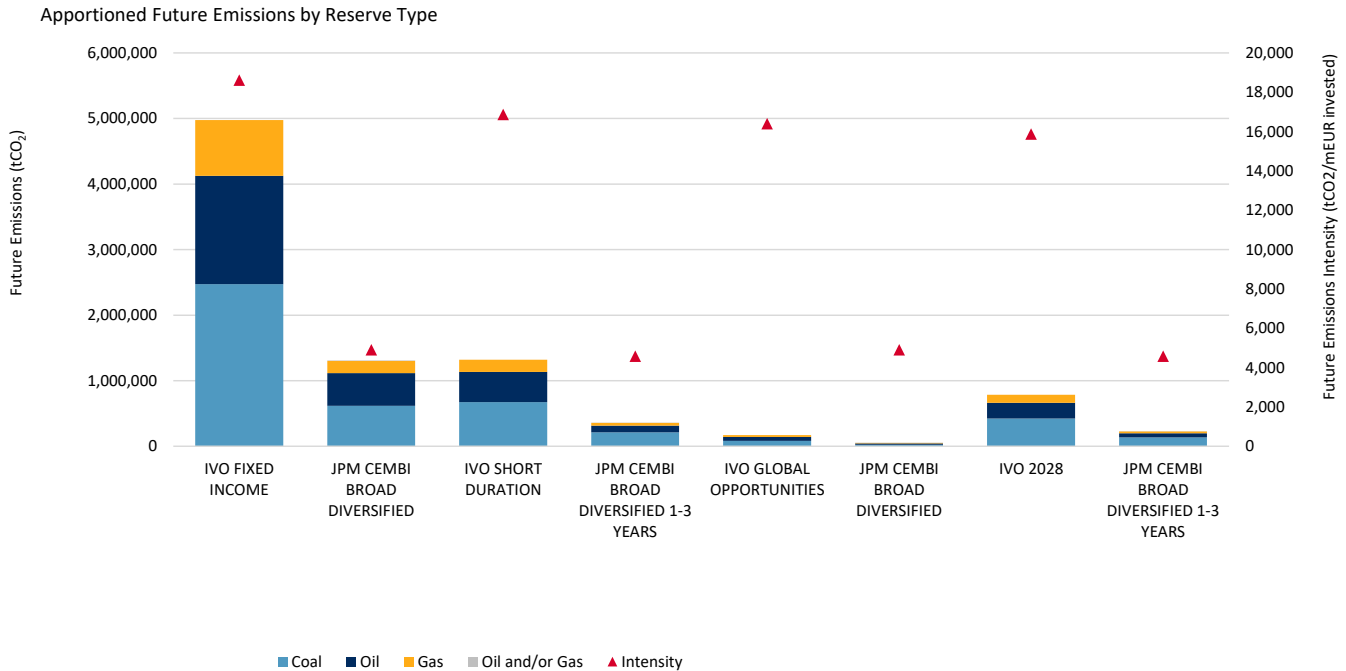
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STRANDED ASSETS & ENERGY TRANSITION

Emissions from Reserves

Trucost is able to analyse two additional metrics that provide additional insights relevant to stranded asset risk. First, are the carbon emissions embedded within company owned fossil fuel reserves which can be considered 'unburnable' if 2°C targets are to be achieved. Second, are the capital expenditures set aside for future fossil fuel related activities such as further exploration and extraction. Both metrics are based on disclosures published by investees.

The chart below shows the total tonnes of apportioned "future" CO₂ from reserves, broken down by reserve type.

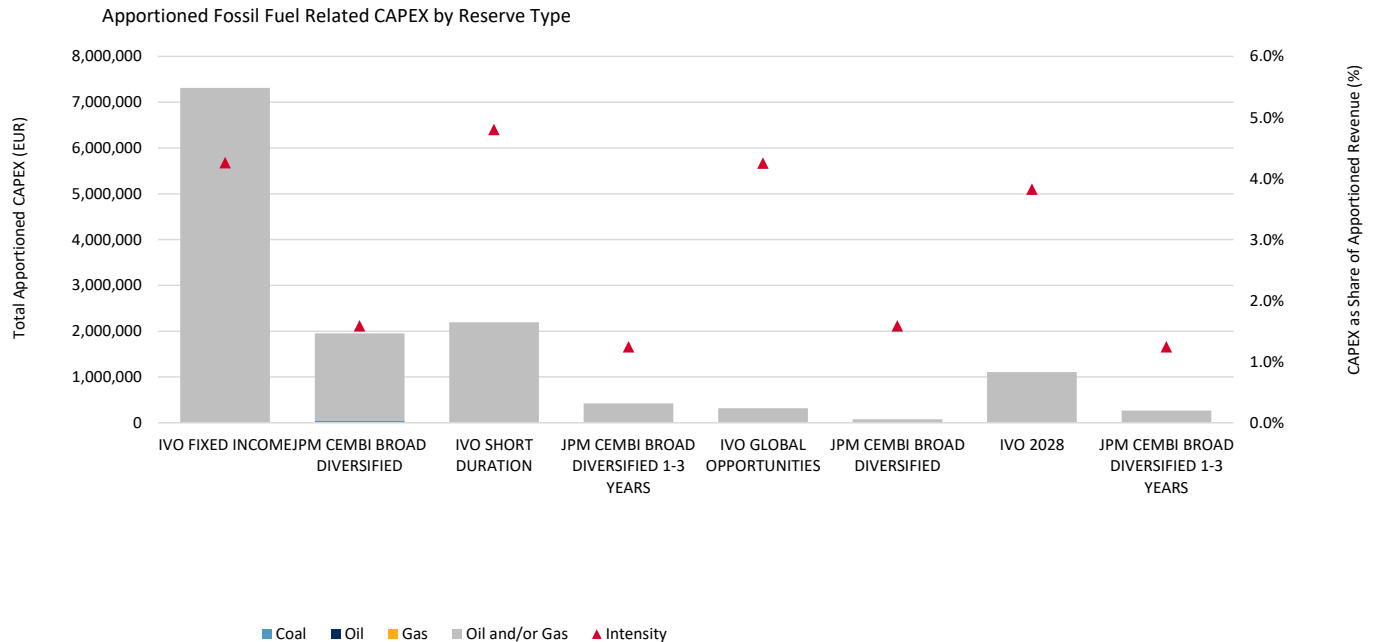


STRANDED ASSETS & ENERGY TRANSITION

CAPEX

Trucost is able to analyse two additional metrics that provide additional insights relevant to stranded asset risk. First, are the carbon emissions embedded within company owned fossil fuel reserves which can be considered 'unburnable' if 2°C targets are to be achieved. Second, are the capital expenditures set aside for future fossil fuel related activities such as further exploration and extraction. Both metrics are based on disclosures published by investees.

The chart below shows the total apportioned capital expenditure on fossil fuel related activities, again broken out by reserve type.



STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Future Emissions from Reserves

The tables below show the top contributors to the portfolio's apportioned emissions from reserves.

IVO FIXED INCOME

Name	Sector	VOH Weight	Company Level	Company Level	Company Level	Portfolio Level	Climate
			Future Emissions	Future Emissions	Future Emissions	Apportioned CO ₂	100+*
			Coal Reserves (m tonnes CO ₂)	Oil&Gas Reserves (m tonnes CO ₂)	Total Reserves (m tonnes CO ₂)	from Reserves (m tonnes CO ₂)	
Sasol Limited	Materials	4.32%	2,752	410	3,162	2.843	Yes
Seplat Energy Plc	Energy	4.37%		163	163	1.212	No
GeoPark Limited	Energy	2.80%		29	29	0.232	No
Ecopetrol S.A.	Energy	5.44%		754	754	0.199	Yes
DNO ASA	Energy	0.83%		119	119	0.194	No
Petróleo Brasileiro S.A. - Petrobras	Energy	1.29%		4,268	4,268	0.103	Yes
Kosmos Energy Ltd.	Energy	3.25%		40	40	0.071	No
Shell plc	Energy	3.30%		1,867	1,867	0.061	Yes

IVO SHORT DURATION

Name	Sector	VOH Weight	Company Level	Company Level	Company Level	Portfolio Level	Climate
			Future Emissions	Future Emissions	Future Emissions	Apportioned CO ₂	100+*
			Coal Reserves (m tonnes CO ₂)	Oil&Gas Reserves (m tonnes CO ₂)	Total Reserves (m tonnes CO ₂)	from Reserves (m tonnes CO ₂)	
Sasol Limited	Materials	4.01%	2,752	410	3,162	0.773	Yes
Seplat Energy Plc	Energy	2.85%		163	163	0.231	No
DNO ASA	Energy	2.07%		119	119	0.141	No
GeoPark Limited	Energy	3.21%		29	29	0.078	No
Ecopetrol S.A.	Energy	4.24%		754	754	0.045	Yes
Kosmos Energy Ltd.	Energy	4.00%		40	40	0.026	No
Shell plc	Energy	2.08%		1,867	1,867	0.011	Yes
TotalEnergies SE	Energy	0.72%		3,718	3,718	0.010	Yes

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STRANDED ASSETS & ENERGY TRANSITION

Top Contributors to Future Emissions from Reserves

The tables below show the top contributors to the portfolio's apportioned emissions from reserves.

IVO GLOBAL OPPORTUNITIES

Name	Sector	VOH Weight	Company Level	Company Level	Company Level	Portfolio Level	Climate
			Future Emissions	Future Emissions	Future Emissions	Apportioned CO ₂	100+*
			Coal Reserves (m tonnes CO ₂)	Oil&Gas Reserves (m tonnes CO ₂)	Total Reserves (m tonnes CO ₂)	from Reserves (m tonnes CO ₂)	
Sasol Limited	Materials	3.65%	2,752	410	3,162	0.093	Yes
Seplat Energy Plc	Energy	3.32%		163	163	0.036	No
GeoPark Limited	Energy	5.91%		29	29	0.019	No
DNO ASA	Energy	0.94%		119	119	0.008	No
Ecopetrol S.A.	Energy	5.25%		754	754	0.007	Yes
Shell plc	Energy	4.30%		1,867	1,867	0.003	Yes
Kosmos Energy Ltd.	Energy	3.37%		40	40	0.003	No

IVO 2028

Name	Sector	VOH Weight	Company Level	Company Level	Company Level	Portfolio Level	Climate
			Future Emissions	Future Emissions	Future Emissions	Apportioned CO ₂	100+*
			Coal Reserves (m tonnes CO ₂)	Oil&Gas Reserves (m tonnes CO ₂)	Total Reserves (m tonnes CO ₂)	from Reserves (m tonnes CO ₂)	
Sasol Limited	Materials	4.00%	2,752	410	3,162	0.488	Yes
Seplat Energy Plc	Energy	3.64%		163	163	0.187	No
GeoPark Limited	Energy	3.73%		29	29	0.057	No
Ecopetrol S.A.	Energy	2.86%		754	754	0.019	Yes
Kosmos Energy Ltd.	Energy	4.30%		40	40	0.017	No
DNO ASA	Energy	0.36%		119	119	0.016	No

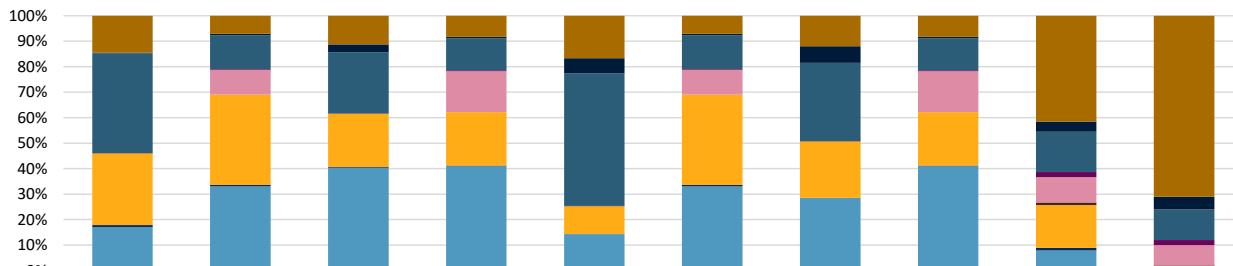
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STRANDED ASSETS & ENERGY TRANSITION

Energy Mix

In addition to the emissions alignment analysis above, Trucost is also able to assess the portfolio's energy mix alignment to a 2 degree scenario. The chart below shows the share, by energy type, of the total GWh apportioned to the portfolio and benchmark. This can be compared to the energy mix required at different reference years for the low carbon economy of the future, as suggested by the International Energy Agency's (IEA) 2 degree scenario*.

