

Goldman  
Sachs

Asset & Wealth Management

**TCFD  
REPORT  
2022**



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# INTRODUCTION

Section

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# INTRODUCTION FROM OUR CHIEF INVESTMENT OFFICER

Given the scale and complexity of the global climate transition, managing climate-related risks and opportunities is integral to serving our diverse client base. We see the risks and opportunities of this transition playing out across the real economy, the markets in which we transact, investment portfolios, and our client franchise. Climate change is an important and growing area of concern for many of our clients, both from a risk-return and an impact perspective. At the same time, it is increasingly impacting our clients' investments, whether through physical risk impacts to operations, or challenges navigating the transition to a lower-carbon economy.

We acknowledge that the transition to a low-carbon economy is complex and will take time. As capital helps fundamental sectors move toward decarbonisation, there will be trade-offs along the way. Our approach to climate transition is pragmatic and underpinned by our core value of serving our clients. As a result, we take a client-centric approach to integrating clients' objectives into their portfolios with an aim to achieve long term, risk-adjusted returns and to prudently manage investments for our clients.<sup>1</sup> With our scale and capabilities, Asset & Wealth Management ("AWM") has a powerful platform to unlock value for our clients through the climate transition. We combine breadth, across public and private markets, proprietary and third-party products, portfolio strategy and implementation, and depth, with specialist climate teams and strategies.

We also help our clients achieve their goals by drawing on the broader climate expertise and capabilities across Goldman Sachs. We have developed climate products and solutions, leveraged analytical tools, utilised climate-related data to inform our investment decisions, and partnered with clients and portfolio companies to uncover opportunities for transformative climate impact and returns.

Through our efforts to manage clients' capital in a prudent manner, we are supporting the climate transition by seeking to price climate-related risks appropriately within markets, supporting portfolio companies to mitigate risks and decarbonise their operations, and providing capital towards climate technologies and solutions.

We are proud to highlight a number of initiatives, including investing in sustainable investments across AWM, employing more than 160 climate- and sustainability-focused professionals across AWM,<sup>2</sup> and helping the firm to achieve 55% of the firmwide \$750 billion sustainable finance commitment.<sup>3,4</sup>

We recognise the importance of climate-related disclosures in our climate strategy and are developing our approach to managing financially material climate-related risks and opportunities. As investors, we seek to actively work with portfolio companies to encourage financially material disclosure on climate-related data, as this information can help to drive more informed investment decisions, where relevant.

With that in mind, we are pleased to share our first Task Force on Climate-Related Financial Disclosures ("TCFD") report focused on Asset & Wealth Management and its business activities carried out within our United Kingdom legal entities.

Looking ahead, we are focused on continuing to develop climate solutions for our clients, and further integrating climate considerations across our business.



**Julian C. Salisbury**  
Chief Investment Officer of Asset & Wealth Management

<sup>1</sup> There is no guarantee that objectives will be met.

<sup>2</sup> As of 31 December 2022. This figure is at a point in time and is subject to change over time. Figures are related to Goldman Sachs' professionals at the organisational level and include individuals deemed to spend 80% or more of their time on sustainability related research, portfolio management, stewardship, engineering, and/or risk management.

<sup>3</sup> As of 31 December 2022. Goldman Sachs has achieved approximately \$425 billion in commercial activity, including \$215 billion in climate transition, \$67 billion in inclusive growth and the remainder in multiple themes. See [Goldman Sachs 2022 Sustainability Report](#).

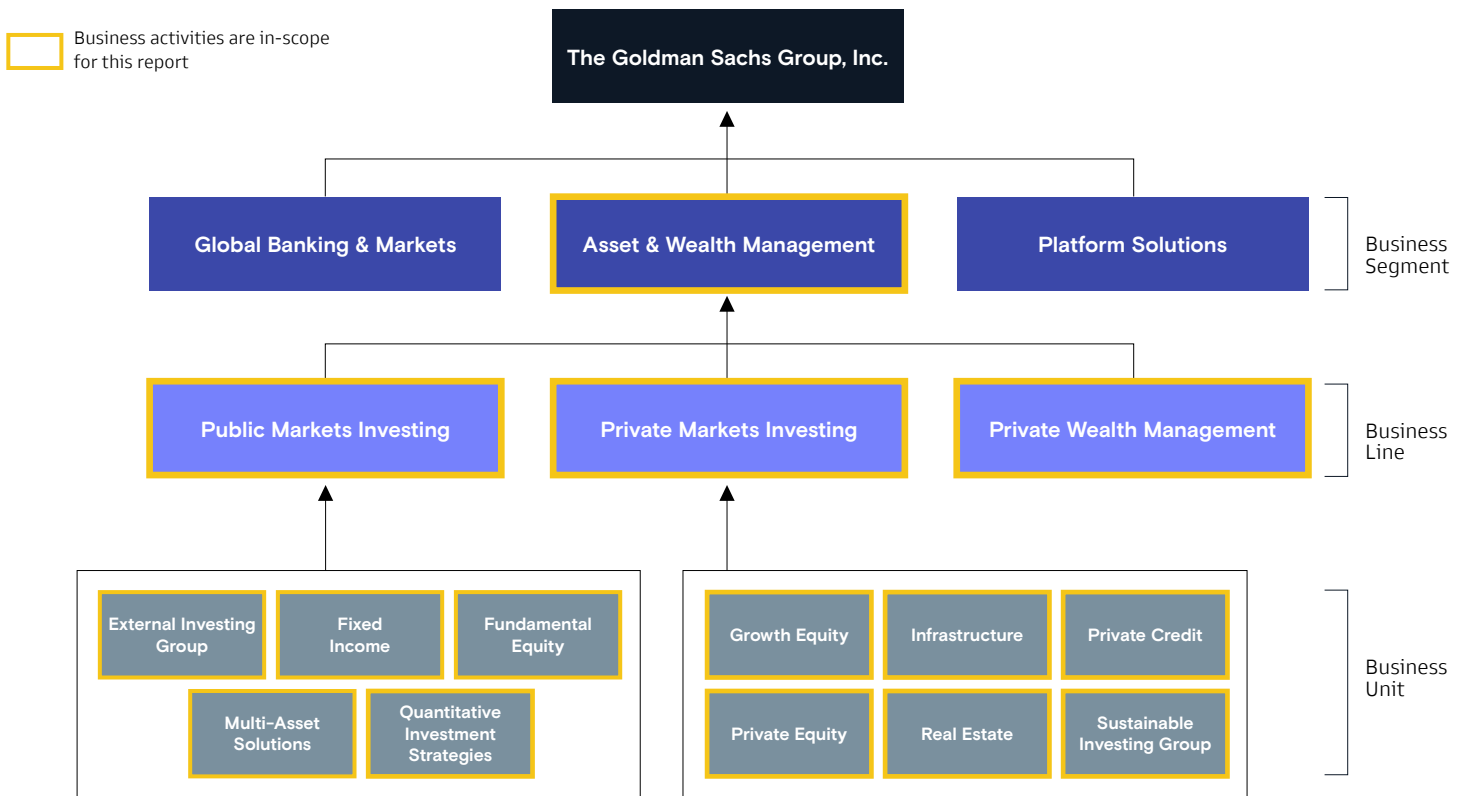
<sup>4</sup> Firmwide sustainability goals are not binding characteristics of specific products. There is no guarantee that any particular ESG objective will be pursued or met with respect to any particular product.

# ABOUT ASSET & WEALTH MANAGEMENT

Asset & Wealth Management (“Asset & Wealth Management”, “AWM”, “we”, “our”, or “us”) is a business segment within The Goldman Sachs Group, Inc. (“Goldman Sachs”, “the firm”). Asset & Wealth Management provides investment services to help clients preserve and grow their financial assets and achieve their financial goals. We provide these services to our clients, both institutional and individuals, including investors who primarily access our products through a network of third-party distributors around the world.<sup>5</sup>

AWM includes Goldman Sachs Asset Management, which includes investing in public markets (“Public Markets Investing”) and private markets (“Private Markets Investing”), and Goldman Sachs Private Wealth Management (“Private Wealth Management”). See Figure 1 below for additional details on Asset & Wealth Management’s position within the broader Goldman Sachs organisational structure.

Figure 1: Goldman Sachs Organisational Structure



<sup>5</sup> AWM also invests Goldman Sachs’ on-balance sheet alternative assets.

Today, AWM is a top five global active asset manager<sup>6</sup> and a top five global alternatives manager<sup>6</sup> with a premier wealth management franchise. As of 31 December 2022,<sup>7</sup> we have more than \$2.5 trillion in assets under supervision ("AUS") globally.<sup>8</sup>

More than

\$2.5tn

Beginning with the fourth quarter of 2022, consistent with announced organisational changes, Goldman Sachs began managing and reporting its activities in three new business segments, including the AWM segment. Prior to these changes, the Asset Management segment was managed and reported separately from the Consumer & Wealth Management segment. As such, certain climate-related processes, governance structures, and strategies are still evolving across the Public Markets Investing, Private Markets Investing, and Private Wealth Management business lines within AWM, and each business may take a different approach in response to climate-related risks and opportunities (within the broader context of Goldman Sachs' climate strategy). Over time, it is intended that climate-related activities will be further integrated.

In addition, Goldman Sachs completed the acquisition of NN Investment Partners ("NN IP") in April 2022, which was subsequently rebranded as Goldman Sachs Asset Management B.V. ("GSAM B.V.").<sup>9</sup> GSAM B.V. is a leading European asset manager based in The Hague, Netherlands, which at the time of acquisition managed \$340 billion in assets for institutions and individual investors worldwide.<sup>10</sup> The integration of GSAM B.V. into AWM is ongoing, and we have been working together to leverage our combined climate-related expertise and capabilities to further develop and embed a sustainable investing approach in certain strategies and offerings.

AWM provides investment services to help clients preserve and grow financial assets and achieve their financial goals. We manage assets across a broad range of investment strategies and asset classes, including equity, fixed income, and private markets. Our Private Markets Investing activities, which are typically longer-term, include investments in private equity, private credit, real estate, and infrastructure assets.

Within Private Wealth Management, we provide tailored wealth advisory services to clients. We operate globally, serving individuals, families, family offices, and foundations and endowments. These solutions begin with identifying clients' objectives and continue through portfolio construction, asset allocation and risk management, and investment execution. We leverage a broad investment platform, and our global execution capabilities, to help clients achieve their investment goals.

The AWM segment also benefits from the broader Goldman Sachs ecosystem, which gives clients access to a wide range of products and solutions, as well as our market expertise.

<sup>6</sup> Rankings as of 4Q22, as measured by actively managed AUS. Peer data compiled from publicly available company filings, earnings releases and supplements, and websites, as well as eVestment databases and Morningstar Direct. GS total Alternatives investments of \$450 billion as of 4Q22 includes \$263 billion of Alternatives AUS and \$187 billion of non-fee-earning Alternatives assets.

<sup>7</sup> Note: this figure represents global AWM assets under supervision.

<sup>8</sup> AUS includes assets under management and other client assets for which Goldman Sachs does not have full discretion.

<sup>9</sup> GSAM B.V. is a separate European legal entity and is not in-scope for this TCFD report.

<sup>10</sup> <https://www.goldmansachs.com/media-relations/press-releases/2022/announcement-11-apr-2022.html>.

# SCOPE OF REPORT

The Asset & Wealth Management Task Force on Climate-Related Financial Disclosures 2022 Report ("AWM UK TCFD 2022 Report", "this report") has been developed in line with the United Kingdom ("UK") Financial Conduct Authority ("FCA") rules and guidance as set out in the Environmental, Social, and Governance Sourcebook ("ESG Sourcebook"). Based on the ESG Sourcebook, the Goldman Sachs legal entities in-scope for this report are Goldman Sachs International ("GSI") and Goldman Sachs Asset Management International ("GSAMI"). As such, this report includes details and perspectives specific to the in-scope portfolio management activities of GSI and GSAMI (collectively "UK legal entities").

## GSI

GSI is a subsidiary of Goldman Sachs and delivers a broad range of financial services to clients located worldwide. GSI also operates a number of branches and representative offices across Europe, the Middle East, and Africa ("EMEA"), providing financial services to clients in those regions. The company generates revenue from the following business activities: Investment Banking; Fixed Income, Currency, and Commodities ("FICC"); Equities; and Asset Management (primarily focused on private markets investments) and Private Wealth Management.

## GSAMI

GSAMI is a subsidiary of Goldman Sachs and an asset management company principally operating in the EMEA region. In 2022, GSAMI's asset management activities primarily focused on public markets investments.

Within GSAMI and GSI, we have concluded that only business conducted in 2022 within Public Markets Investing (under the purview of GSAMI), Private Markets Investing (under the purview of GSI), and Private Wealth Management (under the purview of GSI) are in the scope of the FCA requirements. For full details of in-scope assets within these business lines, refer to "**Appendix B: In-scope Asset & Wealth Management Assets**".<sup>11</sup>

AWM's business activities and processes are largely global in nature, with considerable overlap between legal entities on products and strategies and associated processes and governance, given that we serve clients in different regions and under different regulated investment vehicle regimes. As a result, certain sections of this report are written from a global AWM perspective (for example, the "**Strategy**" section), while other sections and details are UK legal entity-specific where appropriate (or required by the FCA guidance), and are highlighted as such. In particular, the "**Governance**" and "**Metrics and Targets**" sections focus on the two UK legal entities.

This entity-level TCFD report is separate from any on-demand TCFD product reports developed by AWM in accordance with the ESG Sourcebook. When appropriate, this report leverages and references information from these TCFD product reports.<sup>12</sup> However, this report focuses on climate activities at the GSI and GSAMI entity level, rather than at the product level.

This report is also separate from [The Goldman Sachs 2021 TCFD Report](#), which was published in December 2021 and covers all the business activities and segments within Goldman Sachs, including AWM.<sup>13</sup> This AWM UK TCFD 2022 Report focuses exclusively on AWM's activities in the UK legal entities, but refers back to Goldman Sachs' climate activities and other firmwide climate and sustainability reports, where relevant.

Additionally, this report focuses solely on AWM's investment activities in-scope for the GSI and GSAMI legal entities. For details related to GSI's operations, including carbon, energy, and business travel consumption and reporting, refer to the [GSI 2022 Annual Report](#).<sup>14</sup> For details on Goldman Sachs' firmwide climate-related operational goals and commitments, see the [Goldman Sachs 2022 Sustainability Report](#).

Note that all data and metrics are as of **31 December 2022**, and unless stated otherwise, the information provided in this report relates to the 2022 calendar year.

Note that all references to figures in dollars (\$) are in **USD**.

<sup>11</sup> Following an internal reorganisation on 1 April 2023, the UK Private Markets Investing business now sits within GSAMI. However, during the reporting period covered by this report (2022 calendar year) the business was part of GSI.

<sup>12</sup> Note: product-level reporting may also draw from and reference entity-level reporting where applicable.

<sup>13</sup> Note: Goldman Sachs 2021 TCFD was produced voluntarily and is not currently addressing any regulatory requirement.

<sup>14</sup> GSAMI also produces an annual report with details on its operations. However, Goldman Sachs International only publishes an annual report if the entity has listed debt or significant public interest. GSAMI does not meet this criterion, and therefore the report is not publicly available.



# COMMENTARY ON ASSET & WEALTH MANAGEMENT'S INAUGURAL TCFD REPORT

This report represents the first report specific to Asset & Wealth Management in line with the TCFD Recommendations.<sup>15</sup> The report focuses primarily on the progress we have made in recent years to support our clients with their climate-related investment objectives through the development of climate-related products and services, and innovative climate tools and analytics.

This report reflects the latest position as of **31 December 2022**, with the exception of the overarching climate strategy framework and key components within the **"Strategy"** section. The framework was further refined in 2023 by a cross-business line group of stakeholders within AWM, reflecting the closer integration of AWM business lines following the formation of AWM in 2022 (specific details may change in future TCFD reports).

The integration of our overarching climate strategy and climate-related risk management practices within AWM is ongoing, and is more advanced in certain business strategies and products relative to others. The climate strategy described in the **"Strategy"** section is predominantly applicable to Public Markets Investing and Private Markets Investing, though Private Wealth Management leverages many of their products and solutions, and therefore benefits from their strategy when it offers its clients those products and solutions. The majority of our funds and strategies do not have specifically integrated climate considerations; however, across AWM, we have dedicated climate strategies and solutions in which climate considerations are embedded in the investment process and risk management practices. We seek to embed climate considerations more comprehensively, and systematically across some aspects of our business in-line with client preferences; we are making progress towards this, as described later in this report, yet significant work remains. Throughout the report, we aim to identify where specific climate-related activities are being performed for a subset of investment products.

Across all AWM business lines within this report, we have distinguished between existing climate-related activities and future initiatives, focusing on existing activities. There is a broader suite of climate-related initiatives in earlier stages of progress, which we anticipate featuring in future TCFD reports.

Additionally, this report focuses on climate-related considerations per the TCFD Recommendations. However, within AWM, we consider climate-related risks and opportunities, typically alongside other related sustainability risks and opportunities, where financially material. As such, this report includes areas where our business lines and units consider climate and sustainability factors alongside each other.

As noted previously, each of the Public Markets Investing, Private Markets Investing, and Private Wealth Management businesses covered in this report may take a different approach to managing climate-related risks and opportunities, considering factors such as investment size, climate exposures, asset classes, client preferences, and business strategy. Within each business line, individual investment teams may also adopt different approaches to managing climate-related risks and opportunities, as appropriate.

<sup>15</sup> [www.fsb-tcfid.org/recommendations](http://www.fsb-tcfid.org/recommendations).

# SUMMARY OF TCFD RECOMMENDATIONS

The TCFD Recommendations, published in 2017 and updated in 2021, are structured around four thematic areas (“pillars”) that are core elements of how organisations operate: **Governance**; **Strategy**; **Risk Management**; and **Metrics and Targets**. Each of these pillars has a series of key climate-related financial disclosure requirements

(referred to as recommended disclosures) which provide investors and others with information to help understand how reporting organisations assess climate-related issues. These pillars and recommended disclosures are summarised below in Figure 2.

Figure 2: TCFD Recommendations and Supporting Recommended Disclosures<sup>16</sup>

GOVERNANCE	STRATEGY	RISK MANAGEMENT	METRICS AND TARGETS
Disclose the organization's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is financially material.	Disclose how the organization identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is financially material.
RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES
A) Describe the board's oversight of climate-related risks and opportunities.	A) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long-term.	A) Describe the organization's processes for identifying and assessing climate-related risks.	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) Describe management's role in assessing and managing climate-related risks and opportunities.	B) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	B) Describe the organization's processes for managing climate-related risks.	B) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (“GHG”) emissions, and the related risks.
	C) Describe the resilience of the organization' strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	C) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	C) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

<sup>16</sup> Source: TCFD “Implementing the Recommendations of the Task Force on Climate-Related Financial Disclosures”, Figure 6, October 2021.

# DEFINITION OF CLIMATE-RELATED RISKS

In evaluating climate-related risks and opportunities, we use definitions and methodologies consistent with the principles of TCFD.

These risk definitions are incorporated into the Goldman Sachs comprehensive firmwide risk taxonomy, which includes both financial and non-financial risks to the firm.

## TRANSITION RISK

is the risk that asset values may decline because of changes in climate policies, or changes in the underlying economy due to decarbonisation. These risks emerge from policy, legal, technology, and market changes as the economy shifts towards using less carbon.

## PHYSICAL RISK

is the risk to properties, collateral, or investments due to specific climate-related weather events and longer-term shifts in the climate. Physical risk has the potential to reduce the financial value of assets. Risks related to the physical impacts of climate change include acute risks and chronic risks.

# COMPLIANCE STATEMENTS

As set out above, this report covers the in-scope businesses of both GSI and GSAMI, as explained in “**Scope of Report**”.

In accordance with the FCA’s ESG Sourcebook, senior management for GSI and GSAMI confirms, on behalf of the respective UK legal entities, that the information provided in this report in relation to GSI (Private Wealth Management and Private Markets Investing businesses) and GSAMI (Public Markets Investing business), as relevant, complies with the requirements set out in chapter 2 of the ESG Sourcebook.



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Chief Executive Officer of  
Goldman Sachs Asset Management  
International



**Jim Garman**  
Global Co-Head of Real Estate  
and Head of EMEA Alternatives  
within Goldman Sachs Asset  
Management



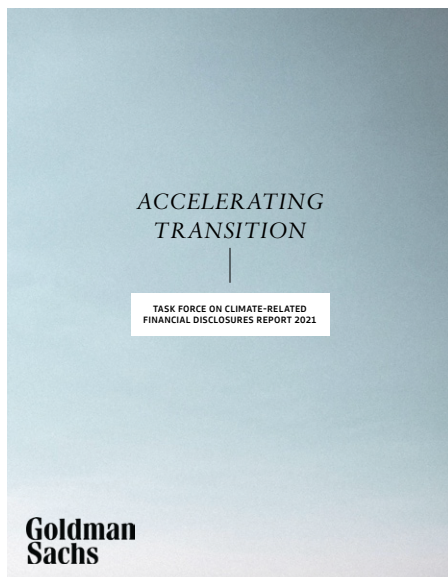
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**Christopher French**  
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# OTHER GOLDMAN SACHS CLIMATE- AND SUSTAINABILITY-RELATED REPORTS

Below we highlight select other Goldman Sachs climate-related reports.



## Goldman Sachs 2021 TCFD Report: Accelerating Transition

[The Goldman Sachs 2021 TCFD Report](#) outlines how Goldman Sachs is leveraging the capabilities across the firm to help advance its climate transition goals. The report details the firm's strategy and approach to climate-related risks and opportunities, and how it integrates climate across the firm's business and risk practices.<sup>17</sup>



## Goldman Sachs 2022 Sustainability Report: Navigating Complexity

[The Goldman Sachs 2022 Sustainability Report](#) focuses on how Goldman Sachs is working with clients to help them achieve their sustainability objectives. The report details the role the firm takes in aiming to meet the increasing demand for sustainable finance advice, tools, and solutions, and helps us inform the market and develop new solutions to better support the firm's clients.

<sup>17</sup> Note: this is a dated report reflecting 2021 specifically, and should not be considered up-to-date.

# OTHER PUBLIC MARKETS INVESTING CONSIDERATIONS

As part of the investment process, Public Markets Investing may integrate ESG factors alongside traditional factors.

The identification of a risk related to an ESG factor will not necessarily exclude a particular investment that, in the view of Public Markets Investing, is otherwise suitable and attractively priced for investment, and Public Markets Investing may invest in an issuer without integrating ESG factors or considerations into the investment process. Moreover, ESG information, whether from an external and/or internal source, is, by nature and in many instances, based on a qualitative and subjective assessment. An element of subjectivity and discretion is therefore inherent to the interpretation and use of ESG data. The relevance and weightings of specific ESG factors to, or within the investment process vary across asset classes, sectors, and, strategies and no one factor or consideration is determinative. Public Markets Investing in its sole discretion and without notice

may periodically update or change the process for conducting its ESG assessments and implementation of its ESG views in portfolios, including the format and content of such analysis, and the tools and/or data used to perform such analysis. Accordingly, the type of assessments described here may not be performed for every portfolio holding. The process for conducting ESG assessments and implementation of ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis, may also vary among portfolio management teams.

# EXECUTIVE SUMMARY

Section

02

# ASSET & WEALTH MANAGEMENT: OUR CLIMATE STRATEGY

Within Asset & Wealth Management, our aim is to achieve long-term, risk-adjusted returns for our clients.<sup>18</sup> Given the impact of the climate transition across sectors, geographies, and markets, we believe that developing a strategy for managing climate-related risks and opportunities (i.e., a “climate strategy”) is important for serving our clients’ preferences and delivering risk-adjusted returns.

The foundation of our climate strategy is a powerful platform that allows our diverse and global client base to optimise their unique climate preferences and investment objectives. We combine breadth, across public and private markets, proprietary and third-party products, portfolio strategy and implementation, and depth, with specialist sustainable investing teams and strategies. This allows us to unlock

potential value for our clients by enabling us to manage climate-related risks,<sup>19</sup> opportunities, and impact together. For further details on our climate strategy across AWM, see the **“Strategy”** section of this report.

Governance, risk management, and the use of metrics are also critical to operationalising, measuring, and managing our climate strategy. In this report, we describe how AWM incorporates climate into key governance structures, risk management processes, and specific metrics in line with TCFD guidance, where financially material.

## GOVERNANCE

Our board- and management-level governance structures and oversight bodies incorporate climate considerations as part of their oversight responsibilities (see the **“Governance”** section of this report for further details).

## RISK MANAGEMENT

Our climate-related risk management approach aims to assess and manage the risks posed by climate change to our business and seeks to integrate climate considerations into risk management practices (see the **“Risk Management”** section of this report for further details).

## METRICS AND TARGETS

We have produced climate-related metrics across a portion of our investment products and strategies in AWM, including financed greenhouse gas emissions metrics at the business line-level for Public Markets Investing, Private Markets Investing, and Private Wealth Management (see the **“Metrics and Targets”** section of this report for further details). We have not set AWM-specific GHG emissions reduction targets, but we are assessing potential target-setting approaches.

<sup>18</sup> There is no guarantee that objectives will be met.

<sup>19</sup> Asset & Wealth Management leverages the resources of Goldman Sachs & Co. LLC subject to legal, internal, and regulatory restrictions. For additional details on Goldman Sachs’ capabilities and approach to climate, refer to the Goldman Sachs 2021 TCFD Report and Goldman Sachs 2022 Sustainability Report.



# RECENT HIGHLIGHTS

In recent years, Asset & Wealth Management has continued supporting the climate transition.

In particular, we have continued to develop our climate products and solutions for clients, climate resources and tools, and our efforts to engage our portfolio companies on climate issues.

RECENT HIGHLIGHTS

# CLIMATE PRODUCTS AND SOLUTIONS



**Public Markets Investing continues to build out its suite of products and solutions to help clients capitalise on the potential opportunities presented by the climate transition.**

- In 2021, Public Markets Investing and Bloomberg jointly developed and launched the Bloomberg Goldman Sachs Global Clean Energy Index. This index was developed using a proprietary, data-driven approach that identifies and selects active and impactful portfolio companies based on an assessment of these companies' value attributable to their activities across the clean energy themes of wind energy, energy storage, clean power, networks, digitalisation, bio-energy, solar energy, and hydrogen energy.
- As part of the acquisition of GSAM B.V. in April 2022, Public Markets Investing acquired a dedicated Green, Social, and Impact Bond team, as well as a longstanding proprietary Green Bonds strategy. As the integration of GSAM B.V. continues, Public Markets Investing is seeking to deepen its approach to sustainable investing and identify areas to scale climate-focused products and strategies.
- Public Markets Investing continues to enhance the Global Environmental Impact Equity Strategy, now in its third year, which provides investors an attractive solution to drive potential investment returns and environmental impact.