Energy Generation Mix - % of Total Portfolio GWh



	IVO FIXED INCOME	JPM CEMBI BROAD DIVERSIFIED	IVO SHORT DURATION	JPM CEMBI BROAD DIVERSIFIED 1-3 YEARS	IVO GLOBAL OPPORTUNITIES	JPM CEMBI BROAD DIVERSIFIED	IVO 2028	JPM CEMBI BROAD DIVERSIFIED 1-3 YEARS	IEA 1.5C 2030	IEA 1.5C 2050
■ Other Renewables	14.51%	7.08%	11.19%	8.24%	16.64%	7.08%	11.94%	8.24%	42%	71%
■ Biomass	0.24%	0.66%	3.12%	0.65%	6.00%	0.66%	6.51%	0.65%	4%	5%
■ Hydroelectric	39.16%	13.20%	24.05%	12.52%	52.04%	13.20%	30.73%	12.52%	16%	12%
■ Other sources	0.02%	0.23%	0.01%	0.28%	0.02%	0.23%	0.02%	0.28%	2%	2%
■ Nuclear	0.00%	9.82%	0.00%	16.18%	0.00%	9.82%	0.00%	16.18%	10%	8%
■ Fossil energy with CCS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1%	2%
■ Natural Gas	28.20%	35.42%	20.95%	20.95%	10.98%	35.42%	22.25%	20.95%	17%	0%
■ Petroleum	0.86%	0.58%	0.34%	0.29%	0.00%	0.58%	0.00%	0.29%	1%	0%
■ Coal	17.02%	33.02%	40.33%	40.89%	14.31%	33.02%	28.54%	40.89%	8%	0%

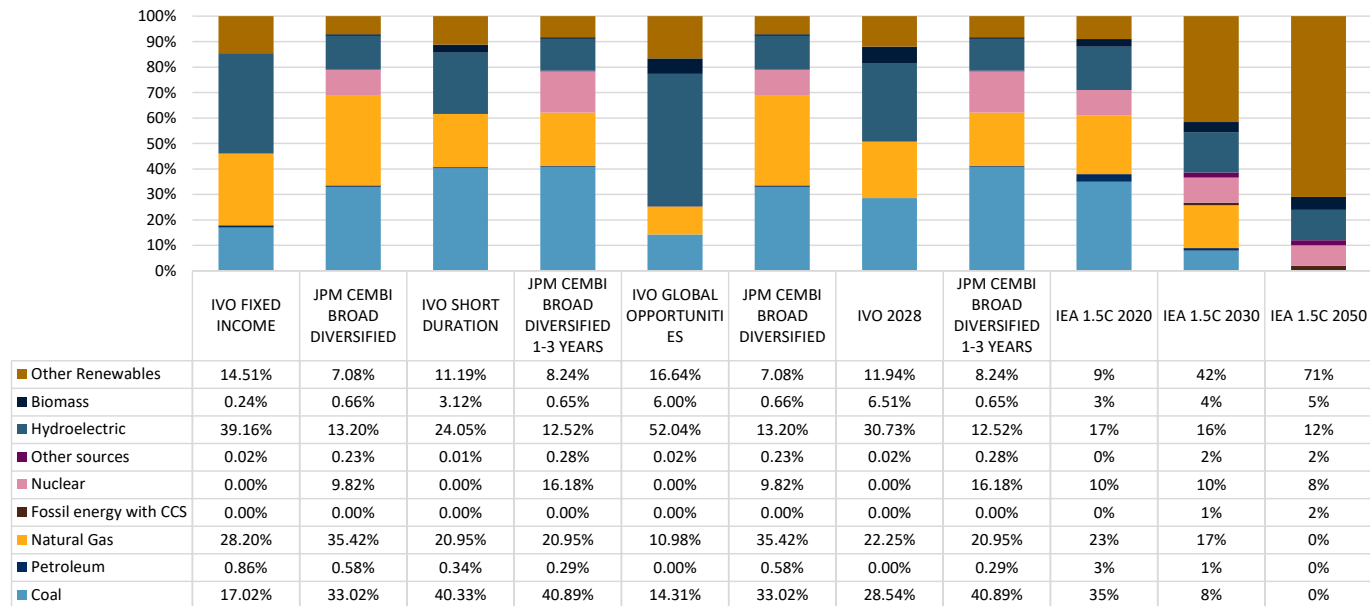
* Based on data from the International Energy Agency (2021) Net Zero by 2050: Net Zero by 2050 Scenario - Data product - IEA; as modified by S&P Sustainable1.

STRANDED ASSETS & ENERGY TRANSITION

Energy Mix

In addition to the emissions alignment analysis above, Trucost is also able to assess the portfolio's energy mix alignment to a 2 degree scenario. The chart below shows the share, by energy type, of the total GWh apportioned to the portfolio and benchmark. This can be compared to the energy mix required at different reference years for the low carbon economy of the future, as suggested by the International Energy Agency's (IEA) 2 degree scenario*.

Energy Generation Mix - % of Total Portfolio GWh



* Based on data from the International Energy Agency (2021) Net Zero by 2050: Net Zero by 2050 Scenario - Data product - IEA; as modified by S&P Sustainable1.

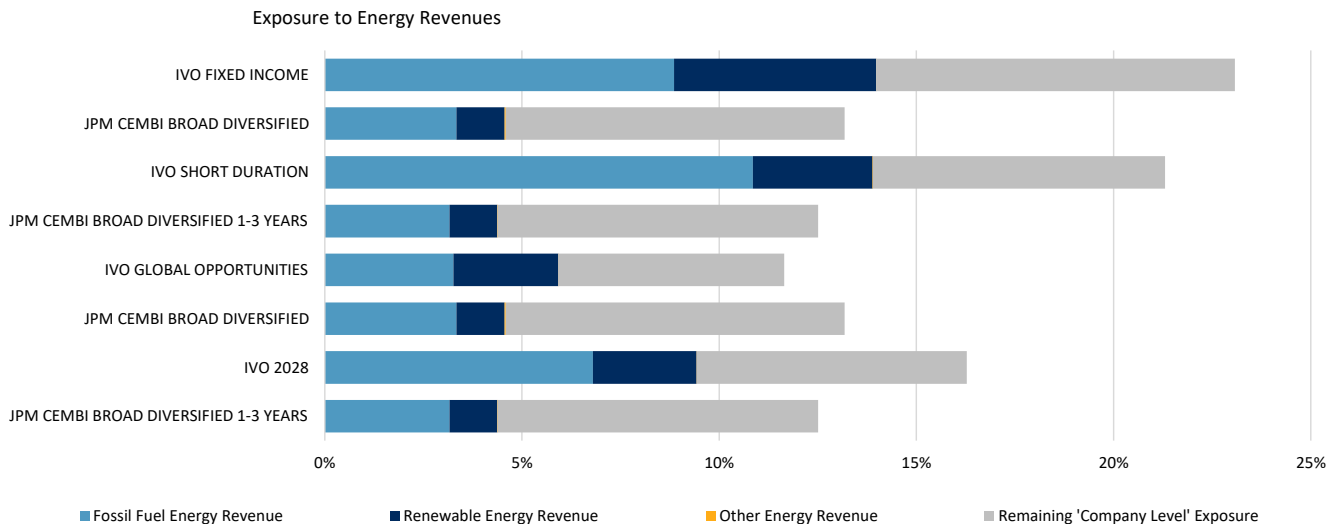
STRANDED ASSETS & ENERGY TRANSITION

Financial Exposure to Energy Revenues

As not all energy companies disclose GWh produced, it is also useful to determine exposure to energy 'aggravators' (fossil fuels) and 'mitigators' (renewables) based on sources of revenue. The full list of energy types considered is shown below:

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

The chart below shows total exposure to companies with any energy revenues (total bar size), while the light blue, dark blue and yellow segments represent the weighted-average revenue exposure to Fossil Fuels, Renewables, and Other energy revenues respectively.



PARIS ALIGNMENT

Transition Pathways

Trucost's 'Transition Pathway Assessment' enables investors to track their portfolios against the goal of limiting global warming to 1.5°C or 2°C above pre-industrial levels. The assessment examines the adequacy of emissions reductions made over time, by investees, in meeting these targets. It incorporates both historical performance as well as forward-looking indicators (over a medium-term time horizon). This avoids the uncertainties of using only forward-looking data, and is of a sufficient time horizon to make the effect of any year-on-year volatility less significant. Historical data on greenhouse gas emissions and company activity levels is incorporated from a base year of 2012. Forward-looking data sources are used to track likely future transition pathways from the most recent year of disclosed data through to 2030.

Trucost's approach is adapted from two methodologies highlighted by the Science Based Targets Initiative (SBTi), these being the Sectoral Decarbonization Approach (SDA) and the Greenhouse gas Emissions per unit of Value Added (GEVA) approach. The SDA is applied to companies with high-emitting, homogeneous business activities, while GEVA is applied to those with lower emitting, heterogeneous business activities. For more information on the methodology please refer to Appendix 5.

The boxes below show the level of warming that each portfolio is aligned with, while the chart shows each portfolio's trajectory and compares that to its own 2°C aligned trajectory.

IVO FIXED INCOME

>3	°C
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IVO SHORT DURATION

>3	°C
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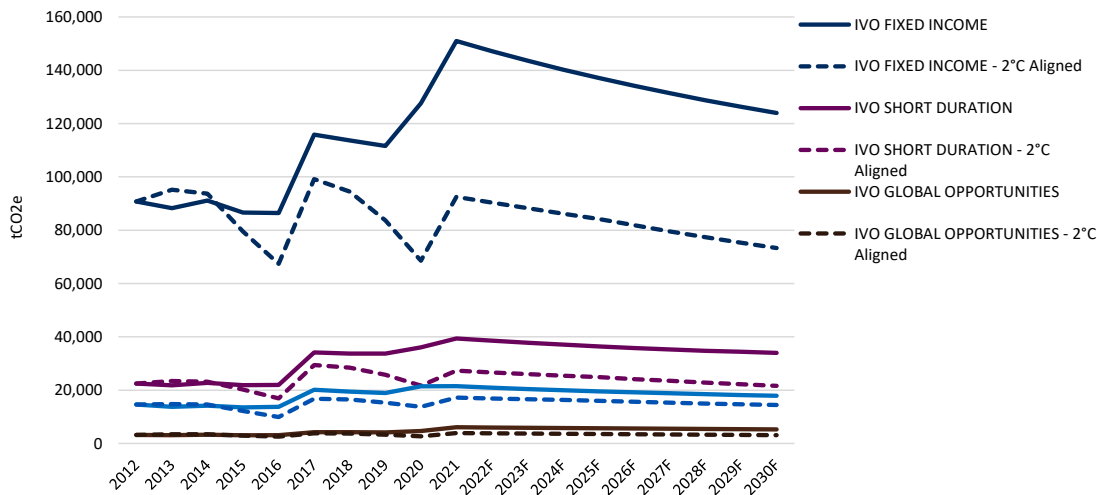
IVO GLOBAL OPPORTUNITIES

>3	°C
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IVO 2028

>3	°C
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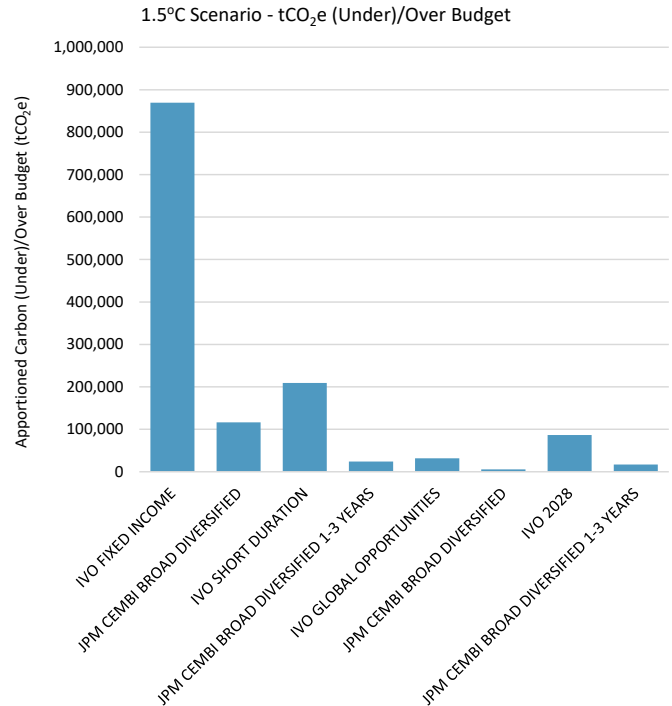
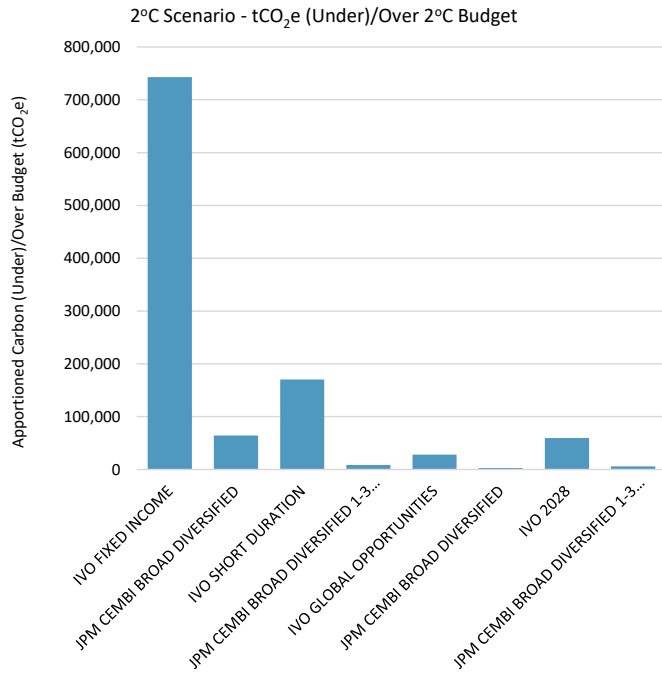
Emissions Trajectory vs. 2 Degree Aligned Levels, 2012-2030



PARIS ALIGNMENT

Carbon Budget Assessment

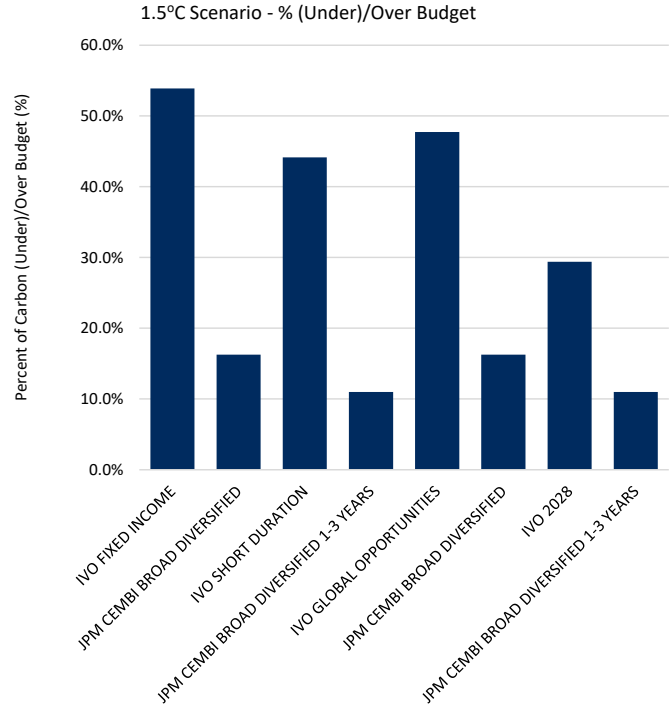
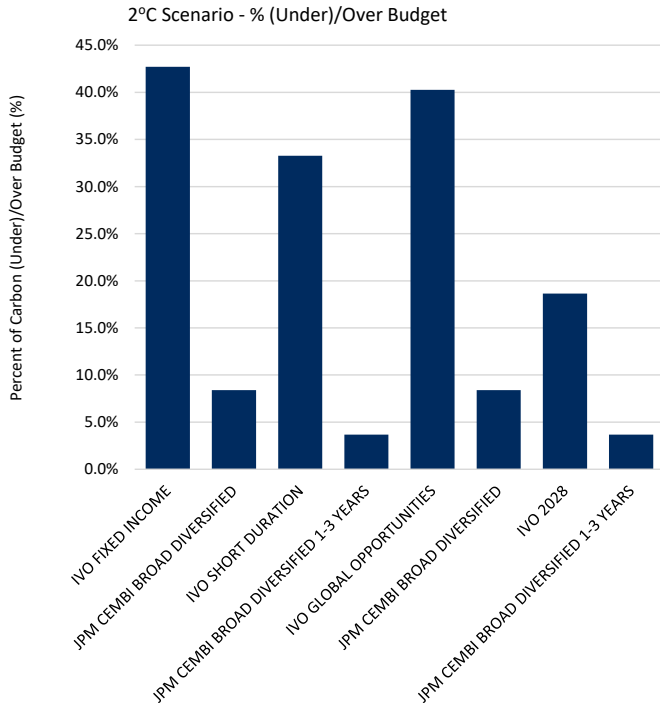
The charts below show each portfolio's performance against their own 2°C and 1.5°C carbon budgets. The chart on this page shows this in absolute tonnes of carbon. A positive number indicates weaker performance, as it means the portfolio is over budget, whereas a negative number indicates stronger performance, as in means the portfolio is under budget.



PARIS ALIGNMENT

Carbon Budget Assessment

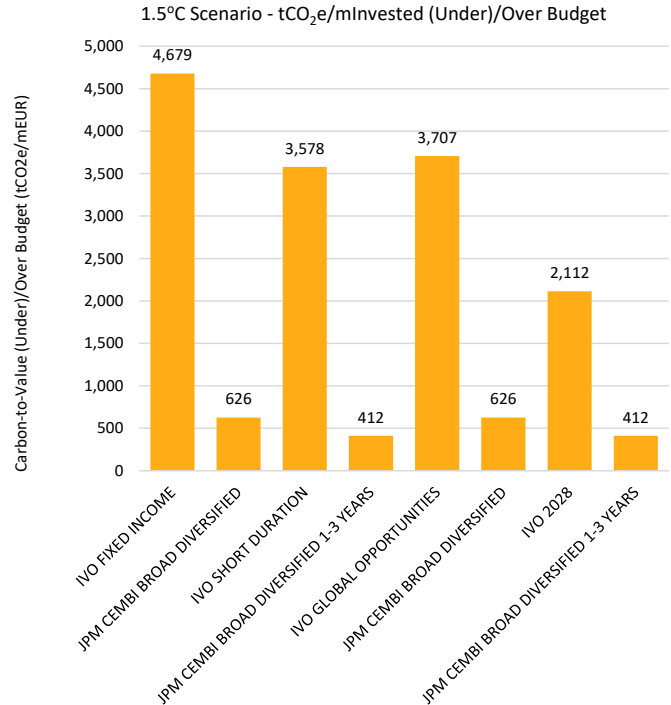
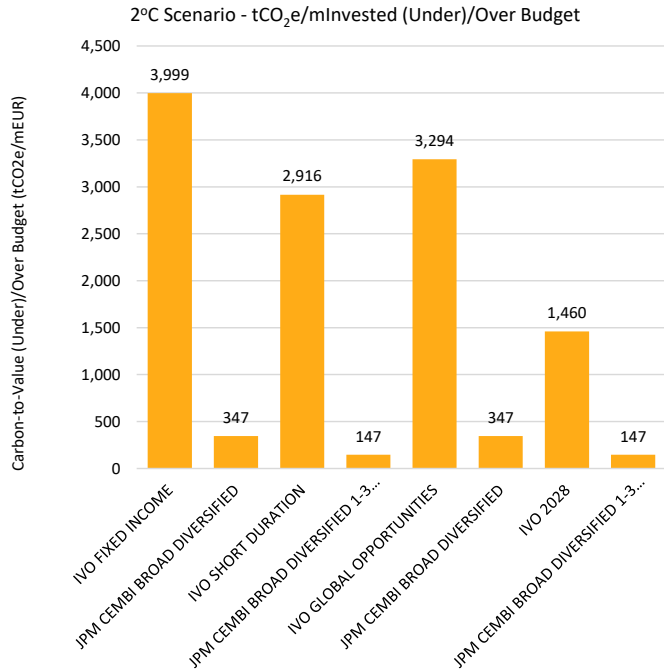
The charts below show each portfolio's performance against their own 2°C and 1.5°C carbon budgets. The chart on this page shows this as a percent of the total portfolio level budget. A positive number indicates weaker performance, as it means the portfolio is over budget, whereas a negative number indicates stronger performance, as it means the portfolio is under budget.



PARIS ALIGNMENT

Carbon Budget Assessment

The charts below show each portfolio's performance against their own 2°C and 1.5°C carbon budgets. The chart on this page shows this in absolute tonnes of carbon. A positive number indicates weaker performance, as it means the portfolio is over budget, whereas a negative number indicates stronger performance, as in means the portfolio is under budget.



PARIS ALIGNMENT

Sector Contributions

Companies with predominantly homogenous business activities that fall into one of the 5 sectors in the table below were assessed using the SDA approach. This means that the required carbon intensity reductions were calculated in sector specific units of production (for example tonnes of steel produced, or number of passenger miles flown), and each company's share of the overall sector budget is calculated relative to its market share.

Companies with low emitting or heterogeneous business activities were assessed using the GEVA approach. This means that required carbon intensity reductions were calculated in carbon-per-dollar of value added (gross profit), and each company's share of the overall sector budget is calculated using its progress against required reduction rates. For more information, please refer to Appendix 5.

		IVO FIXED INCOME		IVO SHORT DURATION		IVO GLOBAL OPPORTUNITIES		IVO 2028	
Method	Sector	Contribution (MtCO2e)	Pathway (oC)	Contribution (MtCO2e)	Pathway (oC)	Contribution (MtCO2e)	Pathway (oC)	Contribution (MtCO2e)	Pathway (oC)
SDA	Power Generation	-93,845	<1.5	-27,860	<1.5	-1,108	<1.5	-21,400	<1.5
	Cement	0		0		0		0	
	Steel	0		1,935	>2.7	0		0	
	Airlines	0		0		0		0	
	Aluminum	0		0		0		0	
GEVA	Communication Services	199,085	>5	32,144	>5	13,578	>5	13	>5
	Consumer Discretionary	414	2 to 3	375	2 to 3	-204	<1.5	75	2 to 3
	Consumer Staples	12,177	>5	-5,475	<1.5	-1,048	<1.5	-9,635	<1.5
	Energy	315,219	>5	55,106	>5	9,117	>5	40,845	>5
	Financials	5	2 to 3	66	>5	0	1.5 to 2	88	>5
	Health Care	0		0		0		0	
	Industrials	15,125	4 to 5	8,502	>5	318	4 to 5	4,213	>5
	Information Technology	0		0		11	2 to 3	0	
	Materials	260,277	>5	74,033	>5	7,463	3 to 4	45,549	>5
	Real Estate	-234	<1.5	1,434	>5	-24	<1.5	0	
	Utilities	34875.402	>5	30112.425	>5	0		0	

PARIS ALIGNMENT

Worst Performers

The table below shows those companies contributing the most to each portfolio being over a 2°C aligned carbon budget.