**Private Markets Investing continues to build out its climate and environmental impact solutions through the Horizon platform.**

- Launched in 2022, Private Markets Investing invests through the Horizon Environment & Climate Solutions ("HECS") strategy which targets five themes that underpin Goldman Sachs' approach to address environmental impact and advance the climate transition: clean energy, sustainable transportation, waste and materials, sustainable food and agriculture, and ecosystem services.

## RECENT HIGHLIGHTS

# CLIMATE RESOURCES AND TOOLS

## In 2022, we expanded our internal climate resources within AWM.

- With the addition of GSAM B.V. (formerly known as NN IP) to the Asset Management platform in April 2022, Public Markets Investing has benefitted from the combined climate-related expertise and capabilities of both companies. As part of the acquisition, Public Markets Investing has integrated more than 65 climate- and sustainability-focused professionals across various geographies and teams.
- In Private Markets Investing, climate- and sustainability-focused resources were expanded by adding ESG business leads for most investment teams and by hiring a head of Climate Strategy for Private Markets Investing, who commenced the role in 2023.

## We also expanded our efforts to enhance climate education and awareness across various investment teams, clients, and portfolio companies.

- Through its 2022 Sustainability and Impact webinar series, Public Markets Investing provided its clients<sup>20</sup> with insights and education on important climate and sustainability topics, including green capital expenditure, battery storage, sustainable debt market trends, and climate-related impacts on socially vulnerable communities.
- Public Markets Investing holds a regular investor meeting series called The Forum, in which leading experts, both internal and external, meet to discuss the global trends and events that will shape its investments. ESG and climate are frequently discussed; in 2022, topics included quantifying improvement in corporate GHG emissions, the investment implications of the increased focus on energy security, resilience, diversification in light of geopolitical issues, and the implications of the US Inflation Reduction Act across

sectors. The Forum helps portfolio managers and research analysts keep up with the latest developments in a rapidly evolving space and helps to inform investment processes.

- In Private Markets Investing, its internal 2022 Strategic Planning series included a sustainable investing-related strategy workshop for senior leadership, and dedicated training sessions for select working groups across business units on climate-related risk assessments and decarbonisation initiatives.
- In 2022, Private Wealth Management published a Carbon-Aware Portfolio Management framework for its clients. This framework supports clients who want to understand the financed GHG emissions associated with their portfolios, and who want to reduce the GHG emissions exposure of their current holdings, invest in decarbonisation solutions, and navigate carbon offset markets to achieve a more carbon-conscious portfolio that is specific to the financial needs and sustainability goals they want to achieve.

## Finally, we built out select climate tools to support our clients and portfolio managers.

- Private Wealth Management has developed a public markets diagnostic tool to help clients articulate, refine, and work towards their long-term sustainable investing goals. Clients can leverage certain climate transition and inclusive growth metrics to assist with risk management, transparency, and engagement on climate and other sustainability objectives. The tool helps provide a deeper dive into a portfolio's financed GHG emissions, exposure to specific business activities, as well as tracks a portfolio's alignment with the UN Sustainable Development Goals ("SDGs").
- Public Markets has been developing a Paris Alignment tool for certain tailored client solutions that combines quantitative and qualitative information on company climate disclosures, strategy, and target-setting to provide a forward-looking categorisation of an issuer's alignment with the aims of the 2015 Paris Agreement.

<sup>20</sup> Note, these sessions are also made available to Private Wealth Management clients.

RECENT HIGHLIGHTS

# ENGAGING WITH PORTFOLIO COMPANIES

**Within Public Markets Investing and Private Markets Investing, we have enhanced our efforts and approaches to engaging with our portfolio companies on financially material climate-related risks and opportunities.<sup>21</sup> Given the differing nature of investments between Public Markets Investing and Private Markets Investing (such as ownership, influence, investment horizon), our approach to engagement differs materially across these business lines and our strategies.**

- In 2022, the Public Markets Investing Global Stewardship Team, in partnership with the Public Markets Investing Fixed Income and Fundamental Equity investment teams, enhanced its Climate Engagement Framework to continue to drive positive outcomes with select portfolio companies in line with Public Markets Investing's views on best practices of issuers' climate-related disclosures.
- Additionally, for the first time in 2022, the Public Markets Investing Global Stewardship Team expanded their approach beyond carbon and developed a framework for engaging on biodiversity. The team launched a targeted programme to engage on biodiversity loss with a select group of portfolio companies, focusing on increasing disclosure around packaging and waste, improving board and management oversight of these issues, and encouraging thoughtful target setting and accountability.

- In 2022, Private Markets Investing undertook a selection process to identify and contract with a preferred third-party vendor to deliver GHG emissions accounting services to select portfolio companies in equity investing portfolios within Private Equity, Infrastructure, and the Sustainable Investing Group ("SIG"). Select portfolio companies are able to track GHG emissions and receive recommended decarbonisation opportunities.
- Private Markets Investing also conducted its second full year of ESG data collection in 2022, with more than 70 portfolio companies in-scope across Private Equity, Growth Equity, Infrastructure, and SIG. As part of this process, the Sustainability & Impact team provided guidance and trainings to portfolio companies, including suggested areas for improvement on disclosure and relative data maturity compared to peers. Real Estate also conducted an ESG data collection process and engaged, where considered financially material, on assets to discuss results and identify potential opportunities, including on climate-related topics.

70+

portfolio companies in scope for ESG data collection across Private Equity, Growth Equity, Infrastructure, and Sustainable Investing Group

<sup>21</sup> The engagement highlights presented here outline examples of Goldman Sachs' initiatives. There is no assurance that Goldman Sachs' engagement directly caused the outcome described herein.

# GOVERNANCE

Section

03

We are continuing to establish an effective and resilient governance and risk environment for climate- and sustainability-related issues.

To achieve this, alongside beginning to embed climate-related risks into our risk management practices, we continue to integrate oversight of climate-related risks and opportunities into governance structures at multiple levels of the organisation.

This includes governance responsibilities within our boards, our management teams, and specific functional groups, at a Goldman Sachs, business segment, business line, and legal entity level. Our governance continues to evolve in response to increasing demand for reporting and transparency from key stakeholders and regulators.

# BOARD OVERSIGHT

In this section of the report, we describe how specific boards, management committees, and functional groups combine to provide governance of climate- and sustainability-related issues for the Asset & Wealth Management activities within GSI and GSAMI. In addition, we provide detail on Goldman Sachs-level oversight groups that play a critical role in overseeing Goldman Sachs-level climate-related risks and opportunities more generally.

There are two distinct Boards with oversight responsibilities for AWM businesses in the UK:

## GSAMI BOARD

The Goldman Sachs Asset Management International Board of Directors ("GSAMI Board") is responsible for oversight of the businesses within GSAMI (which includes Public Markets Investing).

## GSI BOARD

The Goldman Sachs International Board of Directors ("GSI Board") is responsible for the oversight of businesses within GSI (which includes both client assets and the firm's on-balance sheet alternative assets arising from Private Markets Investing and the business activities within Private Wealth Management in AWM).<sup>22</sup>

The GSAMI and GSI Board are responsible for setting the strategic direction of their respective entities, which are aligned to the strategic direction set by the Goldman Sachs Board.

The directors who serve from time to time on the Goldman Sachs Board may also serve on subsidiary boards, including currently the GSI Board. Climate-related considerations may be raised directly to the GSAMI Board and/or GSI Board, as appropriate.

<sup>22</sup> Effective 1 April 2023, following the transfer of the relevant business from GSI to GSAMI, oversight of Private Markets Investing has been transferred to the GSAMI Board from the GSI Board. Future TCFD reports will reflect this change in governance.

## GSAMI BOARD OVERSIGHT BODIES

Governance Body	Climate-Related Responsibilities
<b>GSAMI Board</b>	The GSAMI Board is responsible for the oversight of climate strategy, including the management of climate-related risks and opportunities, and oversight of progress against any future climate-related goals and targets, where applicable, to the extent that this relates to GSAMI activities. The GSAMI Board has implemented an annual agenda item on climate-related risks where they receive an update on the metrics related to TCFD disclosure and contextual information on the relative climate considerations for Public Markets Investing compared to other businesses and peers. On an ad-hoc basis, climate-related topics may be discussed more frequently.
<b>GSAMI Board Risk Committee</b>	The GSAMI Board Risk Committee reviews the effectiveness of the risk management frameworks with reference to climate-related risks, considers GSAMI's exposure in managing climate-related risks, and escalates climate-related risk issues to the GSAMI Board, as required. In 2022, there was no standardised frequency for climate-related discussions. In the future, this committee expects to have a regular agenda item on climate-related risks and climate-related risks management frameworks.

## GSI BOARD OVERSIGHT BODIES

Governance Body	Climate-Related Responsibilities
<b>GSI Board</b>	The GSI Board is responsible for oversight of climate strategy, including the management of climate-related risks and opportunities, and oversight of progress against any future climate-related goals and targets, where applicable, to the extent that this relates to GSI activities. The frequency of climate-related discussions is variable and depends on the frequency with which these discussions are held at the GSI Board Risk and Audit Committees. These committees discuss climate-related topics in greater detail and present summarised findings at the GSI Board-level. Additionally, in 2022, the GSI Board received periodic updates on the strategy and performance of its business lines (inclusive of Private Wealth Management and Private Markets Investing) which included climate.
<b>GSI Board Risk Committee</b>	The GSI Board Risk Committee reviews the effectiveness of the risk management frameworks with reference to climate-related risks, considers GSI's exposure in managing climate-related risks, and escalates climate-related risks issues to the GSI Board, as required. On several occasions in 2022, the GSI Board Risk Committee discussed climate-related topics with regular briefings and as a key focus topic.
<b>GSI Board Audit Committee</b>	The GSI Board Audit Committee is responsible for advising and assisting the GSI Board by overseeing, in particular, the integrity of GSI's systems, controls, accounting, financial statements, and financial reporting processes. As part of this, in 2022, this committee was briefed on climate-related topics in relation to these systems and controls.



In addition to the GSAMI and GSI Boards, the Goldman Sachs Board and various firmwide committees play a critical role in overseeing Goldman Sachs-level climate-related risks and opportunities. The Goldman Sachs Board oversight is described below:

#### **GOLDMAN SACHS BOARD OF DIRECTORS (“THE GOLDMAN SACHS BOARD”)**

and its committees are responsible for overseeing the management of the firm’s most significant risks, including climate-related risks, and focus on reputational risk and long-term operations. Given the interdisciplinary nature of the oversight of sustainability and climate-related risks, the Goldman Sachs Board carries out its oversight of these matters directly, at the full Board level, as well as through its Public Responsibilities and Risk Committees. This may include periodic updates on the firm’s sustainability strategy, including the firm’s approach, objectives, and progress to date, discussions regarding the climate models the firm utilises to assess physical and transition risks, and reviews of our sustainability and climate-related reporting.

#### **THE PUBLIC RESPONSIBILITIES COMMITTEE (“THE PRC”)**

of the Goldman Sachs Board assists the Goldman Sachs Board in its oversight of our firmwide sustainability strategy and sustainability issues affecting the firm, including with respect to climate change. As part of its oversight, the PRC receives periodic updates on the firm’s sustainability strategy and reporting, and also periodically reviews the firm’s governance and related policies and processes for sustainability and climate change-related issues.

#### **THE RISK COMMITTEE OF THE GOLDMAN SACHS BOARD (“THE RISK COMMITTEE”)**

oversees firmwide financial and non-financial risks. This includes the firm’s overall risk-taking tolerance and management of financial and non-financial risks, including climate-related risk. In this respect, the Risk Committee provides oversight of the firm’s Risk Appetite Statement (“RAS”), which describes the levels and types of risks the firm is willing to accept or avoid, to achieve the objectives in our strategic business plan, while remaining in compliance with regulatory requirements, including climate-related guidance. As part of its oversight, the Risk Committee of the Board receives updates on our risk management approach to climate-related risk, including our approaches towards stress testing and integration into existing risk management processes.

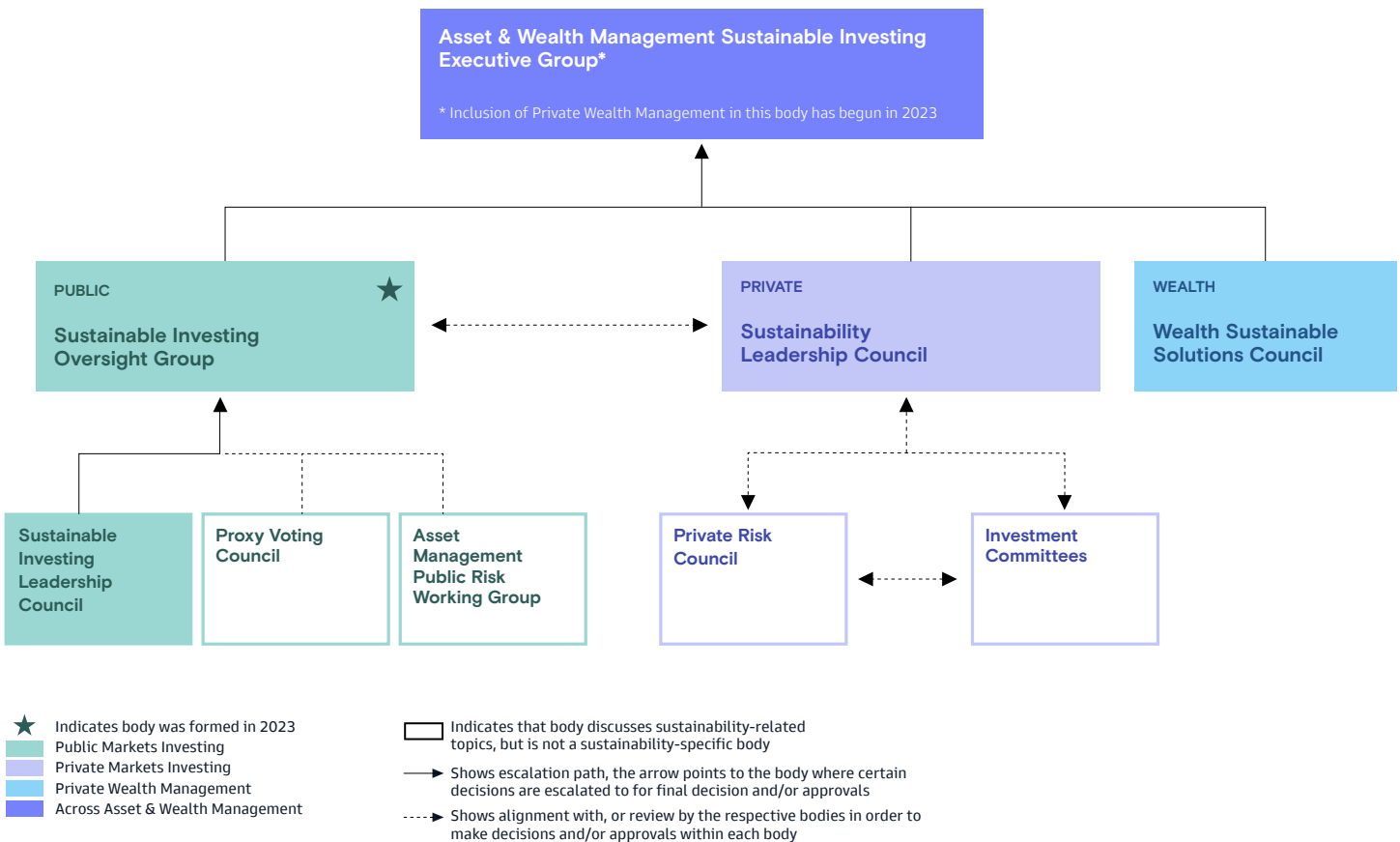
# MANAGEMENT OVERSIGHT

We have embedded oversight of climate-related risks and opportunities into our management governance structures across Asset & Wealth Management. Dedicated forums oversee climate-related activities that sit within GSAMI and GSI.

Additionally, there is overlap in the membership of management and board bodies. The CEO of GSI is on the Firmwide Management Committee and is the Chair of the European Management Committee, while the CEO of GSAMI is also a member of the European Management Committee. Both committees are involved in the implementation of the strategic direction, including climate and sustainability strategy, set by the GSAMI and GSI board, in alignment with the strategic direction set by the Goldman Sachs Board.

Figure 3 provides an overview of the governance bodies with climate-related oversight responsibilities. We have noted where bodies have oversight over specific business lines, and which were newly formed in 2023. As the AWM segment was only recently formed, we continue to evolve our combined governance structures to define and align the appropriate oversight and escalation protocols.

**Figure 3: Asset & Wealth Management Sustainable Investing Governance Bodies**



## ASSET &amp; WEALTH MANAGEMENT – MANAGEMENT OVERSIGHT BODIES

Governance Body	Overview	Escalation Path
<b>Asset &amp; Wealth Management Sustainable Investing Executive Group</b>	<p>The AWM Sustainable Investing Executive Group serves as the ultimate arbiter of climate, sustainability, and impact decisions for AWM. The AWM Sustainable Investing Executive Group is responsible for executing on climate strategy; ensuring AWM is meeting firm, client, and regulatory expectations; ensuring consistency among the business lines within AWM and Goldman Sachs; resolving conflicts if they arise from other sustainable investing governing bodies; and managing climate-related risks.</p> <p>This Group meets every other month, or more frequently on an ad-hoc basis, as needed.<sup>23</sup></p>	<p>Relevant climate-related issues may be escalated to Goldman Sachs' Executive Office.<sup>24</sup> Additionally, the Global Chief Investment Officer for AWM is a member of this Group and may escalate climate-related issues to other management committees or oversight bodies, as appropriate.<sup>25</sup></p>

<sup>23</sup> The Asset & Wealth Management Sustainable Investing Executive Group cannot override legal entity governance as a UK regulatory matter.

<sup>24</sup> The Goldman Sachs Executive Office plays an integral role in setting and advancing Goldman Sachs' strategy and in supporting and enhancing the firm's distinctive culture. The Executive Office contains the Sustainable Finance Group, which serves as the centralised group responsible for driving climate strategy efforts across Goldman Sachs. The Executive Office sits above the GSI and GSAMI entity level and includes personnel who form part of the Goldman Sachs Board.

<sup>25</sup> In 2022, there were no occurrences of climate-related issues being escalated. However, there is an established escalation process for any future climate-related issues.

## PUBLIC MARKETS INVESTING – MANAGEMENT OVERSIGHT BODIES

Governance Body	Overview	Escalation Path
<b>Sustainable Investing Oversight Group<sup>26</sup></b>	<p>The Sustainable Investing Oversight Group oversees sustainability and impact decisions for Public Markets Investing across risk and business issues, such as climate-related topics. This includes final approval on material changes to sustainable investing methodologies and frameworks, oversight on sustainable investing commitments, external statements on sustainable investing, stewardship materials, and the strategic sustainable investing direction for Public Markets Investing.</p> <p>This multidisciplinary body comprises representatives from Risk, Legal, Compliance, ESG Product Groups, Investment Area Chief Operating Officers (“COO”), Sustainable Investing and Innovation Platform (“SIIP”), Client Relations, Imprint, and Marketing.</p> <p>This Group meets quarterly, or more frequently on an ad-hoc basis, as needed.</p>	<p>Climate-related issues are escalated to the AWM Sustainable Investing Executive Group, when deemed necessary.</p>
<b>Sustainable Investing Leadership Council</b>	<p>The Sustainable Investing Leadership Council oversees sustainable investing-related topics within investment portfolios. This multidisciplinary body comprises ESG Product Group leads, Investment Area leaders, ESG/sustainable investing experts, and representatives from SIIP.</p> <p>This governance body is an alignment and sustainable investing expertise exchange rather than a decisioning body; it escalates decisions to other cross-AWM and business line-specific bodies.</p> <p>This Council meets monthly.</p>	<p>Decisions may be escalated to the Sustainable Investing Oversight Group.</p>
<b>Proxy Voting Council</b>	<p>The Proxy Voting Council oversees the Public Markets Investing Global Proxy Voting Policy, including sustainable investing-related sections. This multidisciplinary body comprises representatives from the Global Stewardship Team, equity investment teams, Public Markets Investing Management, Legal, and Compliance.</p> <p>This Council meets quarterly, or more frequently, as needed.</p>	<p>Informs the Sustainable Investing Oversight Group but does not escalate decisions.</p>
<b>Asset Management Public Risk Working Group</b>	<p>The Asset Management (“AM”) Public Risk Working Group assesses and proposes mitigation measures for risks related to business activities in Public Markets Investing. The AM Public Risk Working Group includes senior business leaders, risk management, and other key stakeholders. Where appropriate, the risk function may recommend escalation of climate-related risks to the AM Public Risk Working Group. Potential climate-related risks identified at a fund or investment level are escalated to AM Risk Public Working Group with remedial actions discussed and agreed, as appropriate.</p> <p>The AM Public Risk Working Group meets monthly.</p>	<p>Climate-related issues may be escalated to the applicable Portfolio Management team, and/or the Sustainability Leadership Council, when deemed necessary.</p>

<sup>26</sup> Note: this oversight body was formed in 2023.

## PRIVATE MARKETS INVESTING – MANAGEMENT OVERSIGHT BODIES

Governance Body	Overview	Escalation Path
<b>Sustainability Leadership Council</b>	<p>The Sustainability Leadership Council helps drive the climate strategy and key climate initiatives for Private Markets Investing, as part of the broader sustainability strategy. Members include the Global Head of Sustainability for Private Markets, Business Unit Leaders, COOs for each asset class, the Global Alternatives COO, the AWM Chief Risk Officer (“CRO”), Legal, and Compliance.</p> <p>This Council meets every other month, or more frequently on an ad-hoc basis, as needed.</p>	<p>Recommendations and areas requiring decisions from this group may be escalated to the AWM Sustainable Investing Executive Group, where alignment with other areas of AWM is required.</p>
<b>Investment Committees</b>	<p>The six Investment Committees for Private Markets Investing include:</p> <ol style="list-style-type: none"> <li>1. the Private Equity Investment Committee;</li> <li>2. the Private Credit Investment Committee;</li> <li>3. the Growth Equity Investment Committee;</li> <li>4. the Real Estate Investment Committee;</li> <li>5. the Infrastructure Investment Committee; and</li> <li>6. the SIG Investment Committee.</li> </ol> <p>Each committee comprises a senior group of investors and individuals from the firm’s second line of defence.</p> <p>Potential climate-related risks are generally escalated to Investment Committees through the Investment Committee memo (see the <b>“Manage and Mitigate Climate-Related Risks”</b> section for more details). Additionally, where appropriate, the CRO may recommend escalation of climate-related investment-level risks to the Investment Committee.</p> <p>Committees meet as needed when a potential investment opportunity arises (typically weekly).</p>	<p>Climate-related issues may be raised to the Sustainability Leadership Council and/or Risk Council (see below), when deemed necessary.</p>
<b>Risk Council</b>	<p>The Risk Council assesses and proposes mitigation measures for risks related to business activities in Private Markets Investing. The Risk Council includes senior business leaders, risk management, and other key stakeholders. Where appropriate, the risk function may recommend escalation of climate-related risks to the Risk Council. Potential climate-related risks identified at a fund or investment level are escalated to the Risk Council with remedial actions discussed and agreed, as appropriate.</p> <p>The Risk Council meets monthly.</p>	<p>Climate-related issues may be escalated to the applicable Investment Committee and/or the Sustainability Leadership Council, when deemed necessary.</p>

## PRIVATE WEALTH MANAGEMENT – MANAGEMENT OVERSIGHT BODIES

Governance Body	Overview	Escalation Path
<b>Wealth Management Sustainable Solutions Council</b>	The Wealth Management Sustainable Solutions Council supports the curation of climate and sustainability resources for the Wealth Management client franchise, as part of the broader sustainability strategy, and oversees climate-related issues for Wealth Management.	Climate-related issues may be escalated to the AWM Sustainable Investing Executive Group, when deemed necessary.

## FIRMWIDE AND REGIONAL OVERSIGHT BODIES

In addition to AWM-specific oversight bodies, a number of firmwide and regional oversight bodies play a more general role in overseeing climate issues. The most important oversight bodies are described below:

<b>The GSAMI Executive Risk Committee</b>	<b>The GSI Executive Risk Committee</b>	<b>The Firmwide Climate Steering Group</b>	<b>The Firmwide Enterprise Risk Committee (“ERC”)</b>	<b>The European Management Committee (“EMC”)</b>
Assesses and manages climate-related risks (including physical and transition risk) and provides periodic updates to the GSAMI Board on climate-related risk management through the CRO, who chairs the GSAMI Executive Risk Committee and reports to the GSAMI Board Risk Committee.	Oversees and monitors climate-related risks (including physical and transition risk), and provides periodic updates to the GSI Board Risk Committee on climate-related risk management through the CRO, who co-chairs the GSI Executive Risk Committee and reports to the GSI Board Risk Committee.	Our Firmwide Climate Steering Group provides oversight of key climate-related risks and opportunity decisions, reviews progress, and provides feedback on climate-related and environmental strategy, risk management, integration, and capabilities more broadly. <sup>27</sup>	Oversees all of Goldman Sachs’ financial and non-financial risks, including climate-related risks. This committee, which reports to the Management Committee, is co-chaired by the Group’s President, Chief Operating Officer (“COO”), and CRO.	Oversees the activities of Goldman Sachs (inclusive of AWM) within Europe, the Middle East, and Africa. The EMC is accountable for business management and key risks (including climate-related risks).

<sup>27</sup> For more information on firmwide targets, see [The Goldman Sachs 2021 TCFD Report](#) and [The Goldman Sachs 2022 Sustainability Report](#).

# BUSINESS AND FUNCTIONAL GROUPS OVERSIGHT

In addition to incorporating climate considerations into board and management governance structures, the firm has integrated climate considerations into how its businesses are strategically managed, and how commercial opportunities are identified.

## Business and Functional Groups with Climate-Related Responsibilities

Group	Overview
<b>Sustainable Finance Group ("SFG")</b>	The Sustainable Finance Group serves as the centralised group in the Executive Office responsible for driving climate and sustainability strategy efforts across Goldman Sachs. This includes supporting commercial efforts alongside our firm's business segments (e.g., AWM), engagement with the firm's stakeholders on sustainable finance and sustainability-related policy and reporting, and oversight of firmwide transactional environmental and social risk management.
<b>Sustainable Asset Working Group ("SAWG")</b>	The Sustainable Asset Working Group discusses, guides, and validates sustainable client offerings, and attributions at the transaction and product level, as well as the methodology towards measuring Goldman Sachs firmwide \$750 billion sustainable finance commitment. The target is built on commercial activity that aligns with the Sustainable Finance Framework.
<b>Product and Distribution Working Group ("PDWG")<sup>28</sup></b>	The Product and Distribution Working Group reviews and approves product-specific sustainability-related requirements (inclusive of climate considerations, as appropriate) through a standardised template included in meeting materials. <sup>29</sup>

<sup>28</sup> PDWG is only applicable to Public Markets Investing throughout 2022. Applicable to Public Markets Investing and Private Markets Investing from 2023.

<sup>29</sup> These products are also approved by the relevant Investment Committee for sustainability-related requirements.

# Additionally, climate-related governance is embedded across roles within AWM’s business lines and within other functional teams, as outlined below.

Public Markets Investing, Private Markets Investing, and Private Wealth Management convene to align on climate- and sustainability-related considerations. These groups are focused on aligning across key topics such as climate strategy, sustainable investing, ESG integration and regulation, innovation and research, stewardship, client strategy and engagement, and thought leadership and policy.

There are various other teams including Legal, Compliance, Risk, Controllers, and Corporate and Workplace Solutions involved in helping support the governance of climate-related risks and opportunities in AWM.

## PUBLIC MARKETS INVESTING

In Public Markets Investing, sustainable investment professionals are supported by the centralised SIIP. There is emphasis on enhancing and developing sustainable investing data and tools, sustainable investing internal education, providing sustainable investing strategic advice and analytics, and enhancing ESG integration (inclusive of climate) within investment strategies. Additionally, Public Markets Investing has appointed ESG business leads who are embedded within our asset classes: Equities, Fixed Income, Multi-Asset Solutions, and the External Investing Group (formerly known as the Alternative Investments & Manager Selection Group (“AIMS”)).

## PRIVATE MARKETS INVESTING

In Private Markets Investing, the Sustainability & Impact team leads the sustainability strategy for the business. Additionally, beginning in 2022 and continuing through 2023, Private Markets Investing has established ESG business leads embedded in the Private Equity, Infrastructure, Private Credit, Real Estate, and SIG businesses. They are responsible for integrating and implementing, where applicable, sustainability best practices and climate strategy into the investment process for their business unit. In 2023, these team members are supported by the Head of Climate Strategy in Private Markets Investing. These individuals work closely with investment teams to support the integration of climate-related tools and analytics, transition planning, and portfolio company and asset-level climate integration, along with sustainable investing product development.

## PRIVATE WEALTH MANAGEMENT

In Private Wealth Management, the Sustainable Solutions Group (“SSG”) was established in 2021 to support the development of our sustainability capabilities (including climate) for Private Wealth Management clients. SSG advises the business on all matters related to sustainable portfolio solutions across clients’ multi-asset class portfolios. This team is both client-facing and strategic in nature, working with other groups across the firm to ensure the Private Wealth Management platform fully serves clients’ needs.



# STRATEGY

Section

04

**ASSET & WEALTH MANAGEMENT:**

# OUR CLIMATE STRATEGY

Given the nature of our diverse and global client base, AWM takes a client-centric, tailored approach to integrating each client's unique climate objectives into their portfolio(s).

The level of integration of climate-related considerations into clients' portfolios is dependent on the clients' stated investment and climate objectives.<sup>30</sup> Specific products and strategies for each asset class are implemented to optimise for the client's climate goals, based on each client's expressed interests. As such, the broad climate strategy outlined below may not apply across the entirety of AWM.

In light of the scale of the global climate transition, managing climate-related risks and opportunities alongside other financial and non-financial factors is integral to serving our clients and their climate-related objectives. We leverage expertise and capabilities across the firm to uncover opportunities for our clients.

Our approach to sustainable investing aims to manage and mitigate climate-related risks,<sup>31</sup> while managing value creation opportunities for portfolio companies and client assets.

This requires investment in climate-related data, tools, resources, and product development, all of which can factor into our business strategy and financial planning, where financially material. We continue to invest in climate-focused tools and data, and we have built out our sustainability-focused teams, developed a suite of climate-related products and solutions, and provided our portfolio

companies and clients with resources to help them manage climate-related risks and navigate the transition. This enables us to better understand the impact of climate-related risks and opportunities on our financial performance and position, and to assess potential adaptation and mitigation measures for the investments we manage.

<sup>30</sup> It is also important to note that the availability of climate-related investment solutions varies across the Private Wealth Management business due to strategy minimums and suitability relative to the client size.

<sup>31</sup> The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk.

Our ability as an asset and wealth manager to effectively manage climate-related risks and capture opportunities has the potential to impact our reputation and assets under supervision over time, both through direct valuation impacts, and through our ability to attract and retain client assets. We therefore seek to consider climate alongside other factors when developing our overall strategy.

The following sections provide further detail on AWM’s climate strategy across business lines. This includes how select investment strategies and products have incorporated climate-related considerations in response to the potential impacts from the transition to a lower-carbon economy (e.g., Fixed Income within Public Markets Investing, certain Private Markets Investing strategies amongst others.).<sup>32</sup>

Given the nature of its diverse and global client base, Private Wealth Management takes a client-centric, tailored approach that aims to integrate each client’s climate objectives, if any, into their portfolio(s), and as such the level of integration is bespoke and commensurate with the client’s stated investment and climate objectives.<sup>33</sup> Specific products and strategies for each asset class are implemented to optimise for the client’s climate goals, based on each client’s expressed interests. As such, the broad climate strategy outlined below does not apply across all portfolios or strategies managed or offered by Private Wealth Management, but only to certain products and strategies managed by Public Markets Investing and Private Markets Investing.

Figure 4: Our Climate Strategy Designed to Meet Clients’ Needs



<sup>32</sup> However, this entity-level report does not provide a comprehensive description of the climate-related impact for each product and investment strategy in-scope for the AWM report. Details for individual products and investment strategies will be included in individual product-level reports that are made available to clients (on request).

<sup>33</sup> It is also important to note that the availability of climate-related investment solutions varies across the Private Wealth Management business due to strategy minimums and suitability relative to the client size.

## EMPOWER DECISIONS THROUGH ACTIONABLE CLIMATE INTELLIGENCE

The basis of our climate strategy is our climate-related insights, tools, and analytics from across Goldman Sachs. This provides us with a foundation of actionable information, which can be used in select investment products and strategies for understanding and mitigating climate-related risks, supporting portfolio companies and client assets in the transition, identifying climate opportunities, and creating real world impact.

## UNLOCK POTENTIAL VALUE THROUGH THE MANAGEMENT OF CLIMATE-RELATED RISKS, OPPORTUNITIES, AND IMPACT<sup>34</sup>

We seek to unlock potential value for our clients by embedding climate considerations in the investment lifecycles for select investment products and strategies, for example, by enhancing climate-related risk management, driving operational and strategic improvements in portfolio companies and client assets, and investing in thematic climate-related growth opportunities.

### Manage and mitigate climate-related risks

Our efforts to understand climate-related risks across the investment process help to unlock potential long-term returns for our clients.<sup>35</sup> Our clients seek to manage climate-related risks, and they look to our capabilities to actively manage and mitigate exposure, where appropriate. These capabilities include, for example, transition and physical risk screening tools, enhanced due diligence processes on climate-related risks, and strategic portfolio tilts to partly mitigate physical and transition risk exposure. Through these efforts, we try to help clients make climate-related decisions, unlock potential value, and mobilise capital to deliver on their objectives.

## Help portfolio companies and client assets navigate and benefit from the climate transition

We seek to support portfolio companies and client assets in navigating an accelerated climate transition. We look to support operational and strategic improvements within select portfolio companies, while engaging and stewarding these companies through changing economic and climate conditions. Our efforts focus on positive impacts, while also seeking to appropriately manage the long-term risk-return outlook for our clients.

### Invest in climate opportunities

We have identified investment opportunities that enable the climate transition across regions and markets through our traditional, alternative, and climate-focused products. Our strategy also seeks to support climate transition through additional levers such as biodiversity and inclusive growth strategies.

## MOBILISE THE FULL RANGE OF OUR RESOURCES TO MEET CLIENTS' NEEDS

Our scale and approach to climate investing allows us to provide tailored investment solutions across public and private markets to satisfy our clients' investment and climate objectives. We deliver a range of products and capabilities across our platform to support clients with insights, analytics, and portfolio tools to co-create strategies to meet their specific needs. We aim to serve as the partner of choice for clients in navigating the climate transition within their portfolios.<sup>36</sup>

The global climate transition will require transformative change across sectors, regions, technologies, and communities. As we build on our insights, tools, and capabilities in these areas, we continue to refine and adapt the solutions we offer to our clients. In turn, as our understanding of climate-related risks and opportunities relevant to our business evolves, we continue to re-evaluate our commercial strategy, as appropriate.

<sup>34</sup> As noted in the "Commentary on Asset & Wealth Management's Inaugural TCFD Report" section, we seek to embed climate considerations more comprehensively and systematically across some aspects of our business in-line with client preference.

<sup>35</sup> The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk.

<sup>36</sup> This material is provided for informational purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities. This material is not intended to be used as a general guide to investing, or as a source of any specific investment recommendations, and makes no implied or express recommendations concerning the manner in which any client's account should or would be handled, as appropriate investment strategies depend upon the client's investment objectives.

# EMPOWER

DECISIONS THROUGH  
ACTIONABLE CLIMATE  
INTELLIGENCE

## PUBLIC MARKETS INVESTING

Public Markets Investing has developed several tools to enhance the integration of climate-related factors into investment products and strategies. Fundamental Equity and Fixed Income leverage a proprietary research tool to embed climate- and sustainability-related considerations, amongst other factors, into their research of portfolio companies and issuers within certain investment products.<sup>37</sup> In addition, Public Markets Investing investment teams leverage insights from stewardship activities with portfolio companies (see the **“Help Portfolio Companies and Client Assets Navigate and Benefit from the Climate Transition”** section for further details).

Quantitative Investment Strategies (“QIS”) also leverages data-driven techniques within certain investment products and strategies as further described in the **“Manage and Mitigate Climate-Related Risks”** section. Further, Multi-Asset Solutions (“MAS”), through allocations in their managed portfolios to the Fundamental Equity, Fixed Income, and/or QIS strategies, are able to integrate these factors and processes into select multi-asset portfolios.

In addition to monitoring environmental practice through a risk lens, Public Markets Investing seeks to capture potential upside by encouraging portfolio holdings to disclose their sound business practices, so they can be incorporated into market valuations. This process involves close collaboration with the Public Markets Investing Global Stewardship Team (see the **“Help Portfolio Companies and Client Assets Navigate and Benefit from the Climate Transition”** section for more details).

<sup>37</sup> As part of the investment process, Public Markets Investing may integrate ESG factors alongside traditional factors. The identification of a risk related to an ESG factor will not necessarily exclude a particular investment that, in the view of Public Markets Investing, is otherwise suitable and attractively priced for investment, and Public Markets Investing may invest in an issuer without integrating ESG factors or considerations into the investment process. Moreover, ESG information, whether from an external and/or internal source, is, by nature and in many instances, based on a qualitative and subjective assessment. An element of subjectivity and discretion is therefore inherent to the interpretation and use of ESG data. The relevance and weightings of specific ESG factors to or within the investment process vary across asset classes, sectors, and strategies, and no one factor or consideration is determinative. Public Markets Investing in its sole discretion and without notice may periodically update or change the process for conducting its ESG assessments and implementation of its ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis. Accordingly, the type of assessments depicted here may not be performed for every portfolio holding. The process for conducting ESG assessments and implementation of ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis, may also vary among portfolio management teams.

**HIGHLIGHT**

**FLUENT: PUBLIC MARKETS INVESTING’S PROPRIETARY RESEARCH TOOL**

Research analysts in Fundamental Equity and Fixed Income leverage a proprietary tool, Fluent, to conduct climate- and sustainability-related assessments on portfolio companies and issuers. Fluent provides a centralised repository of externally and internally generated research, storing climate-related metrics in themes such as climate change and energy, biodiversity and habitat, air quality, and water scarcity, that may inform investment decision-making.

Research can be stored and retrieved in a variety of ways, including by ticker symbol, analyst name, investment theme, source, sector, or country, making it seamless for Public Markets Investing’s team members to retrieve and share all relevant information.

Fluent plays an important role for Fixed Income when they apply and track ESG ratings over time across corporate and sovereign issuers, as further described in the **“Manage and Mitigate Climate-Related Risks”** section.

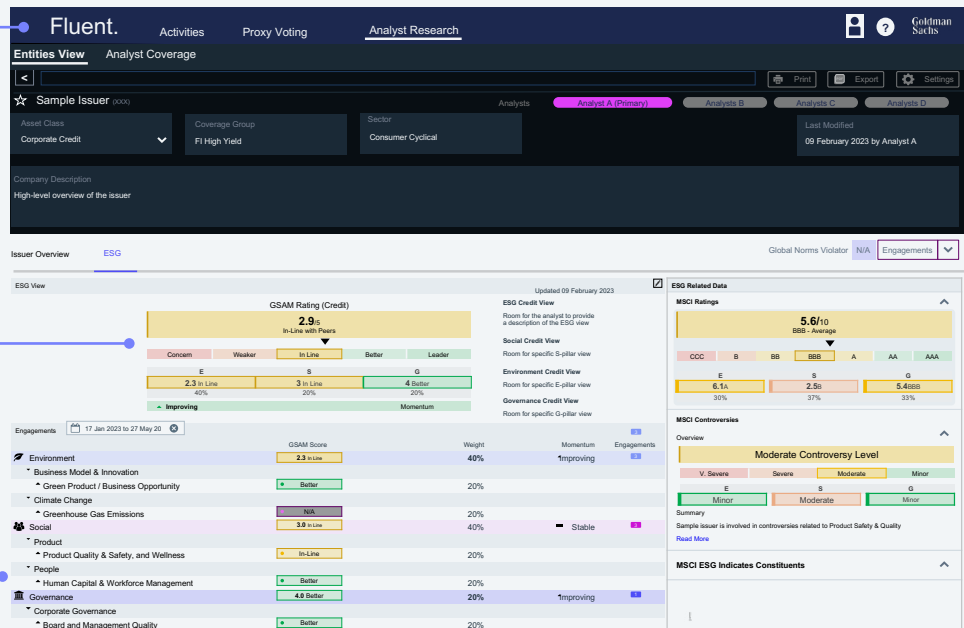
In addition to Fluent, Fixed Income have been developing a Paris Alignment tool for certain tailored client solutions. This tool combines quantitative and qualitative information on company climate disclosures, climate strategy, and target-setting, to provide a forward-looking categorisation of an issuer’s alignment with the aims of the 2015 Paris Agreement (see the **“Fixed Income: Bespoke Portfolio Approaches”** section for more details).

**Figure 5: ESG Integration Enhanced by Fluent<sup>38</sup>**

ESG ratings, data, and engagement are accessible on Fluent (a proprietary research tool).

Ratings reflect the Fixed Income team’s materiality matrix, informed by global standards and Fixed Income analysts’ expertise. Fixed Income uses a forward-looking momentum assessment to evaluate whether a company is on an improving, stable, or deteriorating path.

Each environmental, social, and governance issue that drives the “GSAM Rating” can be expanded to view the relevant KPIs and their assessment.



<sup>38</sup> Source: Public Markets Investing. As of February 2023. For illustrative purposes only. Public Markets Investing in its sole discretion and without notice may periodically update or change the process for conducting its ESG assessments and implementation of its ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis. Accordingly, the type of assessment depicted here may not be performed for every portfolio holding. No one factor or consideration is determinative in the fundamental research and asset selection process. Public Markets Investing may invest in a security prior to completion of the ESG scorecard. Instances in which ESG scorecards may not be completed for a specific security prior to investment include but are not limited to IPOs, in-kind transfers, corporate actions, and/or certain short-term holdings.

## HIGHLIGHT

## FUNDAMENTAL EQUITY ESG SCORECARD AND ESG ENHANCED SOLUTIONS

Fundamental Equity investment teams also use the Fluent platform as a centralised source of research on ESG and climate characteristics when conducting company-level assessments. For certain equity investments, the Fluent platform also provides an ESG Scorecard<sup>39</sup> which consolidates more than 65 ESG-related Key Performance Indicators (“KPIs”), including, amongst others: environmental reporting; disclosure and transparency; environmental litigation and/or controversies; climate change policies; sourcing of sustainable materials; usage of renewable energy sources; compensation linked to climate-related targets; waste management policies; and water usage.

The ESG Scorecard can provide a standardised framework for conducting a baseline assessment of a company’s ESG characteristics relative to peers. The Scorecard pulls in time series data, informed by the Sustainability Accounting Standards Board (“SASB”) materiality map, allowing analysts to focus only on climate factors that Public Markets Investing believes are meaningful to a firm’s growth, profitability, and risk management profile. Once an ESG Scorecard is completed, Public Markets Investing’s analysts capture the results in a qualitative rating, which can have implications for a stock’s inclusion in certain portfolios.<sup>40</sup>

Within Fundamental Equity, there are five “ESG Enhanced” solutions where all holdings are required to have an ESG Scorecard completed and incorporated into the company’s qualitative assessment. Other non-ESG dedicated products may also incorporate the ESG Scorecard into investment decisions, with select implementation across several regions. This analysis may flow through other elements of Fundamental Equity’s investment process, including portfolio construction discussions (i.e., when sizing decisions and risk management framework at the stock and portfolio level).

The Fundamental Equity team also has access to an investment dashboard tool, which provides a dynamic view of ESG metrics, including GHG emissions, within the portfolio. Investment teams can simulate potential trades and view the resulting impact on the carbon footprint of the portfolio. This tool is also integrated into daily risk reporting (see the **“Integration of Climate-Related Risks across the Investment Lifecycle”** section for additional details).

<sup>39</sup> The Public Markets Investing Fundamental Equity team employs a dynamic fundamental investment process that considers a wide range of factors, and no one factor, or consideration is determinative. For ESG Enhanced Strategies, research analysts aim to complete ESG scorecards for all portfolio holdings. Public Markets Investing may invest in a security prior to completion of the ESG scorecard. Instances in which ESG scorecards may not be completed for a specific security prior to investment include, but are not limited to, IPOs, in-kind transfers, corporate actions, and/or certain short-term holdings. Fundamental Equity considers environmental, social, and governance factors as part of the fundamental research and stock selection process. As stakeholders, the strategies have a vested interest in helping the companies in which they invest unlock value by improving corporate practices and being thoughtful stewards of capital. As part of its focus on long-term, active ownership, Fundamental Equity may, in certain circumstances, use proxy voting and engagement as some of the tools available to encourage positive corporate decision making and productive change, where possible. No one factor or consideration is determinative in the fundamental research and stock selection process. Public Markets Investing in its sole discretion and without notice may periodically update or change the process for conducting its ESG assessment and implementation of its ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis. Accordingly, the type of assessment depicted here may not be performed for every portfolio holding. No single factor or consideration is determinative in the fundamental research and asset selection process.

<sup>40</sup> Public Markets Investing may invest in a company prior to completion of a scorecard.



## PRIVATE MARKETS INVESTING

Private Markets Investing's approach to climate-related risk assessment, mitigation, and identification of opportunities starts with collecting data. Private Markets Investing periodically collects and aggregates data from a number of its portfolio companies and third-party sources, where possible, to help understand climate-related risks in its portfolio and find opportunities to drive value creation.

### CLIMATE DATA COLLECTION

Recognising the need for decision-useful data and analytics, Private Markets Investing has developed a bi-annual data collection process to collect primary ESG data, including climate-related metrics, from select portfolio companies across Private Equity, Growth Equity, Infrastructure, and SIG. Throughout 2022, the Sustainability & Impact team provided strategic guidance and training to relevant portfolio companies. These portfolio companies received customised analysis from the Sustainability & Impact team, with discussions upon request, on suggested strategic areas for improvement (such as onboarding a GHG accounting tool, assessing supply chain management, and evaluating physical climate-related risks), and an overview of a company's maturity relative to peers.

Real Estate also undertook a dedicated ESG data collection process in 2022. Real Estate provided asset managers with detailed analysis of the data and suggested areas for improvement, including energy audits, decarbonisation plans, and renewable energy sourcing.

Private Markets Investing also received climate data through its participation in the ESG Data Convergence Initiative ("EDCI"), which aligns General Partners and Limited Partners to standardise private markets ESG data collection, including climate-related data, for controlled assets. As part of this effort, Private Markets Investing received anonymised private markets benchmark data on GHG emissions and renewable energy. Given the relative scarcity of ESG data in private markets, this information is helpful for Private Markets Investing to understand how these companies are performing as compared to their industry peers.

### GHG MEASUREMENT AND DECARBONISATION LEVERS

For several of Private Markets Investing's equity portfolios,<sup>41</sup> the Sustainability & Impact team partnered with a third-party vendor to deliver GHG emissions accounting services to select portfolio companies. This tool allows portfolio companies to track GHG emissions, recommends potential decarbonisation levers, and provides advisory support on GHG emissions measurement and decarbonisation initiatives. With this, the company gains a detailed, activity-based GHG footprint that can serve as an important input to "portfolio companies" decarbonisation plans.

In Real Estate, third-party appointed managers and developers of real estate investments and borrowers are expected to track climate-related data via a proprietary survey platform developed by Goldman Sachs. This survey platform tracks a variety of metrics,<sup>42</sup> including GHG emissions intensity, embodied carbon, and renewable energy procurement for associated real estate investments. For stabilised equity investments, Real Estate collects more granular data on how investments are improving energy efficiency and reducing GHG emissions, and tracks operational GHG emissions through a third-party software solution.<sup>43</sup> The ESG business leads for Real Estate review climate and ESG data for quality and completeness. They use data to benchmark performance where relevant, e.g., comparing energy use intensity against Carbon Risk Real Estate Monitor ("CRREM"), and identify engagement opportunities for underperforming assets, or where data appears incomplete or inaccurate.

<sup>41</sup> This includes the Private Equity, Infrastructure, and SIG business units. Private Markets Investing collected reported GHG emissions data for all companies where equity ownership was greater than 25%. For investments with less than 25% ownership, Private Markets Investing collects data on a "best efforts" basis.

<sup>42</sup> Metrics include: the energy intensity of the asset; the upfront embodied carbon from construction where applicable; the provision of technology to generate renewable energy onsite (e.g., solar panels); the percentage of landlord and tenant electricity use that is supplied with renewable electricity (either onsite or offsite); whether the asset has been designed as 'all-electric' or otherwise not dependent on fossil fuels (e.g., no gas-based heating).

<sup>43</sup> This Real Estate ESG platform aggregates energy, water, and waste data on an asset (or even metre) level, including the use of electricity, natural gas, diesel, fuels, and district heating and cooling, from primary utility data sources. Both landlord energy consumption (generally Scope 1 and 2) and tenant energy consumption (generally Scope 3) are tracked through this platform.

## PRIVATE WEALTH MANAGEMENT

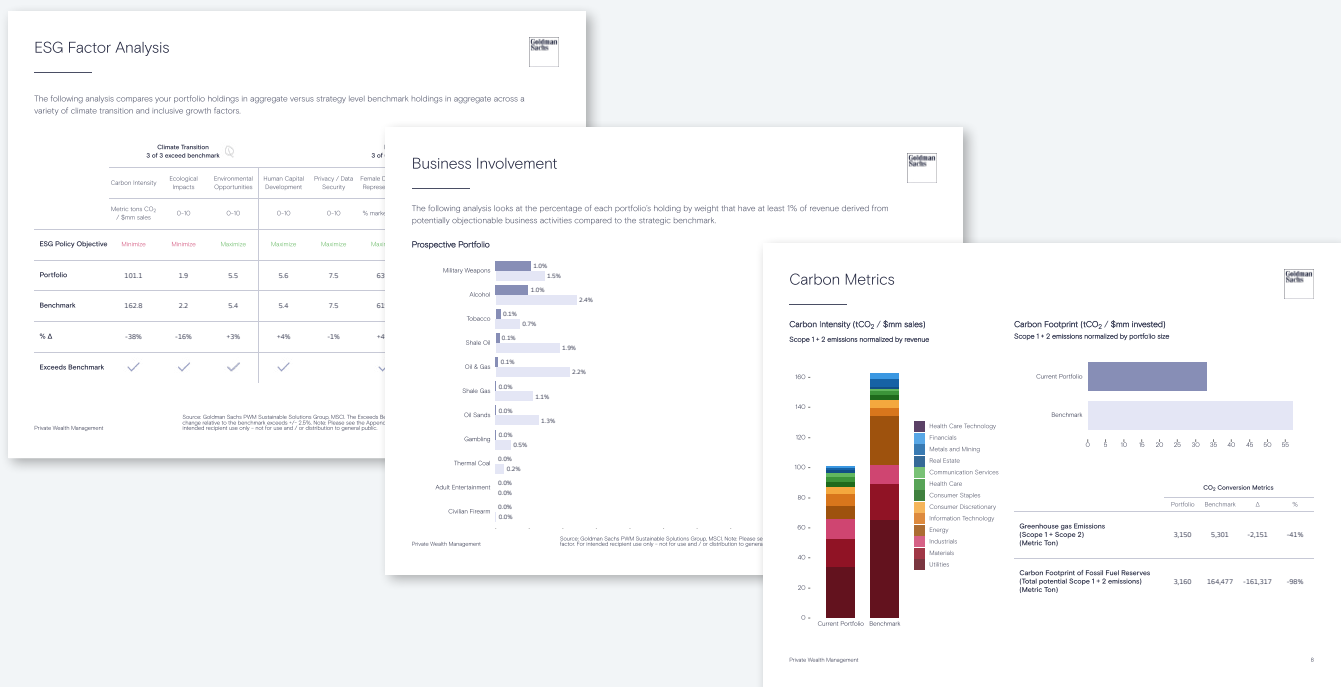
### HIGHLIGHT PORTFOLIO DIAGNOSTIC TOOL

Private Wealth Management clients have access to a public markets Portfolio Diagnostic Tool to help them articulate, refine, and work towards their long-term sustainable investing goals. Clients can leverage curated metrics relevant to climate transition and inclusive growth factors to assist with risk management, transparency, accountability, and engagement around climate, sustainability, and impact objectives. The tool provides a deeper dive into a portfolio's financed GHG emissions, helps investors explore exposure to specific business activities, and tracks a portfolio's alignment with the SDGs.

For financed GHG emissions, the tool provides metrics for the client's public equity and fixed income investment portfolios, such as carbon footprint (tonnes of CO<sub>2</sub>e<sup>44</sup>/\$million invested) and carbon intensity (tonnes of CO<sub>2</sub>e/\$million sales).

The tool provides both a portfolio- and strategy-level view of GHG emissions metrics, allowing clients to identify which strategies are contributing to or detracting from their portfolio's representative GHG emissions.

Figure 6: Example Outputs from the Portfolio Diagnostic Tool<sup>45</sup>



### Planned Enhancements for 2023

SSG within Private Wealth Management regularly evaluates potential enhancements to the Portfolio Diagnostic Tool. Planned enhancements for 2023 include expanding insights on climate transition risks and opportunities by including a wider set of GHG emissions-related metrics, such as quantitative climate scenario analysis, which is intended to align with TCFD recommendations.

<sup>44</sup> CO<sub>2</sub>e refers to units of carbon dioxide-equivalent GHG emissions.

<sup>45</sup> Source: Private Wealth Management. As of June 2023. For illustrative purposes only.