IVO FIXED INCOME		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Sasol Limited	Materials	8,302	5,791 m\$ VA	Company target	418,267,212	376,014	>5°C	
Seplat Energy Plc	Energy	1,276	7,807 m\$ VA	Sub-Industry trend	38,881,203	288,778	>5°C	
Oi S.A.	Communication Service	34	1,646,675 m\$ VA	Sub-Industry trend	1,648,402,405	198,358	>5°C	
Pampa Energia S.A.	Utilities	5,846	10,220 m\$ VA	Sub-Industry trend	80,800,000	35,962	>5°C	

IVO SHORT DURATION		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Sasol Limited	Materials	8,302	5,791 m\$ VA	Company target	418,267,212	102,209	>5°C	
Seplat Energy Plc	Energy	1,276	7,807 m\$ VA	Sub-Industry trend	38,881,203	55,111	>5°C	
Oi S.A.	Communication Service	34	1,646,675 m\$ VA	Sub-Industry trend	1,648,402,405	32,043	>5°C	
JSW Energy Limited	Utilities	33,519	37,996 m\$ VA	Sub-Industry trend	123,070,366	20,566	>5°C	

IVO GLOBAL OPPORTUNITIES		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Oi S.A.	Communication Service	34	1,646,675 m\$ VA	Sub-Industry trend	1,648,402,405	13,495	>5°C	
Sasol Limited	Materials	8,302	5,791 m\$ VA	Company target	418,267,212	12,270	>5°C	
Seplat Energy Plc	Energy	1,276	7,807 m\$ VA	Sub-Industry trend	38,881,203	8,479	>5°C	
Ecopetrol S.A.	Energy	464	743 m\$ VA	Company target	123,345,395	1,211	>5°C	

IVO 2028		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Sasol Limited	Materials	8,302	5,791 m\$ VA	Company target	418,267,212	64,512	>5°C	
Seplat Energy Plc	Energy	1,276	7,807 m\$ VA	Sub-Industry trend	38,881,203	44,546	>5°C	
Methanex Corporation	Materials	5,302	3,596 m\$ VA	Sub-Industry trend	25,897,894	3,227	>5°C	
Ecopetrol S.A.	Energy	464	743 m\$ VA	Company target	123,345,395	3,166	>5°C	

PARIS ALIGNMENT

Best Performers

The table below shows those companies contributing the most to each portfolio being under a 2°C aligned carbon budget.

IVO FIXED INCOME		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Braskem S.A.	Materials	6,566	1,532 m\$ VA	Company target	-121,114,956	-123,643	<1.5°C	
The AES Corporation	Utilities	0.666	0.160 MWh	Company target	-336,797,486	-93,845	<1.5°C	
Kosmos Energy Ltd.	Energy	973	23 m\$ VA	Sub-Industry trend	-10,327,455	-18,243	<1.5°C	
Delek Group Ltd.	Energy	3,579	1,344 m\$ VA	Sub-Industry trend	-11,669,811	-7,546	<1.5°C	

IVO SHORT DURATION		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Braskem S.A.	Materials	6,566	1,532 m\$ VA	Company target	-121,114,956	-28,176	<1.5°C	
The AES Corporation	Utilities	0.666	0.160 MWh	Company target	-336,797,486	-27,749	<1.5°C	
Adecoagro S.A.	Consumer Staples	6,266	1,126 m\$ VA	Sub-Industry trend	-15,700,000	-9,811	<1.5°C	
Kosmos Energy Ltd.	Energy	973	23 m\$ VA	Sub-Industry trend	-10,327,455	-6,584	<1.5°C	

IVO GLOBAL OPPORTUNITIES		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
Braskem S.A.	Materials	6,566	1,532 m\$ VA	Company target	-121,114,956	-6,283	<1.5°C	
The AES Corporation	Utilities	0.666	0.160 MWh	Company target	-336,797,486	-1,108	<1.5°C	
Adecoagro S.A.	Consumer Staples	6,266	1,126 m\$ VA	Sub-Industry trend	-15,700,000	-1,040	<1.5°C	
Kosmos Energy Ltd.	Energy	973	23 m\$ VA	Sub-Industry trend	-10,327,455	-731	<1.5°C	

IVO 2028		GHG Emissions Intensity			GHG emissions (under)/over 2°C carbon budget: '12-'30			
Name	GICS Sub-industry	(tCO ₂ e/Unit)	Unit	Forecast	Total Carbon	Apportioned Carbon	Alignment	
		Start	2030F	Source	(tCO ₂ e)	(tCO ₂ e)	(°C)	
The AES Corporation	Utilities	0.666	0.160 MWh	Company target	-336,797,486	-21,400	<1.5°C	
Braskem S.A.	Materials	6,566	1,532 m\$ VA	Company target	-121,114,956	-12,152	<1.5°C	
Adecoagro S.A.	Consumer Staples	6,266	1,126 m\$ VA	Sub-Industry trend	-15,700,000	-10,909	<1.5°C	
Gold Fields Limited	Materials	4,975	441 m\$ VA	Sub-Industry trend	-55,030,375	-6,468	<1.5°C	

APPENDIX

1. TCFD Recommended Disclosures and Supplementary Guidance for Asset Owners and Managers

	Governance	Strategy	Risk Management	Metrics & Targets
Recommended Disclosures for All Sectors	<ul style="list-style-type: none"> a) Describe the board's oversight of climate-related risks and opportunities. b) Describe management's role in assessing and managing climate-related risks and opportunities. 	<ul style="list-style-type: none"> a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term. b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario. 	<ul style="list-style-type: none"> a) Describe the organization's processes for identifying and assessing climate-related risks. b) Describe the organization's processes for managing climate-related risks. c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management 	<ul style="list-style-type: none"> a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.
Supplemental Guidance for Asset Owners / Asset Managers		<p>Asset owners should describe how climate-related risks and opportunities are factored into relevant investment strategies. This could be described from the perspective of the total fund or investment strategy or individual investment strategies for various asset classes. Asset managers should describe how climate-related risks and opportunities are factored into relevant products or investment strategies. Asset managers should also describe how each product or investment strategy might be affected by the transition to a lower-carbon economy.</p> <p>Asset owners that perform scenario analysis should consider providing a discussion of how climate-related scenarios are used, such as to inform investments in specific assets.</p>	<p>Asset owners / managers should describe, where appropriate, engagement activity with investee companies to encourage better disclosure and practices related to climate-related risks to improve data availability and asset owners' / managers' ability to assess climate-related risks.</p> <p>Asset owners should describe how they consider the positioning of their total portfolio with respect to the transition to a lower-carbon energy supply, production, and use. This could include explaining how asset owners actively manage their portfolios' positioning in relation to this transition. Asset managers should describe how they manage material climate-related risks for each product or investment strategy.</p>	<p>Asset owners / managers should describe metrics used to assess climate-related risks and opportunities in each fund / product or investment strategy. Where relevant, asset owners / managers should also describe how these metrics have changed over time. Where appropriate, asset owners / managers should provide metrics considered in investment decisions and monitoring.</p> <p>Asset owners / managers should provide the weighted average carbon intensity, where data are available or can be reasonably estimated, for each fund / product or investment strategy. In addition, asset owners / managers should provide other metrics they believe are useful for decision making along with a description of the methodology used.</p> <p style="text-align: right;">Source:TCFD</p>

APPENDIX

2. Apportioning

Apportioning, as an approach, began with the principle of ownership. That is, if an investor owns 1% of a company, then they also 'own' 1% of the company's emissions. This concept has since been extended to cover all sources of financing, whether equity, bonds or loans in order to calculate an investor or lender's share of 'financed emissions'.

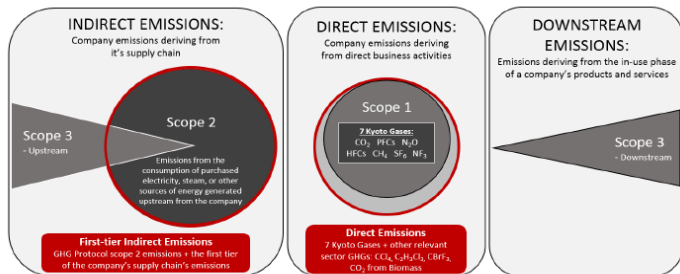
At Sustainable1 we select apportioning denominators in line with the recommendations of the Partnership for Carbon Accounting Financials (PCAF). For listed companies we use Enterprise Value including Cash (EVIC). For unlisted companies we use Total Capital, i.e. the sum of all balance sheet equity and debt, or if this is unavailable then Total Assets. For debt instruments of unlisted companies reporting negative equity, Total Debt is used as the apportioning denominator.

The company level emissions are then multiplied by the apportioning factor to arrive at emissions quantities specific to each holding. The portfolio level emissions are the sum of all of these quantities.

3. Scopes

The right scope of emissions to include in footprint calculations is dependent on the breadth of view that the analyst wishes to take. Restricting the scope to direct operational emissions only (scope 1) removes the risk of double counting carbon, but also limits the level of insight provided as much of what can be considered exposure to 'carbon risks' may exist in the supply chain of investees. Trucost recommends widening the scope of analysis to uncover more of these potential risks. The full list of scopes available is shown below:

- **Direct (Scope 1)** = CO₂e emissions based on the Kyoto Protocol, greenhouse gases generated by direct company operations.
- **Direct (Other)** = Additional direct emissions, including those from CCl₄, C₂H₃Cl₃, CBrF₃, and CO₂ from Biomass.
- **Purchased Electricity (Scope 2)** = CO₂e emissions generated by purchased electricity, heat or steam.
- **Non-Electricity First Tier Supply Chain (Scope 3)** = CO₂e emissions generated by companies providing goods and services in the first tier of the supply chain.
- **Other Supply Chain (Scope 3)** = CO₂e emissions generated by companies providing goods and services in the second to final tier of the supply chain.
- **Downstream (Scope 3)** = CO₂e emissions generated by the distribution, processing and use of the goods and services provided by a company.



APPENDIX

4. Data Collection & Disclosure

Trucost's unique approach to environmental data collection and modelling enables near complete coverage of most investment universes, despite often low levels of reporting among investees. A four step process is used as part of our data gathering exercise.

1. **Analyse Financial and Sector Data** - A company's financials are analysed, collecting consolidated revenues for all companies and specifying their reporting scopes and operational boundaries.
2. **Map Activities to Trucost's Environmentally Extended Input-Output (EE-IO) Model** - Trucost's EE-IO model uses 450+ business activities (broadly aligned to the NAICS, with some additional sectors included to distinguish key activities with materially different physical impacts) to model a company's environmental impacts by assigning portions of each company's revenues to one or more of these activities. The EE-IO model then estimates the pollutant emissions and resource use associated with each business activity, both directly (for a company's own operations) and across the supply chain, using the revenue sector breakdown.
3. **Incorporate Disclosures and Public Registry Data** - Trucost searches all publicly disclosed data sources of companies to find usable environmental data that will be used to over write Trucost's modelled estimates. Trucost ensures the scope and time horizon of any environmental data found matches that of its financials.
4. **Company Engagement and Data Verification** - Trucost analysts quality check the entire research process internally, then share the results with each company directly via a secure online portal. Companies are given one month to respond to Trucost to verify its data or directly engage to provide either refined, additional or non-public information. If appropriate and applicable data is provided, Trucost will integrate this into its analysis before publishing the data to our subscribers.

All data collected as part of the process described above will be assigned a 'disclosure flag', indicating the source of each specific data-point. These flags will fall into one of three possible 'disclosure categories', Full Disclosure, Partial Disclosure or Modelled.

- **Full Disclosure** - Trucost has used data disclosed by a company in an un-edited form as it matches the reporting scope and accuracy required by the research process.
- **Partial Disclosure** - Trucost has used data disclosed by a company but has made adjustments to match the reporting scope required by its research process (e.g. where a company discloses its emissions deriving from 85% of its operational sites, this data is used to model 100% of its emissions). Values may also be derived from a previous year's disclosed data using changes in business activities and consolidated revenues.
- **Modelled** - In the absence of usable disclosures, the data has been modelled using Trucost's EE-IO model.

At the portfolio level, disclosure may be evaluated using the following three methods:

- **VOH:** The sum of the weights of each holding within each of the three disclosure categories.
- **GHG:** The sum of each holding's share of the total apportioned Scope 1 CO2e within each of the three disclosure categories.
- **Companies:** The number of companies, shown as a percent of all companies analysed, within each of the three disclosure categories.