# UNLOCK

## POTENTIAL VALUE THROUGH THE MANAGEMENT OF CLIMATE-RELATED RISKS, OPPORTUNITIES, AND IMPACT

MANAGE AND MITIGATE  
CLIMATE-RELATED RISKS

HELP PORTFOLIO  
COMPANIES AND CLIENT  
ASSETS NAVIGATE AND  
BENEFIT FROM THE  
CLIMATE TRANSITION

INVEST IN CLIMATE  
OPPORTUNITIES

# MANAGE AND MITIGATE CLIMATE-RELATED RISKS

## PUBLIC MARKETS INVESTING

Within Public Markets Investing, investment teams adopt different approaches to managing and mitigating climate-related risks, depending on the asset class, strategy, and client preferences, among other factors.

### HIGHLIGHT

#### TRANSITION AND PHYSICAL RISK INTEGRATION: FIXED INCOME

Within Public Markets Investing, Fixed Income may integrate transition and physical risk into the overall credit assessment process for select investments in corporate credit and sovereign bonds.<sup>46</sup>

Fixed Income leverages the proprietary Fluent tool when conducting research on specific corporate or sovereign debt issuers. The Fluent tool provides a variety of climate- and sustainability-related KPIs which are integrated into the assessment framework (see the **"Empower Decisions through Actionable Climate Intelligence"** section for more details).

Within Sovereign Bonds, Fixed Income has developed an assessment framework for benchmarking sovereign ESG performance (inclusive of climate) that allows investment teams to quantify and compare environmental factors across emerging and developed markets. Recently, Fixed Income enhanced the framework's analysis of climate-related risks by developing a formalised ESG rating process that provides environmental and social inputs to Public Markets Investing's sovereign risk scenario assessments. The framework leverages a dataset that connects climate physical risk exposure to a country's distribution of population, agricultural production, and overall GDP growth and development. Fixed Income further evaluates the transition risk of a country by evaluating the gap between current country GHG emissions and GHG emissions reduction targets (as described in Nationally Determined Contribution ("NDC"), plans that outline medium-term climate policies).

Additionally, the Sovereign Bonds assessment framework assesses each country in relation to four environmental themes: air pollution, water quality and scarcity, climate and energy, and biodiversity and habitat. Together, these indicators provide a deeper understanding of the environmental risks faced by individual sovereigns.

Within Corporate Credit, a proprietary internal ESG rating assessment covers transition risks for relevant sectors and issuers, and is used as an input into overall credit ratings for select investments. Corporate Credit analysts evaluate specific issuers using bottom-up, sector-based analysis, considering financially material ESG issues including, where material, issuers' GHG emissions intensity and green product and business opportunities. For example, the fundamental analysis of issuers in the energy sector closely examines companies' exposure to different energy sources, environmental and regulatory risks to their business activities, and their commitment and steps taken to diversify into lower-carbon sources of energy.

<sup>46</sup> As part of the investment process, Fixed Income may integrate ESG factors alongside traditional factors. The identification of a risk related to an ESG factor will not necessarily exclude a particular investment that, in the view of the Fixed Income investment team, is otherwise suitable and attractively priced for investment, and Fixed Income may invest in an issuer without integrating ESG factors or considerations into the investment process. Moreover, ESG information, whether from an external and/or internal source, is, by nature and in many instances, based on a qualitative and subjective assessment. An element of subjectivity and discretion is therefore inherent to the interpretation and use of ESG data. The relevance and weightings of specific ESG factors to or within the investment process vary across asset classes, sectors, and strategies and no single factor or consideration is determinative. Sovereign Bonds are not included in the Public Markets Investing metrics calculations.

## HIGHLIGHT

## QUANTITATIVE INVESTMENT STRATEGIES CLIMATE TRANSITION FRAMEWORK

The Equity Alpha business unit within QIS manages equity portfolios using data-driven investment models that aim to evaluate public companies globally through fundamentals-based and economically-motivated investment themes. Within QIS, climate- and sustainability-related considerations are expressed through certain mechanisms, including:

## CLIMATE TRANSITION FRAMEWORK

In December 2020, QIS incorporated its proprietary Climate Transition Framework across actively managed Equity Alpha portfolios.<sup>47</sup> The QIS team developed two proprietary metrics to help measure and understand climate transition risk:

**Blended Emissions Intensity**, a measure of the economic impact of current GHG emissions, incorporating Scope 1, Scope 2, upstream Scope 3, and downstream Scope 3 GHG emissions (use of sold products for companies in the energy sector).<sup>48</sup> This metric tends to be relevant for every company in the global equity investment universe.

**Embedded Emissions Intensity**, a measure of the economic impact of future GHG emissions that would result from the extraction and consumption of fossil fuel reserves. This metric is primarily relevant for energy companies which face increased risk of "stranded assets" in the event of a future low-carbon transition.

QIS seeks to maintain blended and embedded GHG emissions intensities across portfolios to be no higher than the portfolio's benchmark index, while managing relative risk (tracking error) to a reference portfolio or benchmark.<sup>49</sup>

## ALPHA MODEL

The QIS team integrates short- to medium-term "alpha" drivers into their equity investment model, including a factor related to a company's "Environmental Impact". This factor may consider a variety of the company's core activities, including GHG emissions, waste, natural resource extraction, and water usage.

<sup>47</sup> Further information on the performance of this framework at the portfolio level may be found in the portfolio's annual reports.

<sup>48</sup> There are various limitations associated with reporting reliable Scope 3 GHG emissions data given challenges obtaining accurate and reliable data.

<sup>49</sup> The reference portfolio/benchmark is not an ESG benchmark, and the portfolios are not managed in the view of achieving the long-term global warming objectives of the Paris Agreement.

## PRIVATE MARKETS INVESTING

Private Markets Investing seeks to invest in companies with resilient business models, including those better positioned to manage and mitigate climate-related risks, which Private Markets Investing believes creates value for its clients. Private Markets Investing conducts assessments of climate-related risks, where financially material, for new investments, and actively monitors and manages these risks over the investment period.

In 2022, an external advisor was engaged to provide educational resources and training to representatives from each of the Private Markets Investing investment teams on climate-related risks and decarbonisation initiatives for portfolio companies and client assets. These sessions covered the impacts of physical and transition risks on portfolios, climate scenario analysis, transition planning, and decarbonisation goals.

During 2022, sustainability task forces across each business unit worked with the external advisor to assess physical and transition risk exposures at a sector and individual investment level. The sector-level assessment encompassed select portfolio companies and client assets (with the exception of the Real Estate business unit and other types of investments where an appropriate sector mapping was not available<sup>50</sup>), and was considered to be representative of Private Markets Investing’s portfolio management activities. Where there was

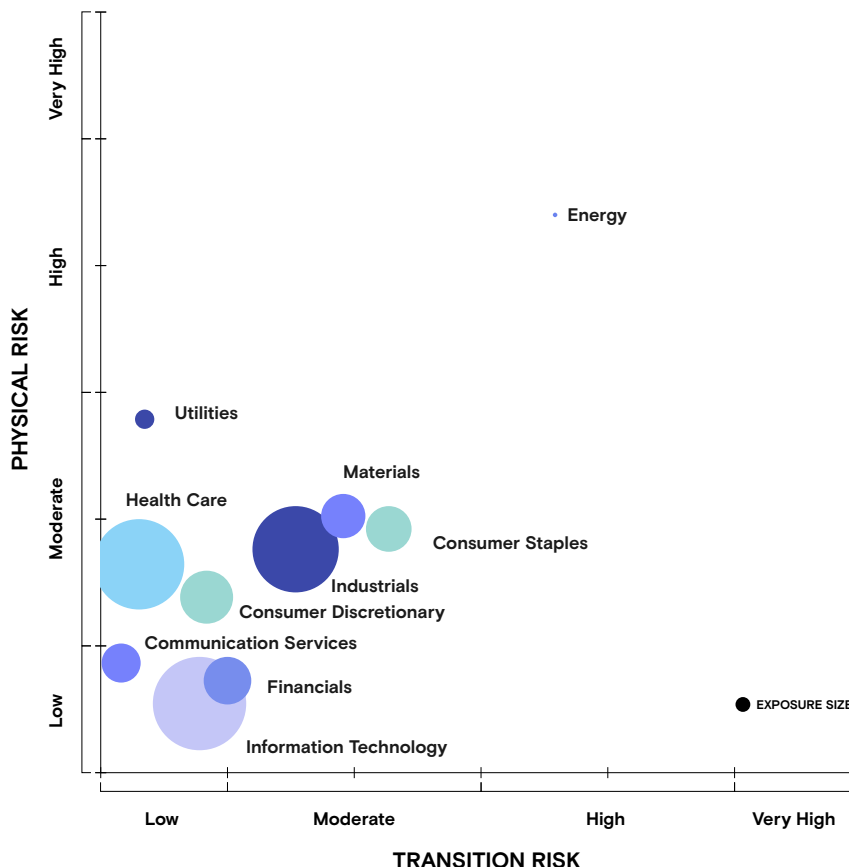
deemed to be higher risk for a sector based on a third-party analysis of transition and physical risk materiality, Private Markets Investing worked with the external advisor to further examine select individual investments within these sectors. For these sectors, investment teams conducted a review of select individual investments by answering sector-specific questions about the relevance of transition and physical risks to a company’s operating model.

The outputs of this exercise were then aggregated into sector-level heatmaps that allowed the investment teams to identify concentrated climate-related risk exposures. This process provides a foundation for the future development of a risk identification and scenario analysis framework, enables investment teams to identify and assess the financial materiality of climate-related risks for their business and at the individual investment level, and helps to prioritise climate-risk engagements and risk mitigation efforts for individual portfolio companies and client assets.

Based on the analysis, the impact of physical and transition risk on most of the portfolio is assessed to be low.<sup>51</sup>

For details on the integration of climate-related risks into the investment process for Private Markets Investing, see the **“Integration of Climate-Related Risks across the Investment Lifecycle”** section.

Figure 7: Physical and Transition Risk Exposures Across Investment Sectors



<sup>50</sup> For example, foreign exchange hedges, equity indexes, etc.

<sup>51</sup> As of 31 December 2022.

## PRIVATE WEALTH MANAGEMENT

For clients who express interest in climate- and sustainability-related investment products and strategies, Private Wealth Management offers solutions which may incorporate climate-related screens and provide lower exposure to carbon intensive companies across a portfolio.

### HIGHLIGHT

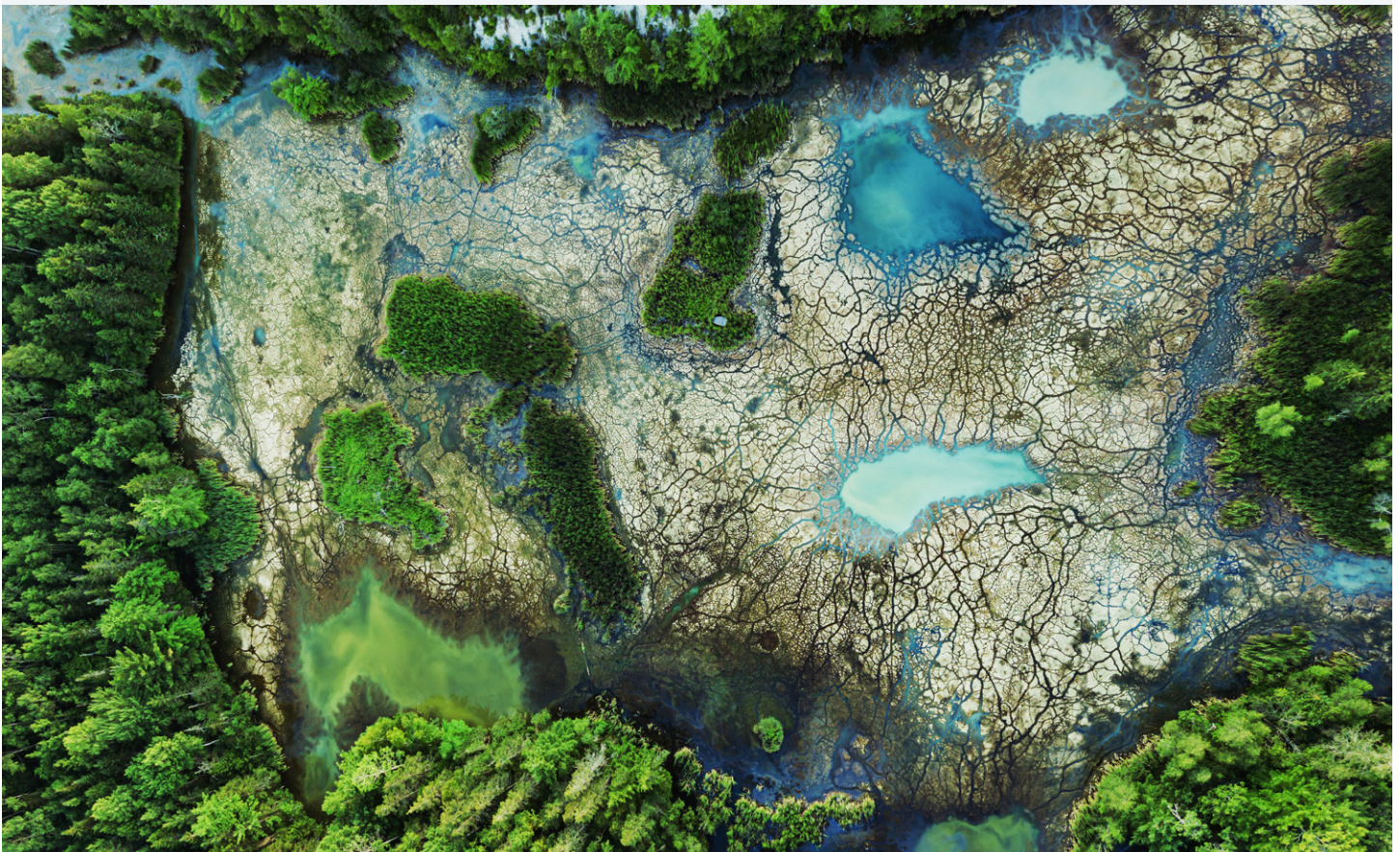
#### PRIVATE WEALTH MANAGEMENT MODEL PORTFOLIO

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**For clients who express an interest, Private Wealth Management has developed a proprietary ESG-focused model portfolio implementation.**

The portfolio utilises the strategic asset allocation from Private Wealth Management's Investment Strategy Group<sup>52</sup> which is implemented leveraging sustainable investing strategies.

When analysed using the Private Wealth Management Portfolio Diagnostic Tool, the portfolio has generally shown to have a lower carbon intensity and lower exposure to carbon reserves than the comparative portfolio benchmark.



<sup>52</sup> The Investment Strategy Group, part of the Asset & Wealth Management, focuses on asset allocation strategy formation and market analysis for Private Wealth Management.

# HELP PORTFOLIO COMPANIES AND CLIENT ASSETS NAVIGATE AND BENEFIT FROM THE CLIMATE TRANSITION

## PUBLIC MARKETS INVESTING

We have long believed the transition to a more sustainable economy would be a decades-long effort. To advance that transition, more risk capital must be invested in developing new, clean technologies, especially for the highest-emitting sectors; and in solving such a complex problem lies enormous opportunity for the companies we are investing in on behalf of our clients. Within Public Markets Investing, this is achieved through a stewardship approach to climate, which focuses on engagement, proxy voting, and participation in industry initiatives, as outlined below.<sup>53</sup>

## PUBLIC MARKETS INVESTING STEWARDSHIP APPROACH TO THE CLIMATE TRANSITION

The Public Markets Investing Global Stewardship Team's approach to the climate transition includes:

### ENGAGEMENT

**Engage with issuers** on GHG disclosures, reduction of GHG emissions, and transition strategy

**Engage with issuers** on their impacts on biodiversity

### PROXY VOTING

**Vote on a case-by-case basis** on environment-related shareholder proposals

**Vote against directors** at portfolio companies identified through Public Markets Investing's engagement framework that disclose no material GHG emissions data

### INDUSTRY LEADERSHIP

Promote disclosure through the **SASB standards**

Encourage reporting in line with the **TCFD**

<sup>53</sup> The engagement/proxy voting highlights presented here outline examples of Public Markets Investing initiatives; there is no assurance that Goldman Sachs' engagement/proxy voting directly caused the outcome described herein.



## ENGAGEMENT

The Public Markets Investing Global Stewardship Team has partnered with Public Markets Investing's debt and equity investment teams to establish a framework for engagement on key risks and opportunities related to climate matters.

The Climate Engagement Framework has the following three primary objectives for portfolio companies:

---

1

### **DISCLOSE MATERIAL DATA**

Promote disclosure of material GHG emissions data considered material to a company's business

2

### **SET TARGETS**

Encourage portfolio companies to set and disclose a target to reduce GHG emissions, where relevant and material

3

### **EXECUTE STRATEGY**

Engage with portfolio companies in high-impact industries on the implementation of a robust and quantifiable climate transition strategy

HIGHLIGHT  
**CLIMATE ENGAGEMENT<sup>54</sup>**

---

**THEME:**

**CLIMATE – SET TARGETS**

**COUNTRY:**

**CANADA**

**SECTOR:**

**MATERIALS**

In February 2022, the Public Markets Investing Global Stewardship Team engaged with the Investor Relations team at the portfolio company to discuss their climate transition strategy, focusing on the portfolio company's lack of GHG emissions reduction targets. Public Markets Investing discussed the portfolio company's projects underway to reduce GHG emissions, setting a quantitative target, as well as disclosing climate-related risks and opportunities in line with the TCFD recommendations. Later in 2022, the portfolio company announced targets to reduce absolute Scope 1 and 2 GHG emissions by 35% by 2030 across their operations versus a 2019 baseline. The portfolio company also aligned its climate-related disclosures to the TCFD recommendations.



**35%**

absolute emissions  
reduction by 2030  
across their operations  
versus a 2019 baseline

<sup>54</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

## Engaging on Biodiversity

Biodiversity loss can represent a key investment risk related to climate change because of its role in ensuring the resilience of natural capital assets, which society and business depend on, and securing them for the future.

However, land use change, climate change, exploitation, and pollution are driving biodiversity and ecosystem loss, which creates risks and opportunities for society, business, and investors.

Recognising this risk, Public Markets Investing has engaged with a targeted group of fast-moving consumer goods (“FMCG”) portfolio companies, a sector that includes companies having a significant impact on total global plastics and packaging waste and pollution.

Through engagement, the goal is to understand the company’s approach to managing risks associated with biodiversity, and to promote accountability and best practices. In 2022, the Public Markets Investing Global Stewardship Team conducted 28 thematic engagements with portfolio companies on biodiversity topics,<sup>55</sup> focusing on two themes: Plastics and Land Use.

## PLASTICS

The Public Markets Investing Global Stewardship Team has engaged with a number of the largest FMCG companies on how they are approaching key risks and opportunities related to plastics, packaging, and waste. The goal of these engagements is to encourage portfolio companies to disclose their plastics usage and to increase disclosure of plastics waste and pollution resulting from their operations. The Public Markets Investing Global Stewardship Team also encourages portfolio companies to set and disclose high quality targets for plastics waste reduction.

## LAND USE

Land degradation, or the decline of economic and biological productivity of land due to human treatment, costs the world \$6.3 trillion annually.<sup>56</sup> In response, the Public Markets Investing Global Stewardship Team has been engaging with portfolio companies facing controversies relating to the impacts of land use in their operations. This engagement addresses key issues such as deforestation, ecological impact of manufacturing and end products, and sustainable agriculture.

<sup>55</sup> Many of the Public Markets Investing Global Stewardship Team’s engagements cover more than one topic or theme.

<sup>56</sup> University of Cambridge Institute for Sustainability Leadership, 2020.

## HIGHLIGHT BIODIVERSITY ENGAGEMENT<sup>57</sup>

### THEME:

**BIODIVERSITY  
– LAND USE**

### COUNTRY:

**SINGAPORE**

### SECTOR:

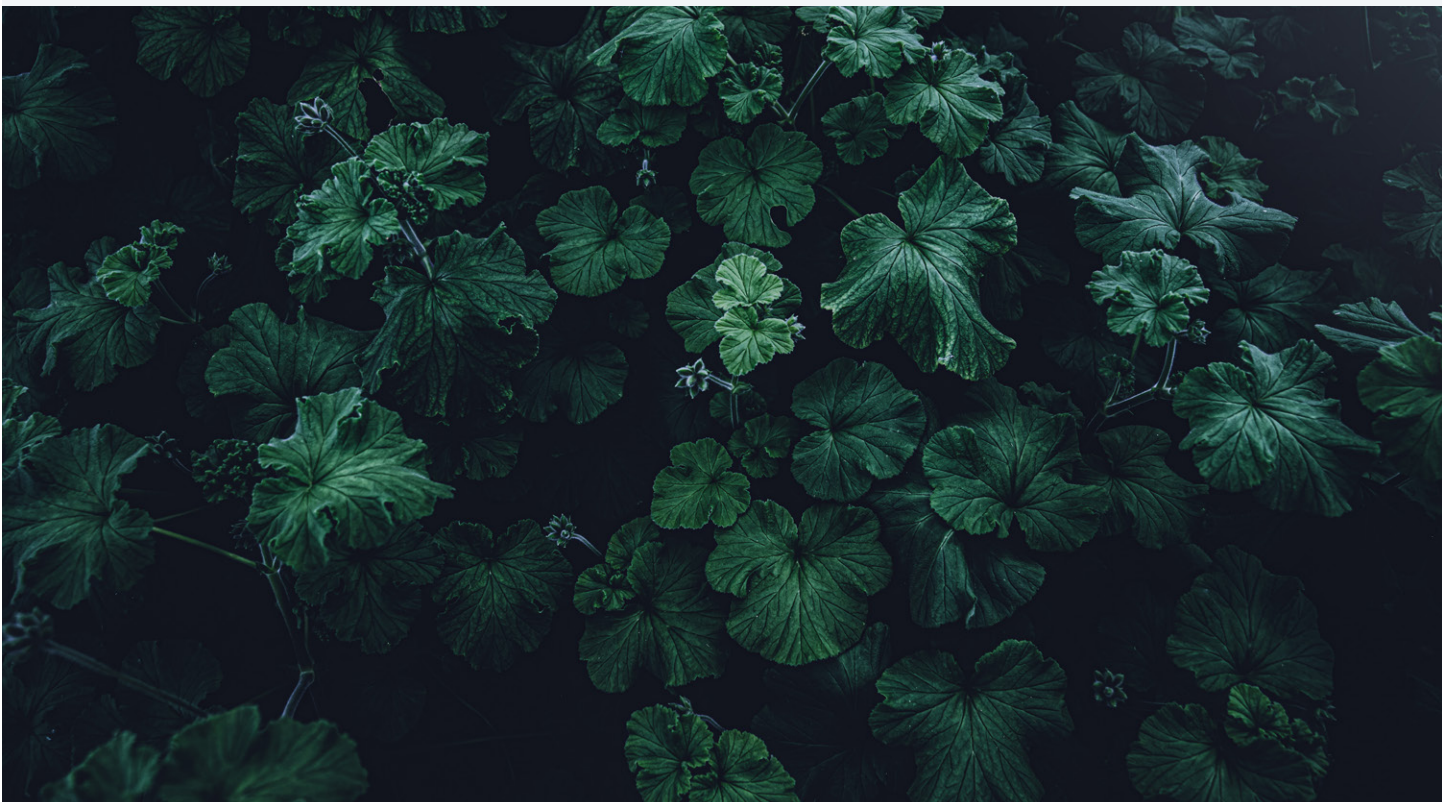
**CONSUMER STAPLES**

In February 2022, the Public Markets Investing Global Stewardship Team engaged with the portfolio company's Chief Sustainability Officer and ESG team to discuss its biodiversity management and remediation plan after a deforestation incident at a group company. The portfolio company had received criticism concerning palm oil plantation operations, and in 2021 it acknowledged that a subsidiary company had not done enough to compensate local residents for poor business practices that included razing part of one of the planet's richest biodiversity regions.

The portfolio company explained its social and environmental policy to conserve biodiversity and cultural value, as well as to protect High Conservation Value areas. It conducts biodiversity assessments internally and also utilises external resources such as the Radar Alerts for Detecting Deforestation ("RADD"). The portfolio company explained its remediation response to the deforestation grievance and the implementation of a "No Deforestation" framework across its supply chain. The portfolio company has also begun providing training to increase education and communication with employees on its code of conduct. It has also taken steps to improve senior oversight of operations.

Public Markets Investing will continue to monitor the status of the remediation and restoration plan to the deforestation incident.

Further information, including additional case studies covering both Land Use and Plastics engagements can be found in the [Goldman Sachs Asset Management Stewardship Report 2022](#).



<sup>57</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

## PROXY VOTING

Exercising clients' shareholder rights via proxy voting is an important portfolio management service that Public Markets Investing provides to advisory clients.

Public Markets Investing has integrated disclosure of material GHG emissions data into its proxy voting policy. Beginning March 2022, Public Markets Investing updated its policy to vote against board directors of relevant committees at portfolio companies that had not made progress on disclosing material GHG emissions data relevant to their business.

During 2022, the Public Markets Investing Team voted against 22 directors at 16 portfolio companies that were not disclosing GHG emissions data. Public Markets Investing was encouraged by the progress made by several of these companies that published GHG emissions data ahead of their annual meetings, which allowed the Public Markets Investing Global Stewardship Team to support the directors.

### "Say on Climate" Resolutions

Shareholder proposals calling for a "say on climate" began to appear in late 2020. The proposals encourage companies to develop and implement climate transition plans aligned with the Paris Agreement, and to allow shareholders to vote on these plans at annual shareholder meetings. While relatively few such proposals came up for a vote in 2022 compared with the previous year, many companies, particularly in Europe and Australia, voluntarily adopted some form of management-proposed "say on climate" vote. In 2022, Public Markets Investing updated the Proxy Voting Policy to vote case-by-case on management-proposed climate transition plans. In 2022, Public Markets Investing voted on management-sponsored climate transition plans at 47 portfolio companies, supporting 94% of all management-sponsored climate transition plans.

Voted on management-sponsored climate transition plans at

47

portfolio companies, supporting

94%

of all management-sponsored climate transition plans

## INDUSTRY LEADERSHIP

The Global Stewardship Team represents Public Markets Investing at various conferences and industry forums, and supports strategic industry initiatives. Public Markets Investing also seeks to build industry influence and promote best practices in stewardship through memberships and affiliations.<sup>58</sup>

### Stewardship: Engaging on GHG Emissions Disclosure

271

Number of portfolio companies Public Markets Investing has engaged or attempted to engage due to lack of material GHG emissions disclosures since 2020

39%

Percentage of the 271 portfolio companies which are now fully disclosing material GHG emissions data<sup>59</sup>

16

Number of portfolio companies where Public Markets Investing voted against directors due to lack of material GHG emissions disclosure

<sup>58</sup> For more detail on memberships and collaborative engagement, see Appendix C.

<sup>59</sup> Source: MSCI and Public Markets Investing research, as of year-end 2022, compared to October 2020.

## PRIVATE MARKETS INVESTING

As we transition to a low carbon economy, Private Markets Investing believes decarbonisation and risk mitigation efforts can be accretive to the value of portfolio companies. Decarbonisation planning enables Private Markets Investing to help prepare portfolio companies to meet the expectations of key stakeholders who may have their own climate goals.<sup>60</sup>

Private Markets Investing aims to integrate an assessment of climate- and sustainability-related risks into new investment decisions. This provides a foundation for evaluating climate-related risks and supports discussions on how to mitigate these risks and create value. Investment teams complete an ESG due diligence questionnaire

which is generally integrated into the Investment Committee memo.<sup>61</sup> Climate-related questions may include the company's GHG emissions and emissions intensity, renewable energy usage, and carbon reduction initiatives. Furthermore, non-financial risks are summarised in the Investment Committee memo, which will include climate- and sustainability-related issues, where relevant, to highlight areas that may need to be addressed either before or after closing the investment.

### HIGHLIGHT HORIZON NET ZERO ASSESSMENT<sup>62</sup>

**From 2022, Private Markets Investing has begun conducting assessments to understand each asset's ability to decarbonise or demonstrate alignment with a net zero pathway.**

The Sustainable Investing Group assess an asset's GHG emissions (or engages a consultant to conduct a GHG emissions estimate) and overall climate governance. From there, they work with internal team members<sup>63</sup> to consider the feasibility and rigour of a decarbonisation pathway for the asset.

For example, in 2022, Private Markets Investing engaged a third-party to conduct a detailed assessment of the ESG capabilities for a potential investment during due diligence. This included an examination of the company's practices around waste, water, air pollutants, materials, occupational health and safety, as well as their governance of ESG issues. A deeper analysis was also conducted on their GHG emissions baseline, projected future GHG emissions, and their potential decarbonisation levers, helping to inform the investment decision.

Upon investing, investment teams collaborated with internal and external experts to develop a post-close plan that addresses recommended uplifts.



<sup>60</sup> In 2022, Private Markets Investing developed internal approaches and processes for facilitating decarbonisation planning in portfolio companies. In 2023, decarbonisation planning with portfolio companies began.

<sup>61</sup> This assessment framework was finalised in Q4 2022, and in 2023 is now being implemented across the strategy, with support of the newly appointed ESG business unit lead. ESG due diligence questionnaires vary depending on the business unit in question, and in some cases were finalised in 2023.

<sup>62</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

<sup>63</sup> From 2023, this will include the newly appointed Head of Climate Strategy and ESG business leads.

Private Markets Investing recognises the importance of partnering directly with select portfolio companies' management teams to share best practices and tools to help manage their climate-related risks and capture climate-related opportunities.

For Private Markets Investing's equity strategies, investment teams may develop post-closing uplift plans in partnership with portfolio

company management, and advisers and/or other co-investors, as appropriate. These plans may include increased engagement with portfolio company management to develop targeted mitigation actions for potential climate-related risks, evaluate how to best capitalise on identified opportunities, identify potential decarbonisation initiatives, and assess capital expenditures needed to decarbonise.

**HIGHLIGHT**

**ENERGY MANAGEMENT CONSULTANCY ENGAGEMENT<sup>64</sup>**

In 2022, the Goldman Sachs Value Accelerator, a senior group of 80 experts who provide subject matter expertise and actionable insights for select investment teams and portfolio companies, partnered with an energy management consultancy to conduct an energy baseline diagnostic at select portfolio companies, and to design and scope out energy efficiency roadmaps for those companies. As a pilot across four portfolio companies, Private Markets Investing identified energy efficiency opportunities from LED lighting retrofits and smart thermostats to fuel switching, all designed to minimise ongoing energy spend and environmental impacts. Private Markets Investing is now working to engage these companies to help them develop business cases required to implement these initiatives.



**PRIVATE WEALTH MANAGEMENT**

Private Wealth Management clients benefit from the engagement and climate-related risk mitigation activities of both Public and Private Markets Investing teams across internally-managed assets.

For assets managed by external managers, Private Wealth Management benefits from the climate- and sustainability-related due diligence conducted by Imprint within XIG (see the **"Imprint within the External Investing Group ("XIG")"** section for more details), including with regard to the assessment of the external managers' approach to engagement.

<sup>64</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.



# INVEST IN CLIMATE OPPORTUNITIES

## PUBLIC MARKETS INVESTING

### HIGHLIGHT

### GLOBAL ENVIRONMENTAL IMPACT EQUITY STRATEGY<sup>65</sup>

The Global Environmental Impact Equity Strategy seeks to create positive environmental impact by investing in portfolio companies with environmentally sustainable solutions. These portfolio companies are aligned to five key themes associated with solving environmental problems:

1  
CLEAN  
ENERGY

2  
RESOURCE  
EFFICIENCY

3  
SUSTAINABLE  
CONSUMPTION

4  
CIRCULAR  
ECONOMY

5  
WATER  
SUSTAINABILITY

The strategy tracks against specific, quantitative KPIs for each company across the key environmental investment themes.

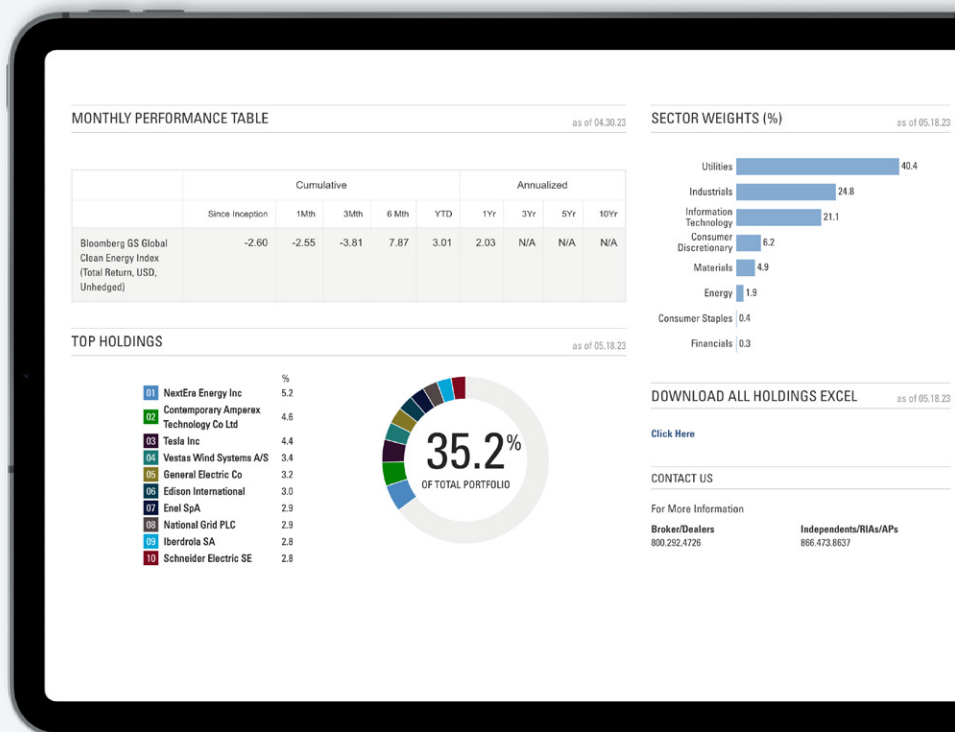
<sup>65</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

HIGHLIGHT

**BLOOMBERG GOLDMAN SACHS GLOBAL CLEAN ENERGY INDEX<sup>66</sup>**

In February 2021, together with Bloomberg, Public Markets Investing launched the Bloomberg Goldman Sachs Global Clean Energy Index, building on the strength of the partnership to direct capital and utilise data in the climate transition.

Public Markets Investing developed the index using a proprietary approach informed by insights from Bloomberg New Energy Finance (“BNEF”) analysts, who identify companies that are active and impactful in their respective sectors, as well as assess their exposure to clean energy. This data-driven approach selects securities from the broader Bloomberg World Index, based on BNEF estimates of a company’s value attributable to its activities across clean energy themes of wind energy, energy storage, clean power, networks, digitalisation, bioenergy, solar energy, and hydrogen energy.



<sup>66</sup> For illustrative purposes only. Performance results vary depending on the client’s investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

## PRIVATE MARKETS INVESTING

### Climate Solutions Investments<sup>67</sup>

In Private Markets Investing, investments are made in climate and environmental impact solutions through the Horizon platform. This platform seeks to identify investments that have the potential to disrupt and positively transform industries through decarbonisation, risk mitigation, and adaptation.

Within Private Markets Investing, investment teams source opportunities that may be well-positioned to outperform in a market undergoing climate transition across emerging trends such as

growing clean energy demand, electrification, and decarbonised industrial processes. Private Markets Investing also believes there are opportunities to invest in the transition, including energy transition infrastructure and strategies aimed at transforming higher carbon intensity companies into assets better positioned for the climate transition.

#### HIGHLIGHT

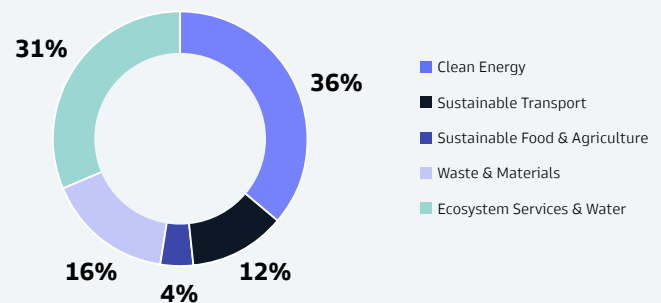
### HORIZON ENVIRONMENT & CLIMATE SOLUTIONS STRATEGY<sup>68</sup>

The Horizon Environment & Climate Solutions strategy was created to invest in and scale proven companies and technologies that tackle climate change by reducing GHG emissions, and to support companies that offer transformative solutions to make the environment more resilient. Consistent with firmwide themes, this strategy identified and invests in five themes at the intersection of impact and commercial opportunity:

This strategy seeks to invest in solutions that can be integrated into supply chains and business operations, so that positive impacts can accrue at meaningful levels in the short-term. These investments span markets in North America and Europe and include; leading manufacturers in lithium-ion batteries, sustainable packaging materials, high-quality recycled cotton fibres, businesses aiming to increase efficient water usage in agriculture, and businesses increasing energy efficiency in commercial and industrial buildings.



**Figure 8: Horizon Environment & Climate Solutions Strategy – Breakdown of Capital Committed by Theme**

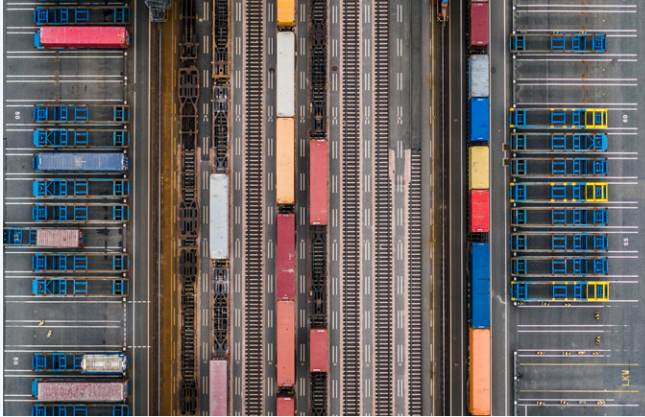


<sup>67</sup> Information in this section refers to the Horizon Environment & Climate Solutions strategy.

<sup>68</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

## HIGHLIGHT

### RANGE OF CLIMATE SOLUTIONS INVESTMENTS<sup>69</sup>



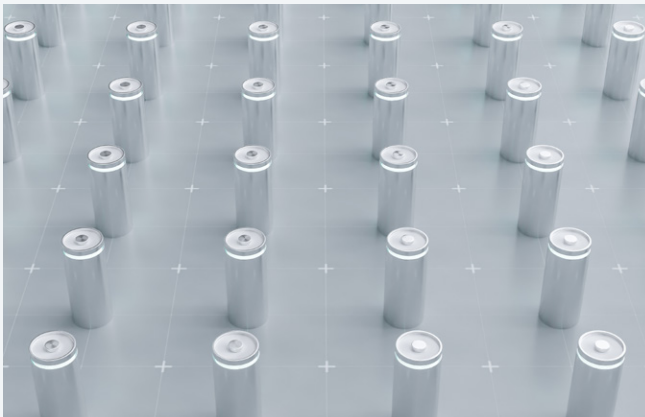
#### European Logistics Strategy

Real Estate launched an equity strategy focused on developing energy-efficient LEED Platinum or BREEAM Excellent certified logistics terminals.<sup>70</sup> The strategy seeks to capitalise on tenants' increasing focus on reducing operational GHG emissions, in a market undersupplied to meet the demand for low-carbon buildings.



#### Modular Buildings

Infrastructure has invested in a leading provider of modular buildings in Northern Europe, which offers medium-term rentals (and sales) of buildings primarily to the social infrastructure sector, and for long-term infrastructure projects and private sector uses (predominantly offices).<sup>71</sup> The circularity of the company's product means that there is not only a reduction in materials and waste associated with the production and use of facilities, but the embodied carbon and life cycle GHG emissions (compared to a typical real estate project) are significantly lower. The company further works to reduce these GHG emissions by prioritising the selection of building materials that report on the environmental impacts of their production and design.



#### Battery Manufacturing

Private Equity and SIG have invested in a leading European supplier of sustainable battery cells and systems, targeting the automotive and energy storage sectors.<sup>72</sup> The company aims to develop a battery that emits 75% less CO<sub>2</sub>e per watt-hour of battery cells produced (compared with the current benchmark average), with a 90%+ long-term GHG emissions reduction target driven by improvements in raw materials GHG emissions, manufacturing, and other GHG emissions. The company's 166GWh long-term capacity is expected to power the equivalent of 2 million passenger cars, all with 10kg/kWh CO<sub>2</sub>e footprint.

<sup>69</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

<sup>70</sup> Leadership in Energy and Environmental Design by the U.S. Green Building Council ("LEED") is a green building certification programme. Building Research Establishment Environmental Assessment Method by the Building Research Establishment ("BREEAM") is a science-based suite of validation and certification systems for sustainable built environment.

<sup>71</sup> This investment was made prior to 2022.

<sup>72</sup> This investment was made prior to 2022.

## PRIVATE WEALTH MANAGEMENT

Private Wealth Management offers clients a range of climate-related investment opportunities across its platform. The platform provides access to a variety of Goldman Sachs products, including Fixed Income, Fundamental Equity, Quantitative Investment Strategies, and SIG within AWM. Clients also have access to a wide range of Exchange-Traded Funds (“ETF”) and mutual funds sourced by XIG. XIG has a dedicated team that performs due diligence on both private and public market climate, sustainability, and impact strategies (see section “**Imprint within the External Investing Group (“XIG”)**” for additional details). Through this platform, Private Wealth Management can currently implement sustainable solutions (inclusive of climate) across approximately 85% of a portfolio with a moderate-risk model asset allocation.<sup>73</sup>

Private Wealth Management regularly collaborates with investment teams within AWM and with XIG for external managers. This collaboration is used to determine which investment strategies are suited for clients’ specific investment and climate objectives, including where clients have expressed interest in monitoring and addressing climate-related risks and opportunities.

Climate- and sustainability-related strategies available to clients on the Private Wealth Management platform include:

- **Integration Strategies:** Evaluate environmental, social, and/or governance factors as part of an investment framework, with the objective of enhancing risk-adjusted returns.
- **Sustainable Focused Strategies:** Emphasise specific sustainable investment criteria or themes, seeking risk-adjusted returns or to capture secular growth opportunities.
- **Impact Investments:** Invest in companies seeking a positive and measurable environmental or social impact alongside a competitive financial return.

Private Wealth Management can also provide access to strategies based on clients’ preferences that screen out holdings in sensitive industries or mitigate exposure to key long-term risks like climate change, while optimising for minimal deviation from a chosen benchmark.

The Private Wealth Management business provides clients with access to private market impact investment opportunities. In recent years, Private Wealth Management has expanded its platform to include a broader range of climate-related commingled funds, single managers, and direct investments.

### HIGHLIGHT

## SERIES D CAPITAL RAISE FOR A GREEN HYDROGEN EQUIPMENT MANUFACTURER<sup>74</sup>

Private Wealth Management also offers private placements for select clients through the Goldman Sachs Investment Banking business segment.

In October 2021, Goldman Sachs Bank Europe SE acted as the sole placement agent for the Series D Capital Raise of a company. The company is a leader in the rapidly growing market for green hydrogen equipment. It provides a unique product portfolio suitable for various hydrogen applications, which enables the transformation of carbon intensive industries currently dependent on oil, gas, or coal, and is particularly well-suited for heavy industrial and e-fuel applications. This transaction was, at the time, the largest equity raise by a private company in the green hydrogen space globally. Private Wealth Management was able to offer select clients exclusive access to this capital raise.



<sup>73</sup> The gaps may arise from sub-asset classes that lack robust sustainability strategies, such as hedge funds and high-yield municipals. In cases where a client wants a 100% sustainable portfolio, changes can be made to their custom asset allocation that avoid these sub-asset classes and subsequently re-weight in a manner that maintains the integrity of their elected risk/return profile.

<sup>74</sup> For illustrative purposes only. Performance results vary depending on the client’s investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

# MOBILISE

## THE FULL RANGE OF OUR RESOURCES TO MEET CLIENTS' NEEDS

Our platform allows us to provide our clients with a wide range of climate investment solutions across capital markets. We also support clients with portfolio construction tools and work with clients to co-create strategies that will meet their climate and investment objectives.

In this section, we outline various case studies highlighting our work with clients in this area.

## PUBLIC MARKETS INVESTING

### Fixed Income: Bespoke Portfolio Approaches<sup>75</sup>

In partnership with its clients, Fixed Income designs bespoke portfolios with unique objectives and constraints, including the integration of climate characteristics alongside traditional bond features such as duration, volatility, sector, and fundamental risk.<sup>76</sup> These tailored solutions use proprietary tools and analytics, and focus on engagement with portfolio companies.

In 2022, Fixed Income partnered with several large clients to understand their climate goals and develop a tailored solution. The Fixed Income team’s climate transition approach builds on the two alignment objectives set forth by the Institutional Investors Group on Climate Change (“IIGCC”),<sup>77</sup> decarbonising investment portfolios in a way that is consistent with global net zero GHG emissions by 2050, and increasing investment in climate solutions, but is tailored to the client’s preferences.

Fixed Income uses several key building blocks as the foundation for the portfolio. The tailored approach focuses on real-world decarbonisation efforts, rather than exclusions of high GHG emissions sectors, and correspondingly emphasises the forward-looking building blocks (i.e., **Alignment** and **Engagement**). Each building block can then be tailored in consideration of the client’s climate and investment objectives, including the portfolio’s risk-return objectives and its starting point. This approach sits alongside Fixed Income’s fundamental credit selection process, which remains the core driver of portfolio positioning.

### Climate Transition Building Blocks

Net Zero Investment Strategy Objectives	Climate Transition Building Block	Baseline Approach <sup>78</sup>
<b>Decarbonise investment portfolios</b>	<b>GHG Emissions</b> (Backward looking)	Measure and set targets for carbon intensity using Scope 1 and 2 GHG emissions (Scope 3 data will be phased in as quality and availability improves), based upon short, medium, and long-term goals of the client.
	<b>Alignment</b> (Forward looking)	Assess the alignment of portfolio companies with a 2015 Paris Agreement-aligned 1.5°C scenario. This assessment incorporates a proprietary mix of quantitative and qualitative issuer information, including disclosure, target-setting, and climate strategy.
	<b>Engagement</b> (Forward looking)	Engage with company management, given this is critical to understand portfolio companies, drive alignment, and facilitate real-world GHG emissions reductions. Fixed Income focuses engagement on portfolio companies that lie within high GHG emissions intensity industries, have not disclosed targets to reduce GHG emissions, and exhibit high relative GHG emissions.
<b>Increase investment in the range of ‘climate solutions’</b>	<b>Climate Solutions</b>	Invest in green bonds which are part of a fast-growing market, offering high-grade, liquid instruments that can be similar to regular bonds but with positive environmental impact (see the <b>“Invest in Climate Opportunities”</b> section for more details).

<sup>75</sup> For illustrative purposes only. Performance results vary depending on the client’s investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

<sup>76</sup> As part of the investment process, Public Markets Investing may integrate ESG factors alongside traditional factors. The identification of a risk related to an ESG factor will not necessarily exclude a particular investment that, in the view of Public Markets Investing, is otherwise suitable and attractively priced for investment, and Public Markets Investing may invest in an issuer without integrating ESG factors or considerations into the investment process. Moreover, ESG information, whether from an external and/or internal source, is, by nature and in many instances, based on a qualitative and subjective assessment. An element of subjectivity and discretion is therefore inherent to the interpretation and use of ESG data. The relevance and weightings of specific ESG factors to or within the investment process vary across asset classes, sectors, and strategies and no one factor or consideration is determinative. Public Markets Investing in its sole discretion and without notice may periodically update or change the process for conducting its ESG assessments and implementation of its ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis. Accordingly, the type of assessments depicted here may not be performed for every portfolio holding. The process for conducting ESG assessments and implementation of ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis, may also vary among portfolio management teams.

<sup>77</sup> The IIGCC are a leading investor group on climate change, widely recognised as a market standard for net zero portfolio construction guidance. Guidance is found in the “IIGCC Net Zero Investment Framework Implementation Guide”.

<sup>78</sup> Note: building blocks can be customised based on clients’ unique investment and climate objectives.

## Multi-Asset Solutions: Supporting Clients in their TCFD Reporting<sup>79</sup>

In 2022, Public Market Investing's Multi-Asset Solutions team worked with UK pension clients to support the development of their TCFD reports, to meet the trustees' regulatory obligations.<sup>80</sup> MAS worked directly with trustees to understand how climate-related risks can impact their portfolios, opportunities that could be available to them, and supported clients with the provision of climate metrics, such as GHG emissions. Additionally, MAS provided climate scenario analysis to determine the resilience of the investment strategies to climate-related risks, and to help quantify the potential effects to pension scheme funding.

MAS uses two primary climate scenarios to understand how client portfolios might be impacted under different global transition scenarios. Although limited in use throughout 2022, MAS intends to expand these capabilities, for example, via the use of climate-integrated capital market assumptions. In early 2023, MAS drafted a report on behalf of its clients, covering the findings from the analysis conducted over the year, as well as the trustees' future ambitions.

## Quantitative Investment Strategies

For separately managed accounts ("SMAs") within Equity Alpha, along with the Climate Transition Framework and Global Norms Framework, the QIS team partners with Public Markets Investing clients to fully customise the investable universe to align with their values and targets. The team also offers to manage portfolios for SMAs against customised ESG benchmarks or ESG benchmarks from third-party providers. Tailored GHG emissions reduction strategies are also implemented for Equity Alpha SMAs, which may include GHG emissions metric construction, data sources, or specific reduction targets.

## PRIVATE MARKETS INVESTING

### Supporting Clients' Decarbonisation Needs in an Infrastructure Strategy<sup>81</sup>

Private Markets Investing considered client feedback on decarbonisation objectives when setting the specific Infrastructure strategy's objectives and targets. To meet these climate objectives, each controlled portfolio company within the strategy is required to adopt a decarbonisation plan.

Private Markets Investing believes that portfolio companies which are proactive in their decarbonisation may better avoid stranded asset risk and capture new business opportunities associated with the climate transition.

### HIGHLIGHT

#### CLIMATE ADVISORY: CARBONLENS<sup>82</sup>

Alongside the climate transition risk tools used by the Fixed Income and Fundamental Equity teams (see the **"Empower Decisions through Actionable Climate Intelligence"** section for more details), Public Markets Investing offers climate advisory offerings for clients across their entire decarbonisation journey, including measurement, goal setting, implementation, and solutions. One manifestation of this is the CarbonLens tool, which provides historical GHG emissions analysis and forward-looking alignment to a net zero pathway for portfolios. The tool is designed to help clients evaluate their portfolio and identify decarbonisation opportunities. Public Markets Investing is currently piloting the tool with clients, and working closely with investment teams on the implementation approach. Public Markets Investing continues to expand and strengthen climate advisory services to assist more clients on their decarbonisation journey.

<sup>79</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

<sup>80</sup> Note: these capabilities were used for a limited number of pension clients.

<sup>81</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.

<sup>82</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.



## PRIVATE WEALTH MANAGEMENT

Private Wealth Management's tailored approach to portfolio construction begins with determining the appropriate asset allocation for a client, based on their risk-return objectives. At present, climate-related considerations are not incorporated into strategic asset allocation.<sup>83</sup> Private Wealth Management believes climate-related considerations are more relevant in the analysis of specific products and investment strategies once strategic asset

allocation is set. Specific products and strategies for each asset class are implemented to optimise for the client's climate goals, based on each individual client's expressed interests. For clients who have expressed interest in monitoring the climate-impacts of their portfolios, Private Wealth Management has a framework to incorporate these and other sustainability-related themes into the selection of products and investment strategies.

### Process for Assisting Clients in the Development of their Individual Sustainable Investing Strategies:

#### 1 EDUCATE

Private wealth advisors leverage SSG, product teams, and insights from GS SUSTAIN<sup>84</sup> to hold exploratory conversations with clients to assess their understanding and appetite to invest in climate-related solutions, and to educate them on Goldman Sachs' approach to sustainable investing and the range of strategies available in multi-asset class portfolios.

#### 2 CLARIFY

Once the client has gained an understanding of the climate-related investing landscape in Private Wealth Management, SSG works alongside the private wealth advisor to help the client define their specific climate objectives in the context of their portfolio. For some clients this means adding broad thematic climate tilts across their portfolio; for others, this can mean specific revenue-based screening thresholds, private impact investment goals, or portfolio-level GHG emissions intensity reductions.

#### 3 IMPLEMENT

After establishing the client's sustainability objectives, the private wealth advisor collaborates with SSG and centralised portfolio advisory teams to select managers that aim to meet those objectives and fit into the client's strategic asset allocation. Based on the client's preferences, this step can happen across a portfolio all at once or in multiple steps over a span of years. An example of Private Wealth Management's implementation approach with other climate-related strategies made available to Private Wealth Management clients is highlighted in the **"Invest in Climate Opportunities"** section.

#### 4 REPORT

To provide transparency around clients' portfolio holdings and adherence to their sustainability objectives, Private Wealth Management offers a Portfolio Diagnostic Tool that analyses a client's public market holdings against select environmental, social, and governance data points. A detailed case study on this diagnostic is included in the **"Empower Decisions through Actionable Climate Intelligence"** section.

#### 5 EVOLVE

Private Wealth Management regularly monitors and re-assesses the portfolio to ensure that values-alignment and performance objectives can be met, and to address any new climate-related risks or opportunities that may arise. The portfolio is then updated on an ongoing basis to reflect clients' investment and climate objectives.

Private Wealth Management maintains a close collaboration with Public Markets Investing and Private Markets Investing to help inform the types of sustainable investing products offered to

clients. This relationship has been reinforced by the integration of Asset and Wealth Management in 2022, promoting more seamless collaboration.<sup>85</sup>

<sup>83</sup> The Investment Strategy Group within Private Wealth Management continues to explore whether to integrate climate-specific considerations into strategic asset allocation, for example, by incorporating climate metrics into portfolio construction and climate-related impacts into capital market assumptions. However, this group has yet to uncover material evidence to adjust their approach based on current available data. As new data emerges, the Investment Strategy Group will continue to evaluate climate impacts on asset allocation.