APPENDIX

5. Paris Alignment

Trucost's transition pathway analysis adapts two approaches prominent in literature produced and referenced by the Science-Based Targets Initiative (SBTi). These are the Sectoral Decarbonization Approach (SDA), and the Greenhouse Gas Emissions per unit of Value Added (GEVA) approach.

SDA Approach

The SDA is applied to companies with high-emitting, homogeneous business activities. Its core principle is that companies in each industry must converge toward emissions intensities consistent with a Paris aligned scenario by 2050 from their unique starting points. It uses industry-specific scenario pathways, with companies measured using industry-specific emissions intensities and physical production levels (eg. tCO₂e per GWh or per tonne of steel). Industry-specific transition pathways may be faster (eg. power), or slower (eg. cement) depending on an industry's available technologies, specific mitigation potential and costs of mitigation. Within a given industry, companies with low base year emissions and low production growth can reduce emissions at a gradual rate. Companies with high emissions or high production growth must make faster reductions.

The scenarios used in SDA assessments are International Energy Agency (IEA) scenarios from the IEA Net Zero Scenario and Energy Technology Perspectives 2017. These provide SDA assessment parameters consistent with 1.5°, 1.75°, 2°, and 2.7°C of warming.

GEVA Approach

GEVA is applied to companies with lower emitting or heterogeneous business activities. It recognizes that many companies have diverse business activities, most of which do not have distinct transition pathways defined in climate scenarios. For these companies, GEVA entails applying a contraction of carbon intensity principle under which a company should make emissions reductions consistent with rates required for the overall economy, from each company's unique base year emissions intensity. It uses a non-industry specific, economy-wide 2°C scenario, and emissions intensities with a financial, not physical or production denominator. Each company's transition pathway is measured as its GHG per unit of inflation-adjusted gross profit, representing its contribution to total global emissions and emissions intensity. This is compared with a global economy-wide emissions intensity pathway required for achieving below 2°C of warming.

The scenarios used in GEVA assessments are Shared Socioeconomic Pathway (SSP) scenarios used prominently in the sixth assessment report (AR6) of the Intergovernmental Panel on Climate Change (IPCC), published in 2022-23. These provide GEVA assessment parameters consistent with 1.5°, 2°, 3°, 4°, and 5°C of warming. The 1.5°C scenario parameter is also consistent with the requirement of the European Union's Paris Aligned Benchmark regulations.

Assessment horizon and data sources

Transition pathways assessed incorporate both historical and forward-looking data in order to provide an assessment that has a medium term outlook. This minimizes the uncertainties involved in using only forward-looking data, and is of a sufficient time horizon to make the effect of any year-to-year volatility less significant. Historical data on greenhouse gas emissions and company activity levels is incorporated from a base year of 2012. Forward-looking data sources are used to track likely future transition pathways beyond the most recent year of disclosed data through to 2030. Forward-looking data is incorporated based on an established data hierarchy made up of the following sources:

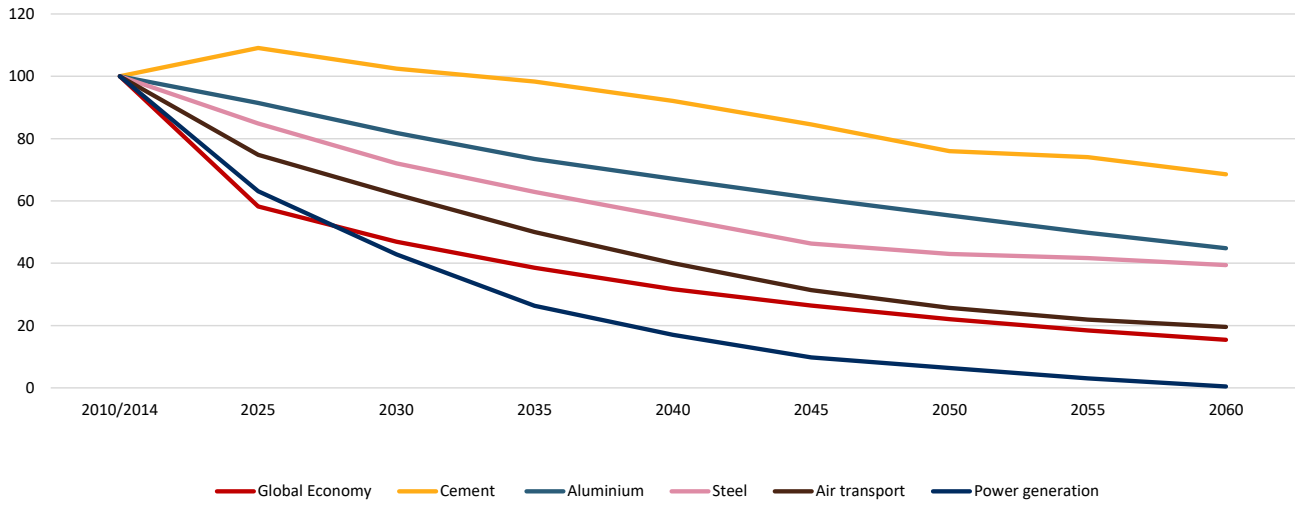
1. Disclosed emissions reduction targets.
2. Asset-level data sources that provide signals of potential future changes in production from high-emitting sources.
3. Company-specific historical emissions trends for companies assessed on the basis of homogeneous business activities.
4. Subindustry-specific average historical emissions trends for companies assessed on the basis of heterogeneous business activities.
5. No change in emissions intensity beyond the latest year.

The portfolio assessments use combined Scope 1 and Scope 2 emissions as the assessment boundary.

APPENDIX

The chart below illustrates the different decarbonization pathways for the five sectors covered in the SDA approach, as well as that used for the remaining sectors in the GEVA approach ('Global Economy' in the legend). Each sector's unique intensity unit has been indexed to 100 to allow for easy comparison. Sectors in which carbon saving technologies and/or processes are most cost effective are expected to decarbonize more rapidly, and terminate on a lower overall intensity, than sectors where such measures are not. For example, carbon intensity reductions are expected to be greater in the field of power generation than cement production.

2 Degree Aligned Decarbonization Pathways per Sector



APPENDIX

6. Unpriced Carbon Costs

Trucost has assembled a database of publicly available information on current carbon prices across over 44 jurisdictions as of January 2022. The Unpriced Cost of Carbon (UCC) is the estimated additional financial cost per tonne of greenhouse gas emissions in a future year. It is the difference between current carbon prices and possible future carbon prices for a given sector, geography and year.

Rising carbon prices entail direct financial implications for businesses where regulations impose a higher price on greenhouse gas emissions from the direct operations of the business. Companies also face indirect financial risks associated with the pass-through of rising carbon prices applied to the emissions of suppliers who in-turn seek to recover the additional regulatory costs in part or in full through increased prices. Pass-through factors are used to estimate the proportion of the increased carbon prices on scope 2 emissions that are passed through from suppliers to companies.

The Carbon Price Risk Premium varies by geography due to government policy differences, and by sector due to the differential treatment of sectors in many climate change policies. The sectors are based on OECD's research and include:

1. Agriculture and Fisheries
2. Electricity
3. Industry
4. Air Transportation
5. Offroad Transport
6. Residential and Commercial Real Estate
7. Road Transport

Each of Trucost's 464 business activities have been mapped to one of these seven categories.

SCENARIOS:

High Carbon Price Scenario

This scenario represents the implementation of policies that are considered sufficient to reduce greenhouse gas emissions in line with the goal of limiting climate change to 2°C by 2100 (the Paris Agreement). This scenario is based on research by OECD and IEA.

Moderate Carbon Price Scenario

This scenario assumes that policies will be implemented to reduce greenhouse gas emissions and limit climate change to 2 degrees Celsius in the long term, but with action delayed in the short term. This scenario draws on research by OECD and IEA along with assessments of the sufficiency of country Nationally Determined Contributions by Climate Action Tracker by Ecofys, Climate Analytics and New Climate Team. Countries with Nationally Determined Contributions that are not aligned to the 2°C goal in the short term are assumed to increase their climate mitigation efforts in the medium and long term.

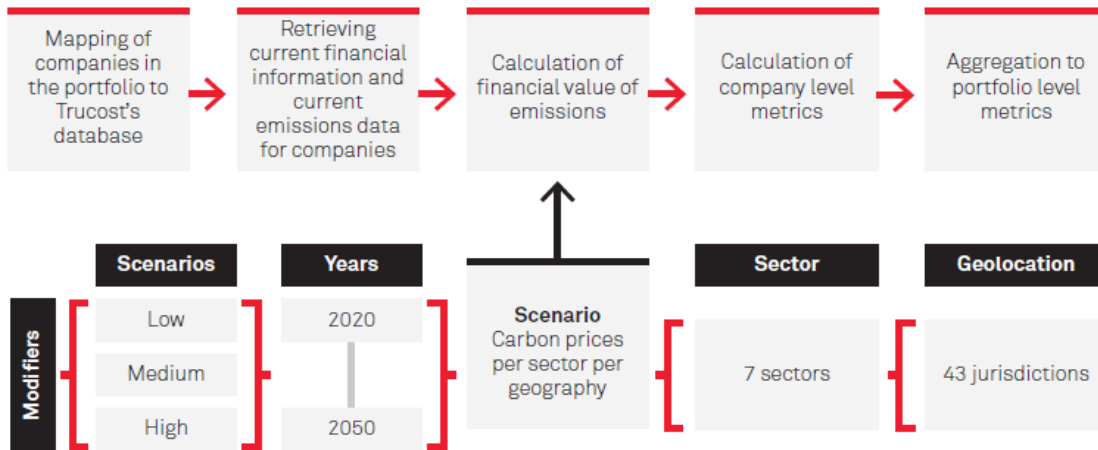
Low Carbon Price Scenario

This scenario represents the full implementation of country Nationally Determined Contributions under the Paris Agreement, based on research by OECD and IEA.

APPENDIX

Which Carbon Price Risk Premium is applicable for individual companies will depend on the choice of scenario, companies' sector of operations as well as their geographical exposure. The analysis covers Trucost's standard 464 sectors used for classification of companies that were mapped to the sectors based on OECD's classification for carbon pricing. The geographical exposure to different Carbon Price Risk Premiums is derived based on companies' geographical emissions as reported through the Carbon Disclosure Project (CDP). In case companies do not report to the CDP, Trucost uses the geographical breakdown of companies' revenues as a proxy for emissions' distribution. Together the sector exposure and country level emissions profiles allow for a very granular level bottom up calculation of carbon price risk exposure.

Schema for the Application of UCC to a Portfolio:



APPENDIX

7. Unpriced Carbon Costs - Financial Impacts

Below is a description of the different financial metrics provided:

- **Apportioned UCC:** The total additional costs arising (in)directly for a given scenario/year at the portfolio level.
- **EBIT at Risk:** The percentage of Earnings at Risk due to UCC. This highlights areas of risk across the portfolios and can be fed into financial analysis.
- **EBIT Margin Reduction:** Implied change in EBIT margins based on a scenario/year compared to the current margins. The metric allows for signaling of red flags in the portfolio where the deterioration of margin is significant.
- **VOH with EBIT at Risk:** Total value of holdings where EBIT at risk is above a certain threshold (e.g. 10%). Identifies companies that are facing the most significant carbon price risk across the portfolio.
- **VOH with Negative Margins:** Companies who's EBIT margin becomes negative after incorporating the UCC. This is used to flag companies that would potentially no longer operate profitably.

APPENDIX

8. Physical Risk

The release of the TCFD recommendations highlighted the importance of climate change as a driver of material financial risks for companies and investors that should be assessed, disclosed and managed. The risks types are split into two major categories, the first being Transitional Risks (including policy and legal risk, technology risk, market risk and reputational risk), and the second being Physical Risks. Physical risks resulting from climate change can be acute (driven by an event such as a flood or storm) or chronic (arising from longer term shifts in climate patterns) and may have financial implications for organizations such as damage to assets, interruption of operations and disruption to supply chains.