<sup>84</sup> GS SUSTAIN is a global, long-term investment research strategy designed to generate sustainable alpha by integrating analysis of financial strength, strategic positioning, and environmental, social and governance performance.

<sup>85</sup> Subject to compliance with regulatory and legal requirements in relation to, for instance, market abuse rules.

## IMPRINT WITHIN THE EXTERNAL INVESTING GROUP (“XIG”)

XIG, formerly known as AIMS, is an open-architecture, multi-asset class solutions provider focused on manager selection and co-investments across private equity, private credit, private real estate, impact strategies, hedge fund strategies, and traditional long-only managers. XIG allows AWM to source products and strategies from external managers, as noted elsewhere in this report.

Within XIG, a dedicated team covers sustainability and impact strategies, inclusive of climate, referred to as **Imprint**. Leveraging their specialist investment knowledge and proprietary framework, Imprint focuses on managing impact private markets investment strategies, where capital is invested to seek to benefit from or accelerate positive climate- or inclusive growth-related trends or goals. Specific ESG-related factors are often embedded within these trends or goals. To qualify as an impact strategy, the majority of products and services provided by the underlying companies must be

expected to align to one or more impact themes supporting climate transition or inclusive growth. Imprint may utilise a variety of tools and approaches in its application of these strategies.

In addition, Imprint seeks to rate external managers and their investment strategies across five ESG-based factors. The factors vary by asset class, and not every manager and strategy will be rated on every factor. Further, the ESG factor score analysis as described herein may not apply to certain Imprint investment programmes. The five factors are listed below.

In addition to helping support the climate transition in the real economy, Imprint has developed a climate-related risk management approach that aims to assess and manage the risks posed by climate change to the business, and seeks to integrate climate-related considerations into risk management practices.

## FIVE ESG FACTORS

### FIRM ETHOS

The prioritisation and incorporation of ESG into the management of the firm’s business

### ESG PHILOSOPHY

The degree to which the manager views ESG as a financially material driver of investment performance and risk

### TEAM & RESOURCES

The level of expertise and organisation of the team incorporating ESG, including the level and use of external resources

### INVESTMENT PROCESS

The degree to which environmental, social, and governance-related factors are formally incorporated into the investment and decision-making process

### ESG PHILOSOPHY

The level and type of engagement with portfolio companies on ESG; ability to add value post investment and degree to which this is reflected in realised outcomes

# DESCRIPTION OF RELEVANT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Within Asset & Wealth Management, the time horizons for considering climate-related risks and opportunities vary across business lines, asset classes, and investment strategies. We follow the definitions of transition and physical risk as set out in our firmwide risk taxonomy framework, see “Climate-Related Risks Categorisation” section for more details.

The following sub-sections describe the potential climate-related risks and opportunities, across different time horizons, that could pose a material financial impact to the different business lines in AWM. The assessment process to identify these risks and opportunities was qualitative in nature, and based on the risks and opportunities identified by individual business lines, within different stages of their typical investment lifecycles. As an investor, we are focused on the impact of transition and physical risks on our portfolio companies and investment assets. We use both quantitative and qualitative methods, as appropriate, to identify and assess climate-related risks within our investments, as discussed in the “**Identifying and Assessing Climate-Related Risks**” section.

## PUBLIC MARKETS INVESTING CLIMATE-RELATED RISKS AND OPPORTUNITIES

Public Markets Investing considers the following short-, medium- and long-term horizons relevant for the effective evaluation of climate-related risks and opportunities.<sup>86</sup> These time horizons were selected to reflect a combination of horizons over which physical and transition risks may materialise in the investment process. These time horizons aim to reflect typical holding periods of the Public Markets Investing business; however, Public Markets Investing recognises that these timeframes may change depending on, for example, asset class and client preferences.

<b>Short-term:</b> 1-3 years	Aligned with portfolio construction, development, and initial investment holding period.
<b>Medium-term:</b> 3-10 years	Aligned with capital appreciation of portfolios and longer-term investment research assessing how an investment may evolve over the next 3, 5, and 10 years. During this time, certain portfolio companies and issuers may be engaged on climate topics.
<b>Long-term:</b> 10+ years	Reflects time horizons for long-term strategic planning, changing perceptions of Public Markets Investing response to the climate transition, and the anticipated impacts of chronic climate-related risks.

Topic	Risk or Opportunity	Time Horizon	Impact
<b>Product-related Risk</b>	Risk	Short-term and medium-term	Changes in client preferences as they pertain to climate topics may affect the demand for products and strategies offered by Public Markets Investing. There is a risk that the products offered by Public Markets Investing do not successfully meet client’s climate needs, which may expose reputational risk and the associated costs.
<b>Reputational Risk</b>	Risk	Short-term and medium-term	Reputational risk could arise if the market perceives Public Markets Investing’s response to climate matters to be ineffective, delayed, or inappropriate. Reputational risk could adversely impact client relationships, cause sales reductions, and subject Public Markets Investing to costly litigation.
<b>Regulatory and Legal Risk</b>	Risk	Short-term and medium-term	The regulatory landscape for climate topics is evolving. There is a risk that changes to current or emerging climate regulation impacting Public Markets Investing’s own products or operations, or those of portfolio companies, could increase compliance costs or alter business and portfolio management activities.
<b>Market Risk</b>	Risk	Short-term, medium-term, and long-term	Fluctuations in the value of assets due to climate-related risks could impact the value of Public Markets Investing’s portfolios, and may also trigger the rebalancing or reallocation of portfolio assets.
<b>Physical Risk / Operations</b>	Risk	Short-term, medium-term, and long-term	Adverse climate events or natural disasters could pose a risk to the physical assets on which Public Markets Investing depends. Public Markets Investing strives to prevent and protect any damage to firm assets through various comprehensive controls. Public Markets Investing also maintains business continuity plans to ensure that critical functions can continue to operate in the event of such disruption.
<b>Physical Risk / Investments</b>	Risk	Short-term, medium-term, and long-term	Acute physical impacts such as extreme weather or climate events, and the chronic longer-term impacts of a changing climate, could decrease the value of Public Markets Investing’s assets and increase capital expenditure and insurance costs.
<b>Transition Risk / Investments</b>	Risk	Medium-term and long-term	Certain industries and activities are at risk of becoming “stranded” in a long-term climate transition. Public Markets Investing may limit exposures to these asset types.
<b>Transition Upside / Products</b>	Opportunity	Short-term and medium-term	Increasing demand from clients for climate-focused products and solutions presents an opportunity for Public Markets Investing to meet demand by investing in transformative climate solutions that provide positive returns to investors and the broader economy.
<b>Transition Upside / Products</b>	Opportunity	Short-term and medium-term	Increasing demand from clients for tailored solutions, specific to their climate and investment objectives, presents an opportunity for Public Markets Investing to leverage a platform and co-create strategies and solutions to meet client needs.

<sup>86</sup> The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk.

## PRIVATE MARKETS INVESTING CLIMATE-RELATED RISKS AND OPPORTUNITIES

Private Markets Investing defined the following short-, medium- and long-term horizons, which are generally relevant for the evaluation of climate-related risks and opportunities. These time horizons were selected to reflect a combination of horizons over which transition and physical risks are generally relevant to the investment process, typical investment holding periods, and longer-term impacts on the positioning of Private Markets Investing. Private Markets Investing recognises some of these risks and opportunities are subject to change over time and this is not an exhaustive list.

<b>Short-term:</b> 1-5 years	Reflects the time horizon for fund development, investment due diligence and the selection of future assets. Also reflects the anticipated exit and liquidation for the majority of current assets and funds.
<b>Medium-term:</b> 5-10 years	Reflects continued fundraising and product development, and the anticipated exit and liquidation of next generation future investments.
<b>Long-term:</b> 10+ years	Aligned with long-term fund raising, product development, risk analysis, and market positioning.

Topic	Risk or Opportunity	Time Horizon	Impact
<b>Product-related Risk / Regulatory Risk / Legal Risk</b>	Risk	Short-term	Potentially disruptive consumer demand, increased regulatory requirements, disruptive innovation, and reputational risks could negatively impact the value of higher-carbon, industrial, or conventional businesses.
<b>Transition Risk / Investments</b>	Risk	Short-term	Inadequate management of carbon exposure in investments could lead to declining market share, higher compliance and operating costs, and lower investment returns.
<b>Market Risk</b>	Risk	Medium-term	Value or liquidity markdowns could occur, due to underperformance or under-reporting on climate issues relative to buyer expectations (e.g., public markets ESG funds).
<b>Market Risk</b>	Risk	Medium-term and long-term	Investment risk could occur in earlier-stage climate innovations disrupted by a range of potential factors, including unforeseen technologies, market events, and shifts in consumer demand.
<b>Physical Risk / Investments</b>	Risk	Short-term, medium-term, and long-term	Increasing likelihood of damages from physical risks to investments, which could impact valuations negatively. Even when this is beyond the investment time horizon for a company, this could still be "priced in" to exits.
<b>Reputational Risk</b>	Risk	Long-term	The performance of investments and the credibility of Private Markets Investing's climate-related risk management practices could impact future capital raises.
<b>Transition Upside / Investments</b>	Opportunity	Short-term and medium-term	Climate and environmental impact investments could see increasing market share relative to their higher-carbon, industrial, or conventional peers.
<b>Value Creation / Investments</b>	Opportunity	Short-term and medium-term	Decarbonisation and energy efficiency initiatives could lead to reductions in operating costs and the realisation of a green premium from consumers.
<b>Value Creation / Investments</b>	Opportunity	Short-term and medium-term	The implementation of adaptation measures could lead to increased resiliency in investments and decreased costs (e.g., through lower insurance premiums or climate loss avoidance).
<b>Value Creation / Investments</b>	Opportunity	Medium-term and long-term	Changes in the strategy or operations of portfolio companies and client assets to capitalise on the climate transition could lead to a lower cost of capital and higher valuations.
<b>Value Creation / Investments</b>	Opportunity	Medium-term and long-term	Decarbonisation initiatives could lead to improved cash flows and margins, resulting in a lower cost of capital and higher valuations.
<b>Transition Upside / Products</b>	Opportunity	Long-term	A successful long-term track record on climate solutions investments, as well as value creation from decarbonisation initiatives and resiliency support within investments, could drive greater client demand as transition and physical risks increase.

## PRIVATE WEALTH MANAGEMENT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Private Wealth Management relies on the climate-related risk management of other business lines in AWM for internal products and strategies, and relies on XIG for external products and strategies. As such, Private Wealth Management follows the approach to climate-related risks and opportunities across time horizons as set forth by other business lines in AWM (i.e., Public Markets Investing and Private Markets Investing), when accessing their products and strategies.

# RESILIENCE OF ASSET & WEALTH MANAGEMENT'S CLIMATE STRATEGY

Within AWM, our climate strategy aims to build resilience into our investment products and strategies by focusing on data collection to identify key drivers of risk exposure, engagement with portfolio companies to mitigate identified risks and capitalise on value creation opportunities, and investment in climate solutions to lower the overall exposure to climate-related risks and help clients benefit from potential opportunities arising from the climate transition.

When assessing the resilience of our strategy to the physical and transition risks and opportunities posed by climate change, the approach may differ across each business line.

In addition to considering resiliency within our investments, AWM considers resiliency in the context of our broader business strategy. We seek to build resiliency in our strategy to the risks, as well

as opportunities, posed by the climate transition by investing in climate-related data, tools, resources, and product development. Given the rapidly shifting geographic, market, and industry dynamics, we continually assess and adjust our strategy accordingly to meet changing client demand.

# IDENTIFICATION AND ASSESSMENT OF CLIMATE-RELATED RISKS AND OPPORTUNITIES

## PUBLIC MARKETS INVESTING

In 2022, select Public Markets Investing investment teams assessed the impact of climate-related risks and opportunities for individual investments. For example, as described in **“Manage and Mitigate Climate-Related Risks”**, Fixed Income investment teams will assess the impact of transition and physical risk on corporate credit and sovereign bonds during the overall credit process for certain investment strategies. However, in 2022, Public Markets Investing did not assess the impact of climate-related risks and opportunities for all investment products and strategies.

## PRIVATE MARKETS INVESTING

As noted in the **“Manage and Mitigate Climate-Related Risks”** section, in 2022, Private Markets Investing assessed the physical and transition risk exposure for its portfolio (with the exception of Real Estate). This assessment provided a view of potential exposures to transition and physical risk at the sector- and investment-level, and showed that the overall portfolio exposure to climate-related risks is assessed to be low. In order to further build resiliency, Private Markets Investing can leverage this assessment to prioritise more detailed risk assessments for investments that operate in sectors identified as having higher potential physical and transition risk.

Additionally, Real Estate leverages internal and external qualitative climate-related risk assessment tools to analyse physical risk exposure for all equity and credit investments. An external physical risk vendor provides asset-level risk scores for wildfires, hurricanes, typhoons, heat stress, water stress, sea level rise, and flooding using a high emissions (RCP 8.5) scenario across multiple time horizons. The firm also utilizes a proprietary tool for real estate investments that provides risk scores for wildfires, hurricanes, water stress, sea level rise, and flooding at present day and in 2050 according to a moderate (RCP 4.5) and high (RCP 8.5) emissions scenario. Relevant outputs from these tools are incorporated in Investment Committee memos (“IC memos”) by investment teams. For high, extremely high, or “red flag” risks, investment teams include a discussion of potential mitigants in the IC memo (for more details see the **“Integration of Climate-Related Risks across the Investment Lifecycle”** section).

## PRIVATE WEALTH MANAGEMENT

For clients who express interest, Private Wealth Management seeks to build resiliency in these clients' portfolios by providing GHG emissions data via its Portfolio Diagnostic Tool, and incorporating climate solutions investments into portfolios. However, in 2022, Private Wealth Management did not assess the impact of climate-related risks and opportunities for all investment products and strategies.

For more details on AWM's approach to identifying climate-related risks, please see the **“Identifying and Assessing Climate-Related Risks”** section.



# APPROACH TO CLIMATE SCENARIO ANALYSIS

Scenario analysis may be used to inform assessments of the resilience of an organisation's business or strategy to potential climate disruption. It can act as a useful tool to assess the exposure of a company or portfolio to climate-related risks to better understand their financial impacts.

## PUBLIC MARKETS INVESTING

Developing climate scenario analysis capabilities is a valuable step in improving Public Markets Investing's understanding of exposure to such climate-related risks and opportunities. In 2022, Public Markets Investing was focused on assessing available tools for measuring the potential financial impact of climate-related risks and opportunities. Public Markets Investing conducted an extensive review of these solutions and, at the end of 2022, agreed to a partnership with a well-established third-party vendor to further enhance its climate scenario analysis capabilities.

Going forward, Public Markets Investing will continue to review and evolve its approach to scenario analysis, to ensure it is well adopted across the business and that the outputs are used effectively.

## PRIVATE MARKETS INVESTING

In 2022, Private Markets Investing evaluated and piloted several vendor-developed climate scenario analysis tools (covering both physical and transition risk) across select investments to assess asset-level impacts. Private Markets Investing continues to assess tools to integrate scenario analysis into investment decision making. Private Markets Investing believes that scenario analysis will allow it to better understand the resiliency of its portfolio to climate-related risks, understand the areas of the portfolio that are most at risk, and inform the prioritisation of engagement efforts.

## PRIVATE WEALTH MANAGEMENT

In 2022, Private Wealth Management did not conduct qualitative or quantitative climate scenario analysis within clients' investment portfolios. However, Private Wealth Management is focused on developing its approach to further quantify exposure to climate-related risks, and to assess the potential financial impacts of these climate-related risks. Private Wealth Management is focused on working collaboratively with Public Markets Investing and Private Markets Investing to assess tools and integrate them into investment decision-making, where applicable. As part of this collaboration and alongside Public Markets Investing, Private Wealth Management agreed to a partnership with a well-established third-party vendor to further enhance its climate scenario analysis capabilities.

# RISK MANAGEMENT

Section

05

## FIRMWIDE CLIMATE-RELATED AND ENVIRONMENTAL RISK MANAGEMENT PROGRAM

Since publishing the firm's 2021 TCFD report, Goldman Sachs has continued to integrate climate-related and environmental risk into broader business and risk management practices.

As the climate and environmental risk management program continues to develop, Goldman Sachs has gained deeper insights across relevant portfolios, and the firm remains focused on identifying and measuring climate-related risks to advance our business strategy.

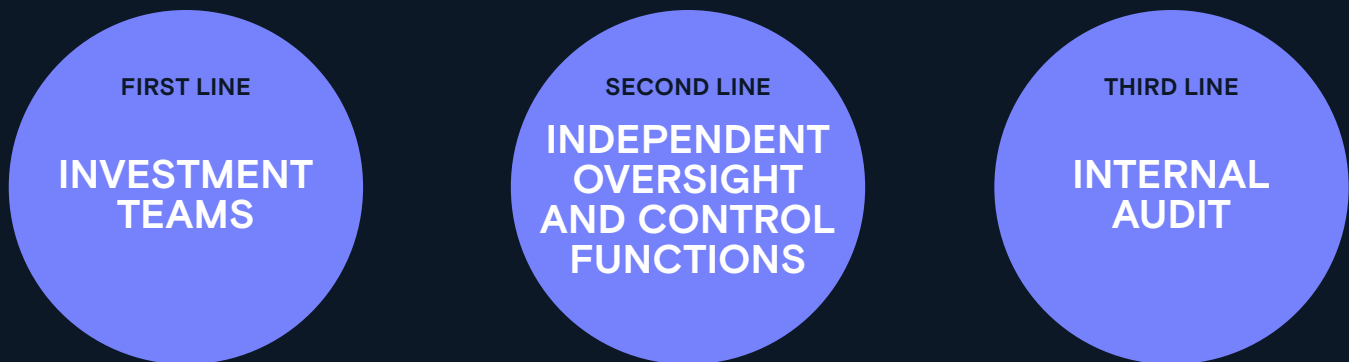
Where applicable, Asset & Wealth Management leverages Goldman Sachs' firmwide risk taxonomy and climate-related risk management processes. In particular, the firmwide risk and control functions monitor the firm's on-balance sheet alternative assets within AWM, and apply firmwide risk tools, including quantitative climate scenario analysis tools.

## ASSET & WEALTH MANAGEMENT CLIMATE-RELATED RISK MANAGEMENT

Climate-related risks are an increasingly important consideration of our risk management approach, and our sustainable investing philosophy considers climate- and sustainability-related factors that can impact the risk profile and performance of our investments. We look to identify, assess, and manage climate-related risks alongside other financial and non-financial risks, in line with clients' preferences and objectives.

The following sections provide further detail on AWM's climate-related risk management practices across business lines, strategies, and products. This report focuses on climate-related risk identification, assessment, and management at the entity level, but also includes select descriptions of climate-related risk management practices for individual investment products and strategies in-scope for the AWM report.

Our risk management framework is based on a “three lines of defence” framework, which covers financial and non-financial risks, including climate-related risks:



Investment teams are considered the first line of defence and are accountable for outcomes of risk-generating activities, as well as for assessing and managing those risks, including climate-related risks, within clients' risk appetite and the firm's risk appetite.

Independent risk oversight and control functions are considered the second line of defence. There are both AWM-specific and firmwide risk and control functions that perform second line risk management activities for AWM, including independent assessment, oversight, and challenge of the risks taken by the first line of defence.

Internal Audit is the third line of defence and provides independent assessments and opinions of the firm's overall control environment, risk management controls and governance processes, including activities performed by GSI and GSAMI. Internal Audit reports to the Goldman Sachs Audit Committee. Additionally, Internal Audit reports results of GSI and GSAMI entity coverage to the GSI Audit Committee and the GSAMI Board respectively.

# Identifying and Assessing Climate-Related Risks

Asset & Wealth Management uses Goldman Sachs' climate-related risks definitions as a foundation when identifying and assessing climate-related risks, adapted for each business line.

## CLIMATE-RELATED RISK CATEGORISATION

As described in the **"Definition of Climate-Related Risks"** section, Goldman Sachs categorises climate-related risks into **physical risk** and **transition risk**. Physical risk is further broken down into acute and chronic risks, while transition risk is broken down into policy risks, technology risks, and liability risks, in line with common industry categories. Physical and transition risks may have meaningful impacts in the short, medium, and long-term.

These risks are incorporated into the firmwide risk taxonomy, which includes both financial and non-financial risks.<sup>87</sup> The firmwide risk taxonomy also recognises that climate-related risks may materialise through existing risk categories (e.g., credit risk, market risk, operational risk).

## CATEGORISATION OF CLIMATE-RELATED RISKS

### PHYSICAL RISK

Physical risk is the risk that asset values may decline as a result of changes in the climate. Risks related to the physical impacts of climate change include acute risks and chronic risks:

#### Acute Risks

Event-driven (e.g., damage to assets from extreme weather events, disruption to operations/supply chains)

#### Chronic Risks

Longer-term shifts impacting resource availability (e.g., sea level risk, chronic heat waves)

### TRANSITION RISK

Transition risk is the risk that asset values may decline because of changes in climate policies or changes in the underlying economy due to decarbonisation. Transition risks include policy, technology, and liability risks:

#### Policy Risks

Supply-side policies encourage substitution away from carbon-intensive technologies and products. Demand-side policies discourage consumption of carbon-intensive goods/services

#### Technology Risks

Technology development and deployment can affect competitiveness/demand of certain sectors/goods

#### Liability Risks

Exposure to high-emissions sectors can affect current and projected resiliency of operations to legal liability and reputational damage. There is potential for this to increase as loss and damage from climate change grows

### GOLDMAN SACHS RISK CATEGORIES

Examples of the impact of climate change on broader categories of risk include:

#### Credit Risks

Higher probabilities of default and/or diminishing collateral value due to lower corporate profitability from transition risk and/or damage to physical assets

#### Market Risks

Decreases in value of holdings, particularly related to real estate exposure

#### Operational Risks

Potential damage to equity real estate investments from climate change factors impacting the operational use of those assets

#### Liquidity Risks

Potential liquidity outflows resulting from the transition risk scenario, in line with other ad hoc macro-financial scenario analysis

<sup>87</sup> The firmwide risk taxonomy covers on-balance sheet alternative assets within AWM in addition to our clients' assets.

## CLIMATE-RELATED RISK IDENTIFICATION AND ASSESSMENT

Across Public Markets Investing and Private Markets Investing, we recognise the importance of a detailed understanding of the climate-related risks that can impact our business and clients. We are committed to developing our approach further to quantify these risks and potential financial impacts.

At present, we consider climate-related risks and opportunities alongside other financial and non-financial risks for certain investment products and strategies. The climate-related risk identification and assessment approach for Private Wealth Management is still evolving and, as such, the approaches outlined below may not apply across the entirety of Private Wealth Management.

We currently take a largely qualitative approach when determining the relative significance of climate-related risks in relation to other risks, which may differ across business units. Below are additional details on how each business line conducts these determinations.

### PUBLIC MARKETS INVESTING

Public Markets Investing continues to formalise and develop its approach to identifying and measuring climate-related risk that could have material financial impact on investment portfolios.

For the first line of defence, in 2022, climate-related risks was predominantly assessed through a qualitative lens, but complemented with quantitative approaches developed within specific investment teams. For example, the Fixed Income, Corporate Credit, and Sovereign Bond investment teams utilise quantitative transition and physical risk assessment tools when assessing certain prospective investments.

The implementation of Public Markets Investing's risk governance structures and risk management processes are overseen by the Asset Management Global Risk ("AM Risk") team, which operates independently of the investment teams, and reports to Public Markets Investing's CRO.

Over the last year, the AM Risk team continued to develop and implement processes around climate-related risk identification and assessment. As part of this, the GSAMI Risk Appetite Statement, which articulates GSAMI's approach to risk taking, was expanded to include additional detail on how climate and environmental financial risks are evaluated and monitored.

Additionally, the AM Risk team expanded to include a dedicated team of climate-related risk managers through the acquisition of GSAM B.V. These dedicated individuals are increasingly involved in risk management activities across the global Public Markets Investing platform, including areas within the scope of this report. The AM Risk team's climate-related risk managers intend to continue to build out GSAMI's climate-related risk management framework.

## PRIVATE MARKETS INVESTING

Within Private Markets Investing, the goal is to identify, measure, and manage climate-related risks that could have a material financial impact on investments and client portfolios. As noted in the **"Manage and Mitigate Climate-Related Risks"** sub-section, investment teams and external advisors assessed the exposure of sectors and select individual investments to physical and transition risks. This provided Private Markets Investing with a view of the percentage of assets under supervision (for portfolio management activities) in high or very high transition or physical risk sectors. Additionally, Real Estate currently uses internal and external qualitative climate-related risks assessment tools to analyse physical risk exposure for all new equity and credit investments.

Private Markets Investing is continuing to develop a framework to integrate physical and transition risks into the investment process, which could include an assessment of external vendors' climate scenario analysis tools.

# Integration of Climate-Related Risks across the Investment Lifecycle

Within Public Markets Investing and Private Markets Investing, we manage climate-related risks by integrating climate considerations into the investment lifecycle for select products and strategies. Although business lines differ in how climate-related risk management activities are integrated, each business line prioritises climate-related risks in a largely qualitative manner, and determines the financial materiality of those risks as part of its approach to managing climate-related risks.

## PUBLIC MARKETS INVESTING

Within Public Markets Investing, investment teams follow a standardised risk management framework, while integrating climate-related risks into their investment decisions, company engagement, and product development processes in a manner consistent with their specific strategies and client preferences. Climate-related risks may be considered from a “top-down” perspective (i.e., in the construction of portfolios and overall risk management), or “bottom-up” (i.e., at an individual investment level), as described in the case studies within this report.

### Investment Decision-Making

The following example approaches are taken by investment teams to incorporate climate-related risk considerations into their investment processes; these may evolve over time in response to regulatory requirements and market developments:

- The use of climate- and sustainability-related risk analysis to inform the selection process for companies, issuers, and portfolio management processes, and to make investment decisions based on these evaluations.
- Tilting portfolios towards climate- and sustainability-related factors and selecting companies that Public Markets Investing considers to have less climate-related risk exposure, based on metrics such as carbon intensity and other KPIs. These factors can be combined into an overall ESG score, using either external vendor or internal proprietary models, to aid portfolio construction and to compare scores across factors and relative to the relevant benchmarks.
- The use of screens on companies or sectors, via guideline management processes, that do not meet certain climate- and sustainability-related criteria. This can include screening companies with more than a prescribed percentage of revenue derived from certain products or activities where climate-related risks are deemed financially material (which may include certain fossil fuels), or screening companies in particular industries with elevated climate-related risks.<sup>88</sup>

Several of the climate-related risk measurement and management approaches in individual Public Markets Investing business units are included as follows.

### Fixed Income

The Fixed Income investment team incorporates climate-related risk assessments (inclusive of physical and transition risk) in investment decisions for certain investment strategies. Public Markets Investing’s portfolio management systems provide investment teams and portfolio managers access to information on key climate-related exposures at the portfolio-level and relevant benchmark information. These include carbon intensity, financed GHG emissions, carbon footprint, and alignment to net zero. Investment teams can use this information to understand and manage financially material climate-related risks impacting portfolios. For further details on how the Corporate Credit and Sovereign Bond teams incorporate climate-related risks, refer to the **“Manage and Mitigate Climate-Related Risks”** section.

### Fundamental Equity

The Fundamental Equity investment team conducts ongoing monitoring of financially material climate-related factors at the individual stock and portfolio level for certain investment products and strategies. As part of their investment dashboard tool, investment teams have access to GHG emissions metrics, such as carbon footprint and carbon intensity, which are captured in daily risk monitoring. This allows investment teams to monitor the carbon exposure of portfolios and individual holdings, providing visibility into the contribution of individual positions to portfolio-level metrics. It also allows teams to simulate the impact of potential trades on overall climate metrics, enabling them to incorporate carbon exposure into risk management decisions and daily risk monitoring.

<sup>88</sup> See the firmwide “Environmental Policy Framework” for more information: <https://www.goldmansachs.com/s/environmental-policy-framework/>.

Alongside GHG emissions metrics, the Fundamental Equity team also considers a broader range of climate-related KPIs in investment decisions through the ESG Scorecard<sup>89</sup> (see the **“Empower Decisions through Actionable Climate Intelligence”** section for more details).

## QIS

As noted in the **“Manage and Mitigate Climate-Related Risks”** section, the Equity Alpha team within QIS incorporated a Climate Transition Framework in December 2020 across its actively managed Equity Alpha portfolios to seek to reduce exposure to climate transition risk.

## Imprint

The Imprint team within XIG engages with partner external managers across key sustainability themes, including climate change. As part of the due diligence process, Imprint assesses external managers on the extent to which ESG-related factors (inclusive of climate) are integrated into managers’ investment processes and risk management practices (refer to the **“Imprint within the External Investing Group (“XIG”)”** section for more details).

## Company Engagement

As part of ongoing stewardship efforts, Public Markets Investing engages with portfolio companies on climate-related risk topics, such as GHG emissions, disclosure of financially material climate-related risk data, setting of targets, and monitoring execution against climate-related risks mitigation and adaptation initiatives (refer to the **“Help Portfolio Companies and Client Assets Navigate and Benefit from the Climate Transition”** section for more details).

## Product Development Process

Climate-related risks have the potential to materially impact investment strategies and outcomes for Public Markets Investing’s clients. Climate-related risks, where relevant, have been integrated into the product development process and associated product governance forums. The key governance bodies involved in considering climate-related risks in product development are outlined in the **“Business and Functional Groups Oversight”** section, which includes the Product & Distribution Working Group for Public Markets Investing.

<sup>89</sup> ESG scorecards are only one among many available tools that Fundamental Equity’s analysts may leverage to conduct a proprietary ESG assessment where relevant. For ESG Integrated portfolios, ESG scorecards might not be completed for all holdings of the portfolio. Public Markets Investing may invest in a security prior to completion of the ESG scorecard. Instances in which ESG scorecards may not be completed for a specific security prior to investment include, but are not limited to IPOs, in-kind transfers, corporate actions, and/or certain short-term holdings. Public Markets Investing in its sole discretion and without notice may periodically update or change the process for conducting its ESG assessment and implementation of its ESG views in portfolios, including the format and content of such analysis and the tools and/or data used to perform such analysis. Accordingly, the type of assessment depicted here may not be performed for every portfolio holding. No one factor or consideration is determinative in the fundamental research and asset selection process.

## PRIVATE MARKETS INVESTING

In Private Markets Investing, climate-related risks are assessed alongside other financial and non-financial risks when evaluating the viability and risk-return profile of investments, as applicable.

## INVESTMENT LIFECYCLE CLIMATE AND SUSTAINABILITY INTEGRATION

### 1 SOURCING AND DUE DILIGENCE

Climate-related risks are integrated into investment due diligence, where applicable. As noted previously, investment teams are required to complete an ESG questionnaire for select prospective investments, which may summarise climate- and sustainability-related issues identified through diligence. These findings are then generally included in the Investment Committee Memo.

Investment teams may also work with ESG business leads,<sup>90</sup> and any second line of defence groups, such as Legal, Compliance, the Operational Risk Environmental team, and Enterprise Risk team, who are climate-related risks specialists, to determine material non-financial and environmental health and safety risks (which may include climate-related risks) when reviewing opportunities.

### 2 HOLDING PERIOD

Once an investment is made, investment teams monitor the portfolio company or investment asset and maintain an ongoing dialogue with management. Private Markets Investing engages proactively with select portfolio companies to identify and manage climate-related risks. Furthermore, Private Markets Investing supports management teams from select portfolio companies to consider, where appropriate and financially material, post-closing uplift plans to help address physical and transition risk, through adaptation and mitigation measures, over the ownership period.

### 3 EXIT

Private Markets Investing considers risk and mitigants throughout ownership (including climate-related risks for select portfolio companies), and is focused on positioning portfolio companies and assets for success at exit (whether through public or private markets).

#### HIGHLIGHT PHYSICAL RISK ASSESSMENT IN REAL ESTATE<sup>91</sup>

Real Estate assesses the impact of physical climate-related risks on potential assets across all new equity and credit investments. During the initial underwriting process, the Real Estate team works with third-party vendors to assess physical risks at an asset-level, which can trigger additional due diligence on higher risk investments. Physical risk assessments also drive discussions with key stakeholders including operating partners, asset management teams, and developers about the feasibility of potential mitigation strategies for higher risk investments. The findings from this review are then generally provided to the Investment Committee for review and consideration.

Post-investment, the Real Estate team generally continues to assess the physical risk of assets and prioritises areas for the assessment and development of physical risk mitigation and adaptation measures. For example, in 2022, an initial climate screening uncovered a high flood risk at a logistics centre development in France, which faces considerable sea level rise and high coastal flood risk. To determine an appropriate mitigation strategy, the Real Estate team worked with environmental advisors to complete a detailed flooding vulnerability assessment.

Following Real Estate's engagement with the developer, the property will now be built higher than originally planned and above local building code requirements. Investing in flood resilience enables the team to insure the asset at a reasonable cost, whilst safeguarding tenant property, retaining tenants, and maintaining asset value over time.

<sup>90</sup> Note: select ESG business leads joined in 2023, so this was not universally applicable to all investment teams in 2022.

<sup>91</sup> For illustrative purposes only. Performance results vary depending on the client's investment goals, objectives, and constraints. There can be no assurance that the same or similar results to those presented above can or will be achieved.



# Incorporating Climate-Related Risk into Overall Risk Management

We consider climate-related risks as part of the broader portfolio of financial and non-financial risks that we need to manage on an ongoing basis. Alongside efforts to enhance our climate-related risk measurement and management capabilities, we are focused on further integrating climate-related risks into existing risk management frameworks and processes, including the second line of defence.<sup>92</sup>

## PUBLIC MARKETS INVESTING

The approach to climate-related risk management and integration into the independent AM Risk processes has evolved over the past several years.

The AM Risk team uses a set of proprietary risk management tools, developed to support risk managers' needs and objectives. These tools continue to be adapted and developed so that they can be deployed for the purpose of managing climate-related risks.

Examples of recent developments include the AM Risk team having implemented monitoring of sustainable risk-related activities in connection with The European Union Sustainable Finance Disclosure Regulation ("SFDR") commitments made in Public Markets Investing funds, which include climate-related components.<sup>93</sup>

The AM Risk team has also conducted reviews of available climate scenario analysis tools to assess the relevance and viability of these for implementation. Going forward, the AM Risk team will continue to develop and evolve its approach to scenario analysis.

The AM Risk team participates in various Public Markets Investing forums, in addition to engaging with investment teams, on both a formal and informal basis, as part of the business-as-usual risk management oversight and monitoring framework. In line with the evolution of the overall risk management approach, these interactions increasingly include discussions on climate-related risks.

Senior members of the AM Risk team also participate in the relevant sustainable investing and GSAMI governance and oversight forums, as detailed in the "**Management Oversight**" section of this document.

## PRIVATE MARKETS INVESTING

Potential climate-related risks for portfolio companies and assets may be elevated for review by the Private Markets Investing Risk team. Where relevant, this Risk team escalates financially material climate-related risks to the Private Markets Investing CRO who then assesses the climate-related risk, and determines whether the matter should be further escalated to the relevant Investment Committee to discuss how to mitigate the risk. Alternatively, the Private Markets Investing CRO can also escalate the relevant climate-related risk to the Risk Council if the risk is relevant for the broader portfolio.

## PRIVATE WEALTH MANAGEMENT

Private Wealth Management recognises the importance of a detailed understanding of the climate-related risk impacting its business and client portfolios, and is committed to developing its climate-related risks management approach. Currently, Private Wealth Management integrates climate-related risks into its investment decision making by primarily relying on the climate-related risk management, engagement, and stewardship capabilities of AWM business units (when sourcing products and strategies from within AWM), and from external managers (when sourcing products and strategies from outside Goldman Sachs) through XIG. As such, Private Wealth Management does not directly undertake traditional public markets shareholder engagement activities or private markets engagement with portfolio companies and client assets.

<sup>92</sup> The incorporation of climate-related risks into overall risk management for Private Wealth Management is still evolving and, as such, the approaches outlined below may not apply across the entirety of Private Wealth Management.

<sup>93</sup> SFDR commitments will be made only for funds and separately managed accounts managed by Goldman Sachs Asset Management Fund Services Limited ("GSAMFSL") and the Public Markets Investing business of Goldman Sachs Bank Europe SE ("GSBE").

# Climate-Related Regulatory Response

## PUBLIC MARKETS INVESTING

Within Public Markets Investing, a robust governance structure and framework supports the implementation of sustainable finance regulations within the UK and the EU. This framework is managed by the Asset Management EMEA Regulatory Change Management Team (“Change Management”) within GSAMI, who support regulatory changes by partnering with Legal, Compliance and the impacted Public Markets Investing businesses depending on the scope of each regulation. The ESG and sustainability programme governs the implementation of multiple sustainable finance regulations including the implementation of the FCA’s ESG Sourcebook.

Emerging regulations, including those that pertain to climate, are considered by the Regulatory Middle Office team as well as certain second line of defence groups.

Additionally, the AM Risk team monitors regulatory developments pertaining to climate-related risk management topics, sharing feedback, and providing input on implementation approaches to the relevant governance and oversight forums.

## PRIVATE MARKETS INVESTING

Within Private Markets Investing, the Sustainability & Impact team (supported by Legal, Risk, Compliance and Controllers) is responsible for monitoring existing and emerging climate-related regulations and assessing their potential impact on the business. For more details on regulatory governance responsibilities, see the **“Private Markets Investing – Management Oversight Bodies”** section.

## PRIVATE WEALTH MANAGEMENT

Within Private Wealth Management, the Sustainable Solutions Group is responsible for monitoring climate-related regulations and assessing their impact on the business. In addition, Private Wealth Management has dedicated project management resources that work alongside traditional Legal and Compliance coverage teams, driving and supporting the implementation of multiple sustainable finance regulations.

# METRICS AND TARGETS

Section

06

# METRICS

Decision-useful data is a critical enabler for our climate strategy; it can help us measure and understand climate-related risks, opportunities, and the potential impact of the climate transition on investment performance. In recent years, we have made a concerted effort to build out our climate data collection and analytical capabilities and integrate climate data into investment activities.

## METRICS TO ASSESS CLIMATE-RELATED RISKS AND OPPORTUNITIES

We use a variety of metrics to assess climate-related risks and opportunities across specific products and investment strategies. Throughout this report, we have provided select examples of these metrics (e.g., KPI for Clean Energy in the Global Environmental Impact Equity Strategy). However, this entity-level report does not provide a comprehensive description of these metrics for each product and investment strategy in-scope for the AWM report. Details on metrics for individual products and investment strategies will be included in individual product-level reports that are made available to clients (on request).

Throughout the report, we have also outlined climate metrics that specific investment teams may consider in their investment decisions and monitoring (e.g., ESG Scorecard metrics within the Fundamental Equity business unit).

At present, investment teams are not systematically measuring the extent to which assets under supervision and products and strategies are aligned with a well below 2°C scenario.<sup>94</sup>

## GHG EMISSIONS AND ASSOCIATED METRICS

Within this section, we have disclosed the carbon footprinting metrics for GHG emissions within our investment products and strategies at the business line level, with separate disclosures for Public Markets Investing, Private Wealth Management, and Private Markets Investing.<sup>95,96</sup> We acknowledge that the scope and calculation methodologies of reported climate metrics may change with evolving industry standards and the development of our climate capabilities.

For the specific scope of assets included in the metrics calculation see **"Appendix E: Additional Details on Metrics"**. The GHG emissions and carbon footprinting metrics disclosed below specifically include business activities within the UK legal entities (GSAMI and GSI), but do not comprehensively include all of AWM's global business activities across various other legal entities.

<sup>94</sup> AWM does not yet conduct a systematic, business-segment wide assessment of the alignment of assets under supervision with a well below 2°C scenario.

<sup>95</sup> Although both Private Wealth Management and Private Markets Investing operate with GSI, there will be no aggregation of metrics across the two business lines in the GSI UK TCFD report given the different types of business performed within the business lines and the different recommended calculation methodology for the alternative assets managed by Private Markets Investing. The GSAMI legal entity report will cover in-scope assets for Public Markets Investing only. Hence, the business line- and entity-level report will align for GSAMI.

<sup>96</sup> In addition, we measure and report various GHG emissions and carbon footprinting metrics within select investment products and strategies, as noted throughout the "Strategy" section of this report.

## OVERVIEW OF GHG EMISSIONS METRICS DISCLOSED

Metric	Units	Strengths	Limitations	Use Cases
Absolute Financed GHG Emissions	tCO <sub>2</sub> e	<ul style="list-style-type: none"> <li>Provides an absolute GHG emissions measurement attributed to AWM based on its share in an asset's capital base.</li> </ul>	<ul style="list-style-type: none"> <li>Increases with portfolio or asset size, making comparisons difficult across companies/asset classes/portfolios.</li> <li>Relies on EVIC<sup>97</sup> to 'attribute' GHG emissions, may not reflect influence, ownership share, and may be affected by volatility.</li> </ul>	<ul style="list-style-type: none"> <li>Track a measure of absolute GHG emissions attributed to portfolios over time.</li> </ul>
Total Carbon Footprint	tCO <sub>2</sub> e / \$million invested	<ul style="list-style-type: none"> <li>Facilitates comparison of GHG emissions over time, between asset classes and portfolios.</li> <li>Normalises for portfolio size and size of the asset's capital base.</li> </ul>	<ul style="list-style-type: none"> <li>Potentially volatile, particularly due to market fluctuations in equity value, which may be unrelated to changes in GHG emissions.</li> <li>Less directly links to company activities given its focus on the capital base.</li> </ul>	<ul style="list-style-type: none"> <li>Measure the carbon efficiency of the portfolio/asset class.</li> </ul>
Weighted Average Carbon Intensity ("WACI")	tCO <sub>2</sub> e / \$million sales	<ul style="list-style-type: none"> <li>Facilitates comparison of GHG emissions over time, between asset classes and portfolios.</li> <li>Normalises for portfolio size and magnitude of the company's sales.</li> </ul>	<ul style="list-style-type: none"> <li>Potentially volatile due to year-to-year sales performance and the inflation of sales values, which may be unrelated to changes in GHG emissions.</li> <li>Normalisation on sales is less direct than using sector-specific activity metrics.</li> </ul>	<ul style="list-style-type: none"> <li>Measure exposure of portfolio/asset classes to carbon intensive companies.</li> <li>Provide a common normalised measure of fund GHG emissions performance.</li> </ul>

<sup>97</sup> Enterprise Value Including Cash.

## METRICS RESULTS AND COMMENTARY

The tables below detail the GHG emissions metrics for GSI and GSAMI in-scope activities AUS for 2022. We have referenced the guidance on calculating metrics set forth by the Partnership for Carbon Accounting Financials Global GHG Accounting Standard ("PCAF Standard")<sup>98</sup> and TCFD,<sup>99</sup> where applicable.

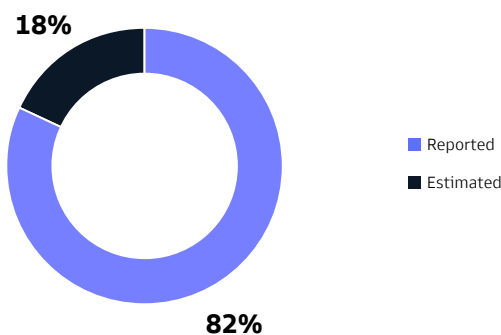
### PUBLIC MARKETS INVESTING

Metric	Asset Classes	Scope	2022	Units
Absolute Financed GHG Emissions	Listed Equities and Corporate Bonds	Scope 1	6,083,057	tCO <sub>2</sub> e
		Scope 2	1,443,564	
		Scope 1 and 2	7,526,621	
Total Carbon Footprint	Listed Equities and Corporate Bonds	Scope 1 and 2	41.8	tCO <sub>2</sub> e / \$million invested
WACI	Listed Equities and Corporate Bonds	Scope 1 and 2	144.5	tCO <sub>2</sub> e / \$million sales

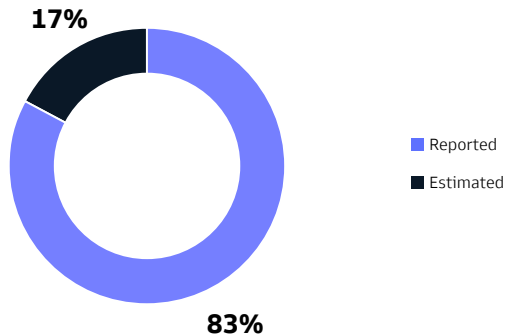
The Scope 1, Scope 2, Total GHG emissions (Scope 1 and 2), and Total Carbon Footprint metrics for Public Markets Investing cover 72% of AUS for in-scope listed equities and corporate bonds, while the WACI metric covers 87% of AUS for in-scope listed equities and corporate bonds. The data coverage for the WACI metric is higher than for the other disclosed metrics, given that there are numerous holdings for which the third-party vendor does not provide EVIC data but does provide GHG emissions and sales data. The remaining holdings, which do not have the requisite data needed to calculate a metric provided by the third-party vendor, have been excluded from the calculation of the relevant metric and the weights of the remaining portfolio holdings have been normalised accordingly. This approach is in line with the methodology employed by the third-party vendor.

Public Markets Investing relies on the GHG emissions data provided by a third-party vendor. This vendor provides GHG emissions from reported company disclosures ("Reported") as well as GHG emissions estimated by the third-party vendor using their internal methodology ("Estimated"). The following graphics detail the source of GHG emissions data (i.e., Reported vs. Estimated) for in-scope holdings based on the total Scope 1 and 2 financed GHG emissions as well as the market value of holdings.

**Figure 9: Source of Public Markets Investing GHG Emissions Data by Scope 1 and 2 Financed GHG Emissions<sup>100</sup>**



**Figure 10: Source of Public Markets Investing GHG Emissions Data by Market Value of Holdings<sup>101</sup>**



<sup>98</sup> Financed GHG Emissions: The Global GHG Accounting & Reporting Standard, <https://carbonaccountingfinancials.com/en/standard>.

<sup>99</sup> Implementing the Recommendations of the Task Force on Climate-Related Financial Disclosures, [https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing\\_Guidance.pdf](https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing_Guidance.pdf).

<sup>100</sup> Note: data is as of December 31 2022.

<sup>101</sup> Note: data is as of December 31 2022.

## PRIVATE MARKETS INVESTING<sup>102</sup>

For the purposes of this UK TCFD report, the scope of Private Markets Investing disclosures is intended to include all corporate and infrastructure investment holdings in funds where GSI carried out portfolio management activities (whether on a direct or delegated basis) in 2022.<sup>103</sup> Given the scope of reporting, GSI-entity exposure

may not be representative of overall Private Markets Investing exposure or related fund family exposures, which are reported in on-demand product-level reports. The reporting below includes all corporate and infrastructure exposure with active GHG emissions, investment holdings, and revenue within these bounds.

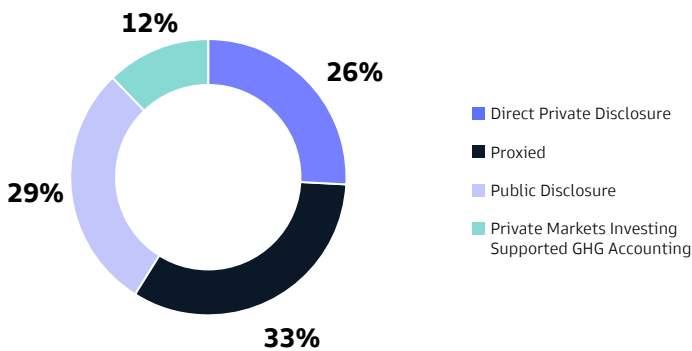
Metric	Asset Classes	Scope	2022	Units
Absolute Financed GHG Emissions	Private Equity, Growth Equity, Private Credit, Infrastructure, SIG	Scope 1	108,103	tCO <sub>2</sub> e
		Scope 2 <sup>104</sup>	62,423	
		Scope 1 and 2	170,526	
Total Carbon Footprint	Private Equity, Growth Equity, Private Credit, Infrastructure, SIG	Scope 1 and 2	23.0	tCO <sub>2</sub> e / \$million invested
WACI	Private Equity, Growth Equity, Private Credit, Infrastructure, SIG	Scope 1 and 2	61.4	tCO <sub>2</sub> e / \$million revenue

Private Markets Investing has made progress collecting and estimating GHG emissions data in 2022, allowing it to provide improved transparency to investors. Private Markets Investing has engaged directly with select portfolio companies to develop a process to collect and review GHG emissions data, and worked with partners to provide estimates, offer carbon footprinting services aligned with the GHG Protocol (“AWM Private Supported GHG Accounting”), and aggregate existing public disclosures. As a result of these efforts, 67% of estimated financed GHG emissions currently come from direct company disclosures to Private Markets Investing (“Direct Private Disclosure”) or public channels (“Public Disclosure”), representing 32% of portfolio companies.

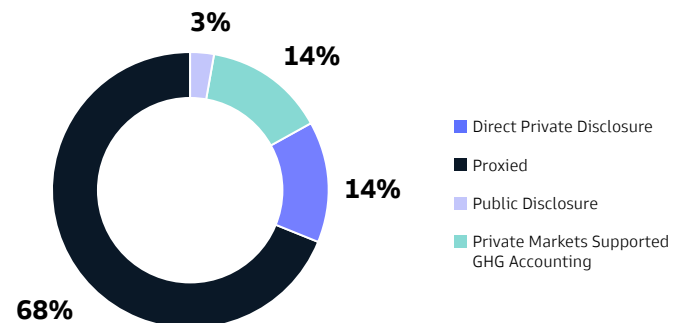
In future years, Private Markets Investing will continue supporting portfolio companies in providing enhanced disclosures based on higher quality data. Reliance on third parties for the accuracy of estimates and disclosures will continue and limitations in reporting quality may contribute to variance from actual footprints due to portfolio company and vendor assumptions and methodologies.

Within the reporting parameters, 39% of Scope 1 and 2 estimated financed GHG emissions (4% of Private Markets Investing’s portfolio companies) are covered by commitments to a Science Based Targets Initiative (“SBTi”) target or have a validated target by SBTi.

**Figure 11: Source of Private Markets Investing GHG Emissions Data by Scope 1 and 2 Financed GHG Emissions**



**Figure 12: Source of Private Markets Investing GHG Emissions Data by Number of Portfolio Companies**



<sup>102</sup> Disclosed GHG emissions pertain to investment products in-scope for FCA guidance, and do not include the entirety of investment activities for Private Markets Investing. Additional product-level reports are available on-demand for current investors.

<sup>103</sup> Note, metrics for real estate investments are excluded from this legal entity report due to limitations in data availability and accuracy. Further details will be provided in product-level reports, as appropriate.

<sup>104</sup> Private Markets Investing Scope 2 GHG emissions reporting privileges the use of market-based accounting methods over location-based estimates when portfolio companies directly report footprints. When market-based accounting methods are not used, estimated, or reported footprints are based on location-based methods.

## PRIVATE WEALTH MANAGEMENT

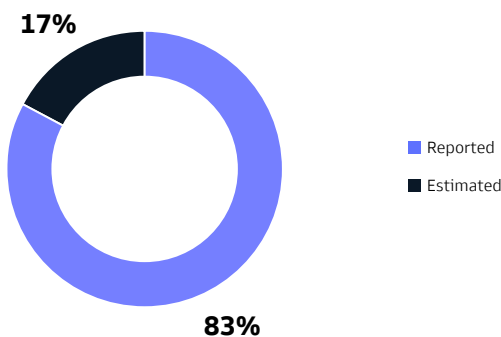
Metric	Asset Classes	Scope	2022	Units
Absolute Financed GHG Emissions	Listed Equities and Corporate Bonds	Scope 1	146,529	tCO <sub>2</sub> e
		Scope 2	42,975	
		Scope 1 and 2	189,504	
Total Carbon Footprint	Listed Equities and Corporate Bonds	Scope 1 and 2	29.6	tCO <sub>2</sub> e / \$million invested
WACI	Listed Equities and Corporate Bonds	Scope 1 and 2	121.0	tCO <sub>2</sub> e / \$million sales

The Scope 1, Scope 2, Total GHG emissions (Scope 1 and 2), and Total Carbon Footprint metrics for Private Wealth Management cover 90% of AUS for in-scope listed equities and corporate bonds, while the WACI metric covers 97% of AUS for in-scope listed equities and corporate bonds. The data coverage for the WACI metric is higher than for the other disclosed metrics, given that there are numerous holdings for which the third-party vendor does not provide EVIC data but does provide GHG emissions and revenue data. The remaining holdings, which do not have the requisite data needed to calculate a metric provided by the third-party vendor, have been excluded from the calculation of the relevant metric and the weights of the

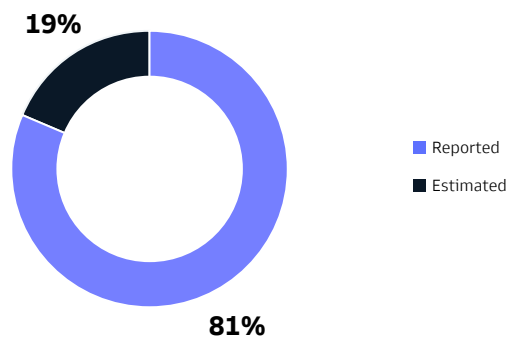
remaining portfolio holdings have been normalised accordingly. This approach is in line with the methodology employed by the third-party vendor.

Private Wealth Management relies on the GHG emissions data provided by the same third-party vendor as Public Markets Investing. The following graphics detail the source of GHG emissions data (i.e., Reported vs. Estimated) for in-scope holdings based on the total Scope 1 and 2 financed GHG emissions as well as the market value of holdings.