S&P Global Sustainable1 (S1) launched a suite of Climate Change Physical Risk Analytics solutions to the market in 2019, offering an asset based approach to the assessment of physical risk at the company and portfolio level. In 2022, S1 launched an enhanced physical risk framework, leveraging the expertise and intellectual property of The Climate Service (TCS), which was acquired by S&P Global in January 2022. Key features of the updated dataset include:

- Robust and science-based climate change physical hazard characterization methodology, leveraging the latest available climate change models (CMIP6) and proprietary methodologies.
- Coverage of eight key climate change physical hazards at consistent resolution, globally: coastal flood, fluvial flood, extreme heat, extreme cold, tropical cyclone, wildfire, water stress, and drought.
- Coverage of four climate change scenarios based on the IPCC Shared Socioeconomic Pathway (SSP) and Representative Concentration Pathway (RCP) scenarios, and offering annualized decadal averages for all hazards from the 2020s to the 2090s.
- Physical risk exposure scores representing point in time exposure to climate hazards, and physical risk financial impact metrics describing the financial consequences arising from changing climate hazard exposure for over 250 unique asset types.
- Built upon a proprietary database of over 3.1 million asset locations linked to corporate entities and ultimate parent entities—based on S&P Market Intelligence, S&P Commodity Insights, and Sustainable1-assembled datasets—and with flexibility to rapidly analyze client provided asset datasets.
- Physical risk analytics for over 20,000 companies representing over 98% of global market capitalization, ensuring high levels of coverage for equity and fixed income portfolios across all markets.

APPENDIX

EXPOSURE SCORES AND FINANCIAL IMPACT METRICS EXPLAINED:

	Physical Risk Exposure Scores	Physical Risk Financial Impacts
What does this metric represent?	Point in time exposure to climate hazards relative to global conditions, independent of the characteristics of the asset present at a given location	Financial consequences arising from the change in climate hazard exposure vs a baseline, specific to the asset present at a given location
Advtgs	<ul style="list-style-type: none"> · Efficient and high throughput for rapid screening of large asset portfolios · Offers an expansive view of climate hazards present at a given location, not limited to those hazards that are assumed to be material · Readily applicable where only limited information (location only) is available on assets to be analyzed · Valuable as proxy for risk in a given location (or nearby locations) when asset data is not available 	<ul style="list-style-type: none"> · Deep dive analysis to quantify the financial impact of changing climate hazard exposure based on the best available data and S&P Global's view on the most material impacts for each asset type · Granular analysis based on over 250 different asset type profiles and associated financial impact pathways · Ready integration into downstream financial analysis such as valuation models, credit risk models and the creation of climate risk adjusted financial accounts · Valuable to inform climate resilience strategies that need to respond to specific risk and mechanisms
Use Cases	<ul style="list-style-type: none"> · Risk screening exercises and portfolio analytics to understand: <ul style="list-style-type: none"> o Aggregate physical risk exposure at the asset, company or portfolio level, and in comparison with relevant benchmarks o Which climate hazards represent the greatest exposure o The assets or companies in a portfolio which contribute most to portfolio level exposure · Inform initial TCFD disclosures and risk screening initiatives · Focus attention on the most exposed assets, companies or portfolio holdings to direct further investigation to the areas with greatest potential impact 	<ul style="list-style-type: none"> · Deep dive physical risk analysis focusing on the financial materiality of climate hazard exposures to specific asset types · Inform detailed TCFD disclosures and reporting · Integration of climate physical risk into financial modelling, including the development of adjusted financial accounts, credit risk modelling and equity valuation modelling · Climate resilience strategy
Outputs produced?	Exposure Score: 1-100 score representing the exposure to each hazard relative to global conditions	Financial Impact: Financial losses (e.g. CapEx, OpEx, Business Interruption) reflected as a percentage of asset value due to exposure to climate-related physical hazards.

APPENDIX

HAZARD TYPES EXPLAINED:

Hazards	Analysis Metric	Indicator Definition	Spatial Resolution	Data Sources
Coastal Flood	Frequency of 100-yr flood	Projected frequency of the historical baseline 100-yr coastal flood depth	30x30m (USA) 90x90m (RoW)	GTSR hydrodynamic surge model Kopp et al SLR data MERIT /US3DEP USGS global coastlines
Fluvial (River) Flood	Frequency of 100-yr flood	Projected frequency of the historical baseline 100-yr flood depth	~25x25km	Hydro Atlas NEX-GDDP downscaled CMIP6
Extreme Heat	Projected Tx90p (Exposure Scores) Tx50pAbsChg (Financial Impact)	Annual percentage of days with maximum temperature warmer than the 90th percentile local baseline daily maximum temperature	~25x25km	NEX-GDDP downscaled CMIP6
Extreme Cold	Projected Tx10p	Annual percentage of days with minimum temperature colder than the 10th percentile local baseline daily minimum temperature	~25x25km	NEX-GDDP downscaled CMIP6
Tropical Cyclone	Frequency of Cat3+ storms	Projected annual frequency of category 3 and higher tropical cyclones	~25x25km	HURDAT JTWC TC archives CMIP5/6 SST
Wildfire	Wildfire conditions days	Projected number of days with Z-index less than or equal to the historical 10th percentile	~25x25km	NEX-GDDP downscaled CMIP6
Water Stress	Water Stress Index	Projected future ratio of water withdrawals to total renewable water supply in a given area.	River Basin	WRI Aqueduct
Drought	Palmer Drought *Severity Index	Projected number of days with the self-calibrating Palmer Drought Severity Index (scPDSI) less than or equal to the historical 10th percentile	~25x25km	NEX-GDDP downscaled CMIP6

APPENDIX

CLIMATE CHANGE SCENARIOS

The Sustainable1 dataset focuses on four future climate change scenarios based on IPCC Representative Concentration Pathways and Shared Socioeconomic Pathways and informed by the TCFD technical guidelines (FSB, 2017):

- **High Climate Change Scenario** (SSP5-8.5): Low mitigation scenario in which total greenhouse gas emissions triple by 2075 and global average temperatures rise by 3.3-5.7C by 2100.
- **Medium-High Climate Change Scenario** (SSP3-7.0): Limited mitigation scenario in which total greenhouse gas emissions double by 2100 and global average temperatures rise by 2.8-4.6C by 2100.
- **Medium Climate Change Scenario** (SSP2-4.5): Strong mitigation scenario in which total greenhouse gas emissions stabilize at current levels until 2050 and then decline to 2100. This scenario is expected to result in global average temperatures rising by 2.1-3.5C by 2100.
- **Low Climate Change Scenario** (SSP1-2.6): Aggressive mitigation scenario in which total greenhouse gas emissions reduce to net zero by 2050, resulting in global average temperatures rising by 1.3-2.4C by 2100, consistent with the goals of the Paris Agreement.

The Sustainable1 dataset evaluates climate change physical risks for decadal averages from the 2020s to the 2090s. Financial impact quantification pathways are not currently available for extreme cold but are offered for all other climate hazards.

ANALYTICAL APPROACH

The Sustainable1 Physical Risk Scores and Financial Impact methodology is based on five key analytical steps:

1. **Climate Hazard Modelling**
2. **Physical Risk Exposure Quantification**
3. **Asset and Company Level Physical Risk Exposure Score Calculation**
4. **Financial Impact Function Modelling**
5. **Asset and Company Level Physical Risk Financial Impact Calculation**

1. Climate Hazard Modeling

Sustainable1 has assembled models and datasets representing projected absolute exposure to eight discrete climate change hazards globally across four climate change scenarios and eight time periods to produce global climate change physical hazard maps. Each indicator, scenario and time period is represented as a geospatial dataset with hazard values assigned to location at a resolution deemed suitable to each hazard. This enables the modelling of exposure to each climate hazard at a given time period and the change in hazard exposure over time and relative to a historical baseline.

2. Physical Risk Exposure Quantification

Exposure to climate change physical hazards is quantified by overlaying asset locations of interest on the climate hazard maps described at step 1. For the purposes of this analysis, 'Assets' represent any structure or real asset owned or leased by a company covered by the Sustainable1 database of over 20,000 companies. The Sustainable1 Climate Change Physical Risk dataset is generated based on an extensive database of physical asset locations, linked to corporate owners (or lessees), developed and maintained by S&P Global.

APPENDIX

3. Asset and Company Level Physical Hazard Exposure Scores

The Sustainable1 physical risk exposure score model assigns risk scores from 1 (lowest risk) to 100 (highest risk) to each asset in the database based on location within the climate change hazard maps described in Step 1. The exposure score is intended to represent the relative level of exposure to each hazard at each location relative to global conditions across all scenarios and time periods. Asset level physical risk exposure scores are aggregated to company level scores as a weighted average of all assets mapped to the company of interest, based on assumed asset values for each asset type. Assumed asset values were derived from a literature review and are intended to be indicative of the relative value of each asset type. Companies evaluated using asset level data are categorized as Data Quality A.

For some companies in the Sustainable1 CorePlus universe, insufficient asset level data is available to calculate physical risk exposure scores. In these cases, physical risk exposure is estimated based on a combination of physical risk exposure at the company headquarters location (20% weight), and a revenue weighted average of the country average physical risk exposure in those countries where the company generates revenues (80% weight). Country physical risk profiles are calculated as a GDP weighted average within the country boundaries, drawing on the climate hazard data described at step 1, and downscaled spatial GDP data. Companies evaluated for physical risk exposure using this method are designated Data Quality B.

The composite exposure score is intended to provide a combined measure of company exposure to all eight climate change physical hazards. It is calculated by taking an equal weighted additive combination of the company physical risk score on each hazard for a given scenario and year, and then rescaled to a 1-100 range using a logarithmic scoring curve. The scoring curve is designed to ensure that assets or companies with high exposure to one hazard, but low exposure to all others, will be assigned a moderate to high composite physical risk exposure score. Alternative approaches, such as a simple average of hazard exposure scores within a given scenario and time period, risk understating the exposure of an asset or company to climate change physical risk.

4. Financial Impact Function Modelling

The Sustainable1 physical risk model quantifies the expected financial consequences of changes in physical risk exposure at both the asset and company level. This model is based on a library of 'Impact Functions' developed by S&P Global which describe the relationship between the degree of change in climate hazard exposure and the financial impact on a given asset type across time and climate change scenarios. Impact functions have been developed for over 250 unique asset types, each focusing on a set of pathways by which climate change hazards may impact on the value, revenues, operations or other value drivers for that asset type. The impact function database has been developed over several years through extensive literature research and analytical development.

At the asset level, Financial Impact is quantified as the projected financial costs associated with changing climate hazard exposure, expressed as a percentage of the asset value.

The Financial Impact metric is calculated at the asset level for each hazard and can be summed to produce a combined Financial Impact metric, and aggregated to the company level as a weighted average based on the assumed asset value. Financial Impact is expressed as a relative metric because accurate data or estimates of the actual value of each asset is currently not available. The following example describes the process applied to developing impact functions for a single hazard and asset type combination.

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Step 1. Identify Material Impacts

S&P Global has developed over 1,280 impact functions linked to over 250 asset types for application in the physical risk dataset and related tools (e.g., the Climonomics platform). The following example shows the extreme heat impact function for the office building asset type from the owner/occupier perspective. The temperature hazard metric used in this impact function is projected $T_{x50pAbsChg}$, measuring the absolute change in the annual 50th-percentile local daily maximum temperature (degree Celsius), relative to the historical value (1950-1999). To analyze the impact of increasing maximum temperature on owned/occupied office properties, a review of available research literature was conducted to identify a range of impact pathways, or avenues by which the operations and value of an office building may be impacted by increasing temperature. The following impact pathways were identified as material to the office building asset type:

- Cooling Costs: Excess operating expenses associated with increased use of cooling equipment/systems to maintain optimal temperatures for employees and plant/equipment in the context of rising temperatures.
- HVAC Degradation: Annualized costs of reduced operating life and early replacement of HVAC systems due to increased operation in response to rising temperatures.
- Employee Productivity: Costs associated with reduced employee productivity and associated expenses caused by increasing ambient temperatures (including employees working indoors).

Step 2. Model Impact Pathway

For each impact pathway a series of relevant research studies and data sources are assembled to quantify the impact of a unit change in hazard on relevant financial performance metrics, as described below:

- Cooling Costs: Excess energy consumption associated with higher temperatures were estimated based on trends identified in a series of papers focusing on changes in energy demand and power generation, and estimated economic damages arising from climate change in the USA. Based on this data, cooling energy demand is projected to increase by 5% per one-degree Celsius increase in average maximum temperature.
- HVAC Degradation: Excess costs associated with reduced operating lifespan for HVAC systems per unit change in temperature were estimated from a series of studies including Fenaughty and Parker (2018). Based on this data, HVAC lifespan is projected to decrease by 6.76% per one-degree Celsius increase in average maximum temperature.
- Employee Productivity: Reductions in employee productivity were estimated based on a global study of the effects of heat on working populations. Based on this data, workforce productivity is projected to decrease by 1.14% per one-degree Celsius increase in average maximum temperature.

Step 3. Quantify Financial Impact

To quantify the total financial impact on asset value, the impact pathways described in the prior section are weighted based on a set of financial ratios reflecting the proportion of the total value of a given asset type that is represented by the value driver impacted by temperature change for each pathway. The asset value metric for the owned/occupied office building asset type is the replacement value, and the financial ratios applied to each impact function described below (These assumptions are based on literature review and analysis by S&P Global):

- Cooling Costs: 1.19% of asset value
- HVAC Degradation: 13.29% of asset value
- Employee Productivity: 7.84% of asset value

The financial impact (%) for each impact pathway is multiplied by the corresponding financial ratio and summed to quantify the aggregated financial impact (%) on the asset value of an owner-occupied office building per one-degree Celsius increase in average maximum temperature, and extrapolated across the range of projected future temperature increases.

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5. Asset and Company Level Physical Risk Financial Impact Calculation

The Sustainable1 physical risk financial impact model quantifies the percentage of asset value at risk for each asset based on:

- a) The change in climate change physical hazard under a given scenario and time period relative to a historical baseline.
- b) The asset type classification, and associated impact functions, for the asset located at a given location.

Asset level Financial Impact is aggregated to company level as a weighted average of all assets mapped to the company of interest, based on assumed asset values for each asset type. Assumed asset values were derived from a literature review and are intended to be indicative of the relative value of each asset type. Asset and company level Financial Impact is calculated for each climate hazard under each scenario and time period and are summed to a combined Financial Impact metric covering all hazards. Financial impact metrics are not calculated for companies with no linked asset level data (other than the company headquarters) in the 2022 physical risk dataset.

APPENDIX

9. EU Taxonomy

The S&P Global EU Taxonomy Data Solution is based on the first delegated act on sustainable activities for climate change adaptation and mitigation objectives. The Taxonomy outlines 96 business activities that fall into one of the 13 Nomenclature of Economic Activities (NACE) macro sectors that are eligible under the Taxonomy. The business activities include those that have a direct carbon mitigation potential (for example, renewable energy), as well as those that are relatively carbon intensive but have the potential to significantly reduce their carbon emissions (for example, steel manufacturing). It also includes business activities that enable climate change adaptation.

The 13 NACE macro sectors covered by the Taxonomy are:

- Forestry
- Environmental protection and restoration activities
- Manufacturing
- Energy
- Water supply, sewerage, waste management and remediation
- Transport
- Information and communication technologies (ICT)
- Buildings (construction and real estate activities)
- Professional, scientific and technical activities
- Financial and insurance activities
- Education
- Human health and social work activities
- Arts, entertainment and recreation

The S&P Global EU Taxonomy Data Solution includes both S&P Global Sustainable1's assessment of the alignment of each company's revenues with the Taxonomy requirements, either at the individual business activity or aggregated at company level, and the underlying data points utilized to inform that assessment. We take a conservative approach in only assigning the Aligned classification where sufficient data and information are available to demonstrate that an activity or company has met the SC, DNSH and MSS requirements.

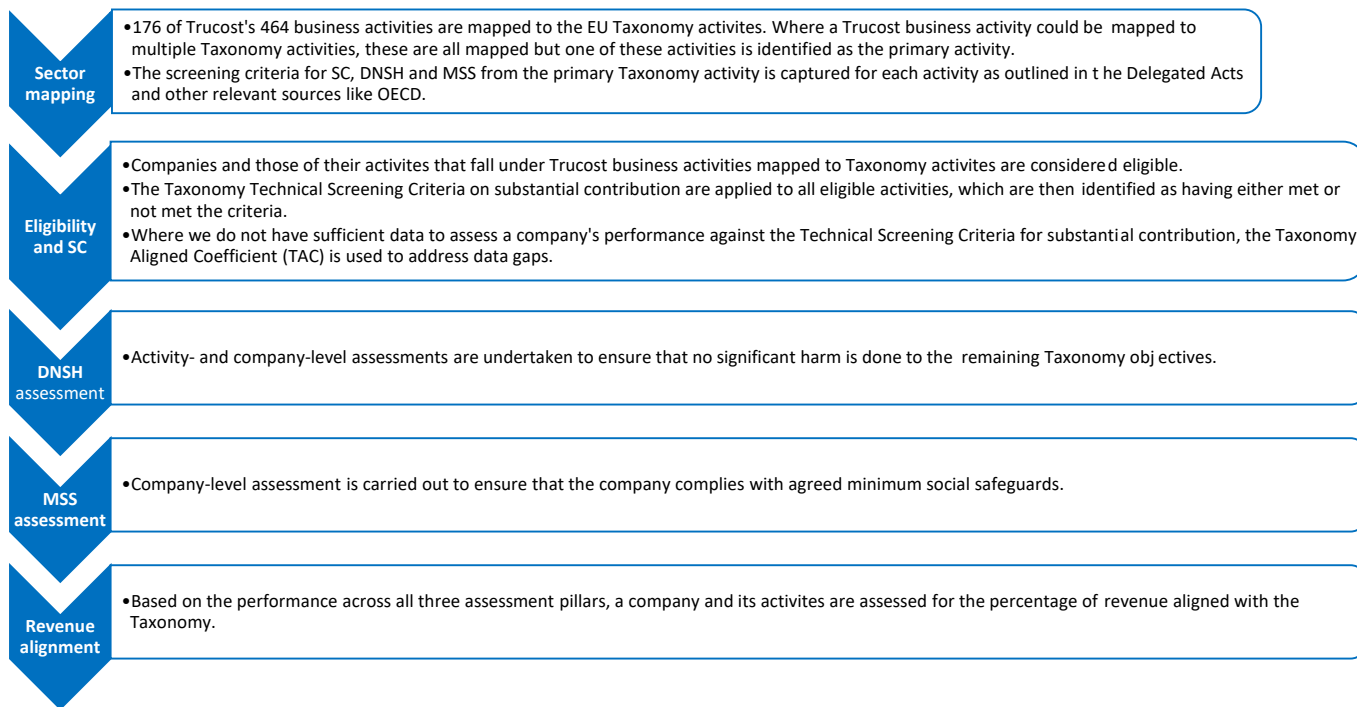
We identify business activities as Transitional, Enabling or General, and map these to the Taxonomy objectives of climate change mitigation and/or climate change adaptation. For adaptation activities, expenditure is used as the assessment metric since companies incur costs to implement measures to mitigate physical climate risk. The current dataset only has total Capex and Opex data at the company level. An activity-specific breakdown is not currently available.

Activities associated with other Taxonomy environmental objectives will be added to the dataset as the relevant regulations are released. The dataset covers the 20,000 companies in the Trucost Core Plus Universe, of which approximately 15,000 are publicly listed companies and 5,000 are private companies issuing fixed income securities.

APPENDIX

The following sections provide an overview of how S&P Global Sustainable1 assesses Taxonomy alignment. Figure 1 below provides a high-level overview of the approach, and Figure 2 provides a summary of the data sources used within the dataset.

Figure 1: Overview of S&P Global Sustainable1's approach to assessing EU Taxonomy Alignment



APPENDIX

Figure 2: Data sources used within the dataset

Section	Data point	Description	Data source	Scope
Revenue Eligibility	Sector revenue	Sector-level revenue data is used to identify revenues generated from eligible activities.	Trucost Sector Revenue dataset	Activity Level
Substantial Contribution	Emission intensity	Sector-level emission intensity data for selected companies present in core plus universe (e.g., tCO2e/tonnes of cement).	Trucost Paris Alignment dataset	Activity level
	Capital IQ topic tags	Company-level flags indicating involvement in key business activities. Based on Capital IQ's business description.	S&P Capital IQ	Company Level
	Power plant performance	Market Intelligence dataset on power plants contains details such as capacity of the power plant, energy source used and cogeneration status. This was used for assessing the Taxonomy activity "Electricity generation from bioenergy."	MI Power Plants	Activity level
	Taxonomy Aligned Coefficient	Activity-level revenue alignment score.	European Commission Joint Research Centre	Activity level
Do No Significant Harm	Controversy screening and objective specific data points	DNSh is assessed at objective level and MSS is assessed for each criterion. Media and Stakeholder Assessment (MSA) data was used to screen for incidents that would impact the reputational risk of the company and negative impacts on the environment and society.	S&P Global Corporate Sustainability Assessment	Company level
Minimum Social Safeguards	Controversy screening and indicator-specific data points			

ASSESSING ELIGIBILITY

To assess revenue eligibility, a direct mapping is carried out between the 96 business activities covered by the Taxonomy and 176 of the 464 business activities in Trucost's proprietary sector classification system. The Trucost sector classification system is based on the North American Industry Classification System (NAICS), which is similar to the European NACE system. S&P Global reviews company reported revenues and emissions data from the Trucost Core+ Universe.

Once mapped, following the Taxonomy Delegated Act the 176 Trucost business activities are identified as General, Transitional, or Enabling, and are categorized against the Taxonomy objectives of climate change mitigation and/or climate change adaptation. General activities are directly mitigating the impacts of climate change. Transitional activities are those that are contributing to climate change mitigation based on their capacity to improve their emissions intensity in the future. Enabling activities are those that are providing products and services that improve emissions intensity of other activities and are indirectly mitigating the effects of climate change.

APPENDIX

Activities associated with other Taxonomy environmental objectives will be added to the dataset as the relevant regulations are released. Any business activities remaining after the mapping has been carried out are not considered to be eligible.

ASSESSING SUBSTANTIAL CONTRIBUTION

Once the eligible business activities and associated revenues have been identified, they must then also be shown to make a substantial contribution (SC) to one of the Taxonomy's environmental objectives. At present, SC screening criteria have been finalized only for two objectives: Climate Change Mitigation and Climate Change Adaptation. The regulations set forth a series of technical screening criteria for each eligible activity, identifying performance thresholds (which can be either quantitative or qualitative) that must be met in order for the contribution of a company's business activity to be considered substantial.

In many cases the technical screening criteria for a given activity will include multiple requirements that must be partially or fully satisfied to demonstrate SC. S&P Global Sustainable1 has disaggregated these requirements and presents an assessment against each sub-criterion separately in the dataset. S&P Global Sustainable1 has also identified activity-specific supplementary criteria that should be adopted in certain situations (for example, in the calculation of product carbon intensity metrics). These supplementary criteria are qualitative and relate to the specific frameworks of those situations.

As the Taxonomy regulations are new, many companies/issuers will not yet disclose publicly on the specific data points required to assess the technical screening criteria. Given this, S&P Global Sustainable1 has sought to utilize information from Capital IQ and other Trucost datasets to satisfy the requirements of SC. As the availability of Taxonomy-aligned data reported by companies increases, S&P Global will look to capture these metrics through its core environmental and ESG research processes.