**Figure 13: Source of Private Wealth Management GHG Emissions Data by Scope 1 and 2 Financed GHG Emissions<sup>105</sup>**



**Figure 14: Source of Private Wealth Management GHG Emissions Data by Market Value of Holdings<sup>106</sup>**



<sup>105</sup> Note: data is as of December 31 2022.

<sup>106</sup> Note: data is as of December 31 2022.



## CALCULATION METHODOLOGY

Public Markets Investing, Private Markets Investing and Private Wealth Management calculated portfolio GHG emissions per the formulas below, with reference to the formulas provided by the TCFD Annex, supplemented by the PCAF Standard:

**Scope 1 GHG Emissions**

$$\sum \frac{\text{Current value of investment}}{\text{Issuer EVIC}} \times \text{Issuer Scope 1 GHG emissions (tCO}_2\text{e)}$$

Also written as

$$\sum \frac{\text{Outstanding amount}}{\text{Company EVIC}} \times \text{Company Scope 1 GHG emissions (tCO}_2\text{e)}$$

**Scope 2 GHG Emissions**

$$\sum \frac{\text{Current value of investment}}{\text{Issuer EVIC}} \times \text{Issuer Scope 2 GHG emissions (tCO}_2\text{e)}$$

Also written as

$$\sum \frac{\text{Outstanding amount}}{\text{Company EVIC}} \times \text{Company Scope 2 GHG emissions (tCO}_2\text{e)}$$

**Total GHG Emissions (Scope 1 + Scope 2)**

$$\sum \frac{\text{Current value of investment}}{\text{Issuer EVIC}} \times \text{Issuer Scope 1 and 2 GHG emissions (tCO}_2\text{e)}$$

Also written as

$$\sum \frac{\text{Current value of investment}}{\text{Company EVIC}} \times \text{Company Scope 1 and 2 GHG emissions (tCO}_2\text{e)}$$

**Carbon Footprint (Scope 1 + Scope 2)**

$$\sum \frac{\text{Current value of investment}}{\text{Issuer EVIC}} \times \text{Issuer Scope 1 and 2 GHG emissions (tCO}_2\text{e)}$$

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Current value of all in scope investments (\$ million)

Also written as

$$\sum \frac{\text{Current value of investment}}{\text{Company EVIC}} \times \text{Company Scope 1 and 2 GHG emissions (tCO}_2\text{e)}$$

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Current value of all in scope investments (\$ million)

**WACI (Scope 1 + Scope 2) – Listed Equity and Corporate Bonds**

$$\sum \frac{\text{Current value of investment}}{\text{Current value of all in scope investments}} \times \frac{\text{Issuer Scope 1 and 2 GHG emissions (tCO}_2\text{e)}}{\text{Issuer Revenue or Sales (\$ million)}}$$

Also written as

$$\sum \frac{\text{Current value of investment}}{\text{Current value of all in scope investments}} \times \frac{\text{Company Scope 1 and 2 GHG emissions (tCO}_2\text{e)}}{\text{Company Revenue or Sales (\$ million)}}$$

107

<sup>107</sup> Private Markets Investing defines EVIC as market value of equity and the book value of debt for the purposes of these calculations. Current value of investment is defined as disbursed debt net of repayments plus Goldman Sachs' ownership share times total company equity market value.

## PUBLIC MARKETS INVESTING AND PRIVATE WEALTH MANAGEMENT: APPROACH TO CALCULATING METRICS

### Data Sources and Collection Process<sup>108</sup>

Public Markets Investing and Private Wealth Management use a third-party vendor as the primary market data provider for portfolio companies' GHG emissions (Scope 1 and 2) and financial data (EVIC and sales) for metric calculation. Despite improving data availability from the increasing adoption of climate reporting, data providers, including the third-party vendor, continue to rely on estimates and proxies where there is a gap in reported GHG emissions data. This report's metric calculations include the reported data published by the portfolio company where available, or the estimated data, both sourced from the third-party vendor as of year-end 2022. Public Markets Investing and Private Wealth Management acknowledge that changes in the third-party vendor's coverage of portfolio company data and their data estimation methodologies may have a significant impact on the calculations of financed GHG emissions resulting in either higher or lower values; as such Public Markets Investing and Private Wealth Management will continue to monitor the impact to historical and future reports.

### Data Gaps, Challenges, and Limitations

- **Data gaps related to external and alternative holdings:** Data transparency and quality continue to be a challenge for third party managed portfolios and alternative holdings. As such, these holdings are excluded from the scope of assets for this report's metric calculation.
- **Limitations related to data coverage:** Public Markets Investing and Private Wealth Management rely on a third-party vendor for portfolio company data, and the coverage universe may contain gaps for certain issuers or securities, such as those recently matured or expired. Where there are data gaps, a normalisation process is applied to increase the weights of holdings in the portfolio for which there is data coverage. Future improvement in data coverage may have a significant impact on the calculations of financed GHG emissions resulting in either higher or lower values; as such Public Markets Investing and Private Wealth Management will continue to monitor the impact to historical and future reports.
- **Limitations related to financial and GHG emissions data:** EVIC data available for select issuers in the third-party vendor's coverage universe may be too historic to be usable for meaningful metric calculation; to ensure metrics provided in this report are timely and relevant, Public Markets Investing and Private Wealth Management have primarily used the latest data available that are no earlier than 2021 for metric calculations. **Where data is not available for 2021 or later, a normalisation process is applied to increase the weights of holdings in the portfolio for which there is data coverage.** Nonetheless, the reporting period for EVIC, sales, and/or GHG emissions data for select issuers in the third-party vendor's coverage universe may not be aligned due to differences in timing between financial and climate reporting.
- **Limitations related to estimation methodologies:** Public Markets Investing and Private Wealth Management rely on the third-party vendor's data estimation methodologies. Evolving updates to methodologies may have a significant impact on the calculations of financed GHG emissions, as such Public Markets Investing and Private Wealth Management will continue to monitor the impact to historical and future reports.
- **Limitations related to financial volatility and inflation:** GHG estimates and all TCFD reporting metrics rely on financial data for normalisation and/or estimation. Enterprise value and sales may vary due to volatility, rates, and inflationary pressures. Metrics using these financial values for estimation, attribution, or normalisation may display differences from year-to-year that do not necessarily reflect changes in real world GHG emissions.

Going forward, the main areas of focus for Public Markets Investing and Private Wealth Management include:

- **Data availability and quality:** Public Markets Investing and Private Wealth Management will continue to engage with third-party vendors to seek to improve the coverage and quality of data for its holdings.
- **Coverage of external holdings:** Public Markets Investing and Private Wealth Management will seek to improve the transparency and coverage of third-party managed portfolios, in order to improve the overall portfolio coverage.
- **Improvements to calculation and estimation methodologies:** Public Markets Investing and Private Wealth Management will continue to monitor changes to calculation and estimation methodologies and evaluate their potential impact on future GHG emissions disclosures.

<sup>108</sup> While Public Markets Investing and Private Wealth Management have reviewed the data, the data have not been verified or assured by a third party and may be subject to limitations. Therefore, no representation or warranty is made as to the accuracy, consistency, or completeness of this information, and Public Markets Investing and Private Wealth Management cannot guarantee that data provided in the future will be provided in the same format as this data.

## PRIVATE MARKETS INVESTING: APPROACH TO CALCULATING METRICS

### Data Sources and Collection Process<sup>109</sup>

#### ESG data collection for Private Equity, Growth Equity, Infrastructure, and SIG

Private Markets Investing monitors select portfolio companies' climate- and sustainability-related progress by engaging in biannual ESG data collection throughout the investment holding period. Where a company is in-scope for monitoring, portfolio company management teams are asked to complete a reporting template covering a variety of ESG topics, which are relevant for climate-related risk management and GHG emissions reductions. These metrics are tracked and analysed internally to help guide ESG development plans for individual portfolio companies (including climate transition plans, as appropriate), assess ESG performance at a fund level, where relevant and inclusive of climate-related performance, and inform climate strategy.

Through the data collection process, Private Markets Investing maintains dialogues with portfolio companies and management teams and may seek enhanced disclosure of ESG factors and risks, particularly where Private Markets Investing believes that such information could meaningfully impact the value of investments.

#### GHG Emissions data collection process for Private Equity, Growth Equity, Infrastructure, Private Credit, and SIG

Private Markets Investing references the PCAF Standard in prioritising sources of data in the following order of precedence: reported GHG emissions, physical activity-based GHG emissions estimates, economic activity-based (financial) GHG emissions estimates. Private Markets Investing acknowledges that the quality of data increases as more portfolio companies directly report GHG emissions and is committed to reducing reliance on economic/financial estimates of GHG emissions over time.

In 2022, Private Markets Investing collected reported GHG emissions data for recent investments where equity ownership was greater than 25%<sup>110</sup> in Private Equity and Infrastructure. Additionally, all Sustainable Investing Group investments were required to report GHG emissions data for 2022. Although no specific tool or process is required, Private Markets Investing encourages companies with no established method to engage with Private Markets Investing's recommended GHG accounting provider. These portfolio companies were required to submit GHG emissions data directly in its ESG data collection template and/or through the GHG accounting provider, together with other ESG metrics. Private Markets Investing requests that the portfolio company's Chief Financial Officer reviews and attests to the accuracy of this data before submitting the data.

Regardless of these efforts, reported GHG emissions accuracy ultimately relies on the reporting portfolio company and quality of underlying accounting methods.

For portfolio companies that did not submit reported GHG emissions data, Private Markets Investing relies on third-party GHG emissions estimates from a GHG accounting provider based on financials and operating characteristics, including a combination of the portfolio company's country, NAICS<sup>111</sup> industry, employee count, and financials. The sources of the GHG emissions factors vary by region and were verified by a third-party engaged in October 2022 to independently validate the calculation methodology for Scope 1, 2, and 3 GHG emissions. For select asset classes, as an alternative to using 2022 GHG emissions proxies based on financial data, Private Markets Investing established waterfall logic to privilege 2021 primary data as an estimate for fiscal year 2022.

Where there are concerns or questions about data quality or accuracy, Private Markets Investing engages with the GHG accounting provider to review the data for data quality and drivers of GHG emissions sources. Regardless of these checks, Private Markets Investing ultimately relies on its vendors and the quality of source data for the accuracy of reported GHG emissions and GHG emissions estimates.

### Data Gaps, Challenges and Limitations

There are various limitations associated with climate-related metrics due to emerging methodologies and data gaps.

- **Limitations related to proxy data and estimates:** For portfolio companies in-scope for the ESG data collection program that are not required or are not able to report GHG emissions (typically investments where Private Markets Investing has minority stakes), Private Markets Investing used proxy data. Private Markets Investing has relied on third parties to gather this proxy data and have not verified, edited, or amended this data in any way.
- **Limitations related to reliance on primary data:** While Private Markets Investing has recommended a preferred GHG accounting provider, portfolio companies in-scope for ESG data collection are able to select a different method or tool/service to calculate and report activity-based GHG emissions. As a result, portfolio companies may use different methodologies, primary data sources, and assumptions to calculate their GHG emissions. This could result in differences in data quality and reliability, as Private Markets Investing does not verify, audit, or amend this data. When aggregating GHG emissions calculated and directly reported by portfolio companies, the data quality and reliability of these aggregations may vary. Further, as estimations, attribution factors, and GHG emissions normalisations are derived from financial and operating data provided by companies, Private Markets Investing relies on the accuracy of company representations to provide correct inputs into these fields.

<sup>109</sup> While Private Markets Investing has reviewed the data, the data have not been verified or assured by a third party and may be subject to limitations. Therefore, no representation or warranty is made as to the accuracy, consistency, or completeness of this information, and Private Markets Investing cannot guarantee that data provided in the future will be provided in the same format as this data. Private Markets Investing continues to develop its ESG data collecting and reporting framework, and data provided in the future may differ in terms of content and format from this data.

<sup>110</sup> Private Markets Investing asks that portfolio companies report GHG emissions in a manner consistent with the GHG Protocol which is process-based and ready to be audited. However, Private Markets Investing cannot assure that all reporting is in line with these expectations. For recent investments with more than 25% ownership in Private Equity and Infrastructure and all SIG investments, Private Markets Investing collects data on a "best efforts" basis.

<sup>111</sup> The North American Industry Classification System.

- **Limitations related to aggregating primary and proxy data:** When aggregating GHG estimates based on activities with GHG emissions estimates based on financials, the data quality and reliability of estimates may vary across investment products and strategies.
- **Limitations related to financial volatility and inflation:** GHG estimates and all TCFD reporting metrics rely on financial data for normalisation and/or estimation. Enterprise value and revenue may vary due to volatility, exchange rates, and inflationary pressures. Metrics using these financial values for estimation, attribution, or normalisation may display differences from year-to-year that do not necessarily reflect changes in real world GHG emissions.

Going forward, Private Markets Investing's main areas of focus include:

- **Data collection infrastructure:** Private Markets Investing is working on automating portions of the ESG data collection process including how information is collected and reported across investments.

- **Data availability and quality:** Private Markets Investing is engaging with portfolio companies to encourage tracking and reporting of data to help increase access to primary data and support decarbonisation initiatives. Private Market Investing's efforts include:

- Enhancements to centralised data governance and controls to improve quality of reported data.
- Training webinars for select portfolio companies and investment professionals on data collection and measurement best practices.
- Ongoing partnership with a GHG accounting provider to help select portfolio companies measure GHG emissions and report on their GHG emissions in a cost-effective manner.

# TARGETS

While each of Public Markets Investing, Private Markets Investing, and Private Wealth Management have not yet set business line-level, AWM-specific GHG emissions reductions targets, we are considering potential target setting approaches.

Additionally, select business lines are undergoing build-out of decarbonisation engagement and planning capabilities to support scenario-aligned GHG emissions reductions across our investment portfolio. Our approach to the investments we manage is intended to be collaborative and data-driven; it will evolve in response to our clients' investment objectives and based on our individual business lines and investment activities.

As part of Goldman Sachs, AWM is included within the purview of firmwide operational GHG emissions initiatives and commitments. In 2015, Goldman Sachs achieved carbon neutrality across firmwide operations and business travel. Since then, Goldman Sachs has expanded this commitment and set a target to achieve net zero by

2030 in the firmwide supply chain, inclusive of the AWM operations. For further details on the firm's operational net zero target and key initiatives across operations and supply chain, refer to the [Goldman Sachs 2022 Sustainability Report](#).

In addition, following Goldman Sachs' commitment in March 2021 to align its financing activities to a net zero 2050 pathway, Goldman Sachs established an initial set of business-related, ranged GHG emissions intensity targets for 2030 for the firm's financing activities across three sectors: oil and gas, power, and auto manufacturing. AWM oversees a portion of the firm's on-balance sheet alternative assets in these sectors, which are included in the initial 2030 GHG emissions intensity targets.

For more details on the interim targets, refer to [The Goldman Sachs 2021 TCFD Report](#). The firm also plans to publish an updated Goldman Sachs-level TCFD report later this year that will demonstrate our progress towards our climate-related goals and commitments.

# APPENDICES

Section

07

## APPENDIX A

# ABBREVIATIONS USED

**AM Risk:** Asset Management Global Risk team

**AUS:** Assets under supervision

**AWM:** Asset & Wealth Management

**BNEF:** Bloomberg New Energy Finance

**Change Management:** Asset Management EMEA Regulatory Change Management Team

**CO<sub>2</sub>e:** Carbon dioxide-equivalent

**COO:** Chief Operating Officer

**CRO:** Chief Risk Officer

**CRREM:** Carbon Risk Real Estate Monitor

**EDCI:** ESG Data Convergence Initiative

**EHS:** Environmental Health & Safety

**EMC:** European Management Committee

**EMEA:** Europe, the Middle East, and Africa

**ERC:** Firmwide Enterprise Risk Committee

**ESG:** Environmental, social, governance

**ESG Sourcebook:** ESG Sourcebook of the Financial Conduct Authority Handbook

**EU:** European Union

**EVIC:** Enterprise Value including Cash

**FCA:** Financial Conduct Authority

**FICC:** Fixed Income, Currency, and Commodities

**FMCG:** Fast-moving consumer goods

**FMG:** Fund Management Group

**GHG:** Greenhouse gas

**Goldman Sachs Board:** The Goldman Sachs Group, Inc. Board of Directors

**GSAM B.V.:** Goldman Sachs Asset Management B.V.

**GSAMFSL:** Goldman Sachs Asset Management Fund Services Limited

**GSAMI:** Goldman Sachs Asset Management International

**GSAMI Board:** Goldman Sachs Asset Management International Board of Directors

**GSAML P:** Goldman Sachs Asset Management, L.P.

**GSI:** Goldman Sachs International

**GSI Board:** Goldman Sachs International Board of Directors

**HECS:** Horizon Environment & Climate Solutions strategy

**IAG:** ISSB Investor Advisory Group

**IC memos:** Investment Committee memos

**IIGCC:** Institutional Investors Group on Climate Change

**ISSB:** IFRS International Sustainability Standards Board

**KPIs:** Key performance indicators

**MAS:** Multi-Asset Solutions

**NDC:** Nationally Determined Contribution plans

**NN IP:** NN Investment Partners

**PAII:** Paris Alignment Investment Initiative

**PCAF Standard:** PCAF Global GHG Accounting Standard

**PDWG:** Product and Distribution Working Group

**PRC:** Public Responsibilities Committee

**QIS:** Quantitative Investment Strategies

**RADD:** Radar Alerts for Detecting Deforestation

**RAS:** Risk Appetite Statement

**Risk Committee:** The Risk Committee of the Goldman Sachs Board

**SASB:** Sustainability Accounting Standards Board

**SAWG:** Sustainable Asset Working Group

**SBTi:** Science Based Targets Initiative

**SDGs:** United Nations Sustainable Development Goals

**SFDR:** Sustainable Finance Disclosure Regulation

**SFG:** Sustainable Finance Group

**SIG:** Sustainable Investing Group

**SIIP:** Sustainable Investing and Innovation Platform

**SMAs:** Separately managed accounts

**SSG:** Private Wealth Management Sustainable Solutions Group

**TCFD:** Task Force on Climate-Related Financial Disclosures

**UK:** United Kingdom

**WACI:** Weighted Average Carbon Intensity

**XIG:** External Investing Group

## APPENDIX B

# IN-SCOPE ASSET & WEALTH MANAGEMENT ASSETS

The FCA's requirements are set out in the ESG Sourcebook of the FCA Handbook ("ESG Sourcebook") which mandates TCFD-aligned disclosures for asset and wealth management entities domiciled in the UK. The Asset & Wealth Management Task Force on Climate-Related Financial Disclosures 2022 Report has been developed in line with the ESG Sourcebook.

The Goldman Sachs legal entities that meet the threshold for disclosure are GSI and GSAMI (i.e., the "UK legal entities"). The ESG Sourcebook only requires an in-scope firm to prepare a TCFD entity report for the assets managed or administered by the firm in relation to its TCFD in-scope business (e.g., portfolio management). Accordingly, a firm will not need to include all business activity in the TCFD entity report, only those that carry out TCFD in-scope business. On that basis, we have concluded that only business conducted within: Public Markets Investing (under the purview of GSAMI); Private Markets Investing (under the purview of GSI); and Private Wealth Management (under the purview of GSI) business lines are in the scope of the requirement to make UK TCFD reports at the legal entity level.<sup>112</sup>

For Public Markets Investing, the scope of assets is:

- SMAs contracted with GSAMI (including sub-advised mandates where external fund managers delegate to GSAMI);
- SMAs where GSAMI delegates portfolio management to affiliates (e.g., Goldman Sachs Asset Management, L.P., "GSAML") or to external managers (i.e., onward delegation);
- SMAs where affiliates delegate portfolio management to GSAMI (e.g., GSAML);
- Public Markets Investing funds delegating portfolio management to GSAMI (including funds managed by GSAMI and sub-delegated to external managers and other Public Markets Investing affiliated entities), this includes all funds for which Goldman Sachs Asset Management Fund Services Limited ("GSAMFSL") acts Management Company or AIFM;
- Products on the Private Wealth Management platform delegating portfolio management to GSAMI (centrally managed strategies and bespoke GSI SMAs).

For Private Markets Investing, the scope of assets is:

- Private Markets Investing where portfolio management is conducted by GSI, either directly or on a delegated basis with respect to Private Markets Investing funds, or by an affiliate of GSI (e.g., Goldman Sachs & Co, "GSCO", GSAML) to which it has delegated portfolio management.

For Private Wealth Management, the scope of assets is:

- Holdings within discretionary accounts contracted to GSI.

<sup>112</sup> Following an internal reorganisation that took place on 1 April 2023, the UK Private Markets Investing business now sits within GSAMI. However, during the reporting period covered by this report (2022 calendar year) the business was part of GSI.

## APPENDIX C

# ADDITIONAL DETAILS ON PUBLIC MARKETS INVESTING

## MEMBERSHIPS AND COLLABORATIVE ENGAGEMENT WITHIN PUBLIC MARKETS INVESTING

Public Markets Investing seeks to engage collaboratively with clients and the portfolio companies it invests in through investor coalitions and memberships in multi-stakeholder working groups, demonstrating the commitment to work with the broader community to drive better climate outcomes.

Public Markets Investing is a member of the **Institutional Investors Group on Climate Change ("IIGCC")** and is closely engaged with IIGCC on the Paris Alignment Investment Initiative ("PAII"), which aims to inform the industry standard on monitoring and acting on asset-owner ambitions related to net zero-aligned investing. As a member of this leading climate investor group, Public Markets Investing participates in informing developing standards and advancing engagement strategies.

Public Markets Investing has been a member of the **Sustainability Accounting Standards Board Investor Advisory Group** since 2018 and continues to support their work as part of the IFRS International Sustainability Standards Board ("ISSB"). Public Markets Investing currently holds two seats on the ISSB Investor Advisory Group ("IAG").

## CLIMATE- AND SUSTAINABILITY-RELATED TRAINING WITHIN PUBLIC MARKETS INVESTING

Through the Sustainability and Impact webinar series launched last year, Public Markets Investing aims to educate clients on important climate and sustainability topics. Examples of the topics covered in 2022 include green capital expenditure, battery storage, sustainable debt market trends and climate change impact on socially vulnerable communities among others.

Public Markets Investing also holds an investor meeting called The Forum, in which leading experts, both internal and external to the organisation, meet to discuss the global trends and events that will shape investments in the ever-changing macro and policy environment. Examples of sessions dedicated to climate-related topics include best practices in stewardship, the investment implications of climate change, and the changing economic impact and implications of decarbonisation ("Carbonomics").

The inputs that Public Markets Investing derives from The Forum allow portfolio managers and research analysts to stay updated on the latest developments in the climate space, and meaningfully enrich investment processes across each asset class. To keep advancing sustainable finance capabilities and knowledge baseline across the organisation, Public Markets Investing endeavours to drive engagement and knowledge around the firm's climate strategy, goals, and product offerings. Therefore, a key focus for 2023 is to invest in engaging and educating all employees across business lines, regions, and seniority levels.



## APPENDIX D

# ENGAGING WITH THIRD PARTIES

The AWM climate strategy approach detailed in the **“Asset & Wealth Management: Our Climate Strategy”** section has influenced, and continues to influence, the process and decision-making for engaging third-parties and the services and products we offer and employ from those third-parties. In practice, considerations and decisions around engaging third-parties (including where we delegate to such entities) are made, where relevant, in view of:

- (1) the extent to which the engagement (or delegation) may directly or indirectly enhance the development and ongoing delivery of a platform that allows clients to optimise their unique climate preferences, and / or enable us to more effectively manage climate-related risks and opportunities; and
- (2) conversely, the extent to which the engagement (or delegation) may directly or indirectly impede our ability to deliver on our strategic aims under (1).

When assessing third-party tools, critical consideration is given to our vendor relationships, vendor capabilities, and applicability to our investment strategies. This includes an assessment of their climate- and sustainability-related capabilities, where applicable to our investment products and strategies. We are committed to developing our approach to further quantify our exposure to climate-related risks and to assess the potential financial impacts of climate-related risks; as well as evaluating enhancements to our approach, including staying abreast of industry wide capabilities and tools.

When assessing third-party asset managers, whose products, and strategies we may leverage through our open architecture platform, we rely on XIG which performs comprehensive investment and operational due diligence processes on third-party managers across public and private markets (see the **“Imprint within the External Investing Group (“XIG”)”** section for more details).

## APPENDIX E

# ADDITIONAL DETAILS ON METRICS

## ADDITIONAL DETAILS ON METRICS FOR PUBLIC MARKETS INVESTING AND PRIVATE WEALTH MANAGEMENT

### Scope of metrics calculated

As noted in the “**Metrics and Targets**” section, Public Markets Investing and Private Wealth Management reference the PCAF Standard<sup>113</sup> for calculation of financed GHG emissions for investments managed within these business lines. PCAF sets out metrics to be calculated and disclosed at an asset class (or sectoral) level, where asset class is defined as one of the seven listed below:

- Listed Equity & Corporate Bonds
- Business Loans & Unlisted Equity
- Project Finance
- Commercial Real Estate
- Mortgages
- Motor Vehicle Loans
- Sovereign Debt

PCAF acknowledges that there are recognised limitations in data availability and quality for many asset classes, and therefore calculation methodologies continue to improve and evolve. As such, calculations have been performed for asset classes where calculation methodologies are provided by PCAF and where data availability and quality limitations do not prevent calculation. For this report, this includes Listed Equity (including Real Estate Investment Trusts) and Corporate Bonds for Public Markets Investing and Private Wealth Management. Given data limitations and/or the nascency of calculation methodologies, other asset classes have been excluded (i.e., Business Loans & Unlisted Equity, Project Finance, Commercial Real Estate, Mortgages, Motor Vehicle Loans, and Sovereign Debt).

Where data limitations exist for a holding which is in-scope for disclosure, the holding is excluded from the calculation of the relevant metric and the weights of the holdings remaining in the portfolio are normalised accordingly.

Additionally, given the limited level of fund-level metric disclosure by third-party fund managers for this UK TCFD report, third-party managed funds have been excluded from metric calculation.

## ADDITIONAL DETAILS ON METRICS FOR PRIVATE MARKETS INVESTING

### Data verification

Private Markets Investing uses all reasonable commercial means to obtain accurate data to transparently report on investments' GHG emissions. Where proxied GHG emissions data has been used, Private Markets Investing has relied on third parties to gather this data and have not verified, edited, or amended this data in any way. For GHG emissions estimates, company and financial data were gathered from centralised data storage systems, where company profiles are completed by investment teams. This data is then consolidated and prepared with oversight from the Fund Management Group (“FMG”).

In limited cases where financial data may not be readily available in centralised data storage systems or may not have been updated in time, Private Markets Investing engages with investment teams, FMG, or with portfolio companies to complete financial data used for GHG emissions estimates. To fill gaps, this includes reaching out to a limited number of investment teams and portfolio company management, as well as leveraging FMG.

<sup>113</sup> Financed GHG Emissions: The Global GHG Accounting & Reporting Standard, <https://carbonaccountingfinancials.com/en/standard>.

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