The Capital IQ Topic Tags is one of the datasets used in the context of assessing SC. The topic tags are retrieved from the Capital IQ Business Description of a company. The business description is a description of the business of a company; it is made by the S&P Capital IQ analysts and fed into the Company Intelligence dataset. The topic tags may be helpful in the instances where the Trucost business activity is not granular enough (e.g., for electric vehicles). Trucost Paris Alignment is another dataset that is used to assess SC. This dataset uses company data on carbon emissions and production to calculate a ratio of carbon emissions per unit of production. Such a ratio is calculated for companies in key carbon intensive sectors (also called Sectoral Decarbonization Approach, or SDA, sectors) such as power, steel, cement, aluminum, airlines and automobiles. An S&P Global Market Intelligence dataset on power plants is also used, and it contains details such as the capacity of power plants, energy sources used and cogeneration status. This is used for assessing the Taxonomy activity on electricity generation from bioenergy.

Where relevant data is not currently available to assess the SC requirements for a given Taxonomy business activity, "No data available" will be shown and the analysis will default to a Taxonomy-aligned-coefficient (TAC) that has been assigned by the TEG to that activity. These coefficients reflect an estimate of the proportion of an activity/sector that is expected to meet the SC criteria. If all SC criteria are met, 100% of activity revenue is included; however, if data is insufficient or missing, the eligible revenue multiplied by the TAC is shown.

ASSESSING DO NO SIGNIFICANT HARM

Once an eligible activity has been identified as making a substantial contribution to one of the Taxonomy's environmental objectives, it must also show that it meets the DNSH requirements in relation to the other five environmental objectives.

APPENDIX

The Taxonomy delegated act provides specific activity-level requirements, alongside more generic company-level requirements. Both activity- and company-level requirements are assessed using data collected through the S&P Global Corporate Sustainability Assessment (CSA). It is important to emphasize that the CSA data is based on the company's reporting. This data does not involve the use of any estimates. The CSA process is conducted annually and covers approximately 10,000 companies globally, capturing data on a wide range of Environmental, Social and Governance (ESG) issues. This dataset is the basis for the S&P Global ESG Scores dataset. The S&P Global CSA uses a consistent, rule-based methodology to convert an average of 600 data points per company into a S&P Global ESG Score. These data points are aggregated into question-level, criteria-level and dimension-level scores. The total S&P Global ESG Score results from the sum of weighted dimension scores. Further information on the CSA is available on the S&P Global CSA website.

The DNSH assessment is based on CSA score and data point-level analysis, alongside the Media and Stakeholder Analysis (MSA). The activity and appendix DNSH requirements for each environmental objective are matched to data point and question-level information disclosed by companies assessed through the CSA and used to evaluate whether an activity or company has satisfied the requirements. It is important to note that if a company is identified as being engaged in any of the controversies covered by the MSA, the company would be assessed as not meeting the DNSH threshold irrespective of its performance on the DNSH criteria.

An assessment is provided for each of the individual DNSH objectives (e.g., "DNSH Pollution Assessment") alongside the complete DNSH Combined Assessment, which is a summary of all of the individual objectives. Below is a list of the outputs for the individual assessments of the DNSH objectives and the DNSH Combined Assessment.

- **Met:** The individual DNSH objective assessment will be considered Met if all of the underlying CSA scores or data points meet the thresholds of the Taxonomy requirements. The DNSH Combined Assessment is considered Met when one or more of the individual DNSH assessments are Met and the remaining assessments are not categorized as Not Met or Partially Met.
- **Partially Met:** The individual DNSH objective assessment will be considered Partially Met if at least one of the underlying CSA scores or data points meets the thresholds of the Taxonomy requirements. The DNSH Combined Assessment is considered Partially Met when at least one of individual DNSH assessments is categorized as Partially Met and the remaining assessments are not categorized as Not Met.
- **Not Met:** The individual DNSH assessment will be considered Not Met if none of the underlying CSA scores or data points meets the thresholds that are reflective of the Taxonomy requirements. The DNSH Combined Assessment is categorized as Not Met if one or more of the individual DNSH assessments is categorized as Not Met.
- **Not Required:** For some activities there are no requirements to meet specific DNSH objectives. These are marked as Not Required under the individual DNSH objectives. The DNSH Combined Assessment is categorized as Not Required if all six of the individual DNSH assessments are categorized as Not Required.
- **No Data Available:** The individual DNSH assessment will be considered No Data Available if there has not been sufficient data collected on a company or there was not substantial coverage of the Taxonomy delegated act within the CSA methodology. In these cases, the company has participated within the CSA data collection methodology, but insufficient data was collected due to one or both of the above reasons. The DNSH Combined Assessment will be categorized as No Data Available if all six of the individual DNSH assessments are categorized as No Data Available. The No Data Available output affects the Confidence Level score, which is discussed below.
- **No Coverage:** The individual DNSH assessments are considered No Coverage if the company did not participate in the CSA data collection methodology. The DNSH Combined Assessment will be considered No Coverage if one or more objectives are categorized as No Coverage and the remaining objectives are Not Required.

Where the CSA does not have sufficient data on a company, the Combined DNSH Assessment will be considered as Met if two or more individual DNSH objectives where sufficient data is available are Met and the remaining DNSH objectives are not categorized as either Not Met or Partially Met. Every activity is assessed against the Taxonomy Delegated Act requirements; however, if the MSA assessment identifies a relevant controversy, the DNSH Combined Assessment is automatically considered Not Met, even if the DNSH Combined Score is 100%.

APPENDIX

ASSESSING MINIMUM SOCIAL SAFEGUARDS

Adherence with Minimum Social Safeguards (MSS) is evaluated at the company level using data disclosed by companies in the CSA. S&P Global Sustainable¹ reviewed the UN Guiding Principles on Business and Human Rights (UNGPs) and the OECD MNE Guidelines and selected the following themes to be used:

- Human Rights
- Employment and Industrial Relations
- Corruption and Bribery & Anti-Competitive Practices
- Consumer Interest
- Tax Strategy
- Supply Chain Management

The MSS criteria for individual themes are matched to data point and question-level information disclosed by companies assessed through the CSA in order to evaluate whether an activity or company has satisfied the criteria. Where no individual CSA data points/questions are matched or minimum score threshold was applied, the assessment is based on the negative screen through the MSA assessment only. Where a company is identified as being engaged in any of the controversies outlined under the MSA for MSS, the company would be assessed as not meeting the MSA threshold irrespective of the company performance on the individual MSS criteria.

Data points collected in the CSA are mapped to specific MSS Criteria and used to assess a company's performance. Where a company meets all data point level/minimum score threshold requirements, it would be considered to have met the MSS recommendations based on the OECD MNE Guidelines; where some recommendations are met but insufficient data is available on others, the company would be considered Partially Met; and where any of the recommendations are not met, the company would be assessed as Not Met for the relevant MSS Criteria. It is important to emphasize that the CSA data is based on the company's own reporting. Where the company has an MSA case, as explained above, the company fails the MSS check irrespective of the company's performance.

An MSS Metric column is provided for each of the individual MSS criteria that reference the OECD MNE Guidelines, which the MSS assessment is based upon. An individual assessment is provided for each of the MSS criteria, alongside one MSS Combined Assessment which is a summary of all of the individual MSS Criteria assessments. Below is a list of outputs for the individual MSS assessments, alongside the MSS Combined Assessment.

- **Met:** Individual MSS criteria are considered Met if all of the underlying CSA scores or data points meet the thresholds that are reflective of the recommendations of the OECD MNE Guidelines. The Combined MSS Assessment will be considered Met if two or more of the individual MSS criteria are Met and the remaining metrics are not categorized as Not Met or Partially Met.
- **Partially Met:** Individual MSS criteria are considered Partially Met if at least one of the underlying CSA scores and data points meets the thresholds that are reflective of the recommendations of the OECD Guidelines. The Combined MSS Assessment will be considered Partially Met if one or more of the individual MSS criteria assessments are categorized as Partially Met and the remaining metrics are not categorized as Not Met.
- **Not Met:** Individual MSS criteria are considered Not Met if none of the underlying CSA scores or data points meets the thresholds that are reflective of the recommendations of the OECD MNE Guidelines. The Combined MSS Assessment will be considered Not Met if at least one of the individual MSS criteria is categorized as Not Met.
- **No Data Available:** Individual MSS criteria are considered No Data Available if the company participated in the CSA but the data is not sufficient to conduct an assessment against MSS criteria.

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- **No Coverage:** The individual and combined MSS assessments will be considered No Coverage if the company did not participate in the CSA data collection process.

Every activity is assessed against the MSS criteria, which are based on the OECD MNE Guidelines. If the MSA assessment identifies a relevant controversy, the MSS Combined Assessment is automatically considered Not Met, although the MSS Combined Score is still available. Where the CSA does not have sufficient data on a company for individual MSS criteria, the Combined MSS Assessment is considered Met only if two or more of the individual MSS criteria are Met and the remaining criteria are not categorized as Not Met or Partially Met.

OVERALL ALIGNMENT ASSESSMENT

S&P Global Sustainable1 provides a final assessment of how companies and business activities align with the Taxonomy overall, incorporating all the assessments on eligibility, Substantial Contribution, Do No Significant Harm and Minimum Social Safeguards. We take a conservative approach in only assigning the Aligned classification where sufficient data and information are available to demonstrate that an eligible activity or company has met SC, DNSH and MSS requirements.

The table below explains the full alignment assessment output logic.

SC	DNSH	MSS	Overall Taxonomy Alignment
Met	Met / Not Required	Met	Aligned
Met	Partially met	No Data Available / Partially met / Met / No Coverage	Partially aligned
Met	No Data Available / Partially met / Met / Not Required / No Coverage	Partially met	Partially aligned
Met	No Data Available / No Coverage	No Data Available / Partially met / Met / No Coverage	Partially aligned
Met	No Data Available / Partially met / Met / Not Required / No Coverage	No Data Available / No Coverage	Partially aligned
Not met	Not met / Partially met / Met / Not Required / No Coverage	Not met / Partially met / Met / No Coverage	Not aligned
Met / Not met	Not met / No Coverage	Not met / Partially met / Met / No Coverage	Not aligned
Met / Not met	Not met / Partially met / Met / Not Required	Not met	Not aligned

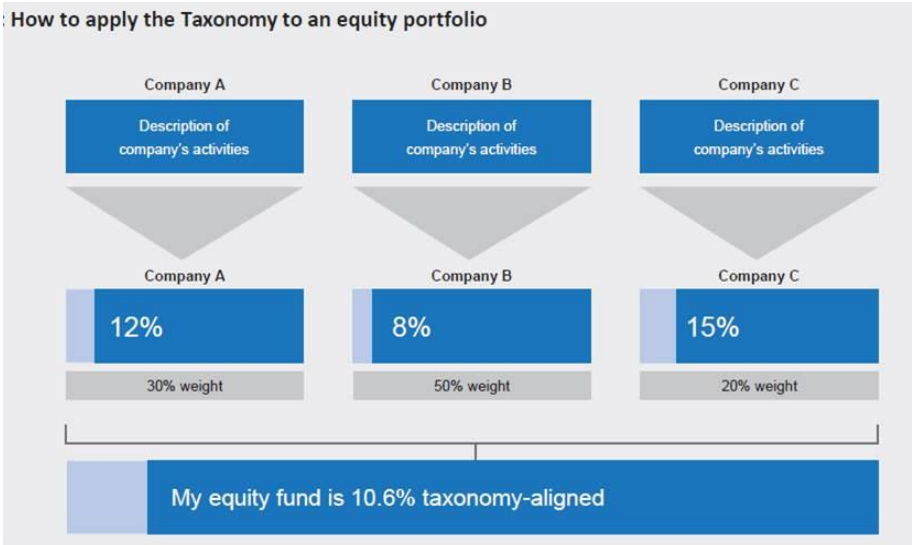
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APPLICATION TO PORTFOLIO ANALYSIS

The S&P Global EU Taxonomy Data Solution can be used at the portfolio level to help financial institutions understand the alignment of their portfolio holdings with the Taxonomy, compare the alignment against their benchmark, and ensure their reporting is in line with the requirements.

For investors, this can be done using a weighted average approach by summing the product of each holding's weight in the portfolio with each holding's share of aligned revenues, as shown in the righthand graphic.

This approach can be applied to any portfolio of companies (equities, corporate bonds, convertible bonds, or even corporate loans covered by S&P Global Sustainable1) to provide the portfolio's overall exposure to revenues currently aligned with the Taxonomy.



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