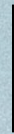


*ACCELERATING  
TRANSITION*



**TASK FORCE ON CLIMATE-RELATED  
FINANCIAL DISCLOSURES REPORT 2021**

**Goldman  
Sachs**

# A Letter from our CEO

---

As a financial institution, we believe we can achieve the greatest impact in advancing the climate transition by partnering with our clients across our business. Whether it's by developing new sustainability-linked financing solutions, offering world-class strategic advice, or co-investing alongside our clients in cutting-edge clean energy companies, we're constantly innovating and expanding new commercial capabilities to help our clients accelerate their transition.

To build a more sustainable planet will require nothing less. Our own Carbonomics research estimates that \$56 trillion in green infrastructure investments is needed worldwide to reach a net zero economy by 2050.

In this report we have defined a range of ambition for an initial set of industries where we see a significant opportunity to help our clients decarbonize. These near-term targets reflect the aspirational goals we have for our business, clients, and the global economy.

Having reliable data will be critical to measuring our impact and managing our progress toward these targets. So, we are continuing our work with corporate partners to develop a free, open-source platform for climate-related data and to equip our clients with new tools — like our Carbon Portfolio Analytics in Marquee — to measure their carbon impact.

Building a more sustainable economy is a global effort, and we're firmly committed to do our part — but even still, we will not succeed unless we approach the problem with global solutions.

The public and private sector must work together. It's especially important for financial institutions to direct capital to sustainable solutions in emerging markets, where the climate transition faces a more daunting journey. That's why we've partnered with Bloomberg Philanthropies to launch a Climate Innovation Fund that will encourage public and private investment in clean energy projects across South and Southeast Asia.

Beyond these efforts, we also need thoughtful public policy that strikes a balance between current energy capabilities and support for new technology, as well as concrete measures, like a price on carbon, that will accelerate a just and orderly transition.

Because in the end that's what this is: a transition. It's going to take time. But as this year's report shows, we're making progress, a more sustainable future is within reach, and Goldman Sachs is determined to do our part to help the world get there.

**DAVID SOLOMON**  
CHAIRMAN AND CHIEF EXECUTIVE OFFICER

Goldman Sachs has a long-standing commitment to address the impacts of climate change and accelerate the transition to a low-carbon economy – we were one of the first major banks to acknowledge the scale and urgency of climate change in 2005. Since then, we have accelerated our efforts to integrate sustainability across our business, prioritizing climate transition and inclusive growth in our commercial efforts with clients.

## OUR PURPOSE

*We advance sustainable economic growth and financial opportunity*

### ADVANCING THE CLIMATE TRANSITION



CLEAN ENERGY



SUSTAINABLE TRANSPORT



ECOSYSTEM SERVICES



WASTE & MATERIALS



SUSTAINABLE FOOD & AGRICULTURE

### DRIVING INCLUSIVE GROWTH



ACCESSIBLE & INNOVATIVE HEALTHCARE



ACCESSIBLE & AFFORDABLE EDUCATION



FINANCIAL INCLUSION



COMMUNITIES

## WE ACHIEVE THIS THROUGH

### WHAT WE DO

OUR WORK WITH CLIENTS

### HOW WE DO IT

OUR FIRM

### HOW WE ADDRESS GAPS

OUR PARTNERSHIPS, ENGAGEMENT & IMPACT

As a financial institution, we believe the most meaningful role we can play in the global climate transition is to drive decarbonization in the real economy in partnership with our clients. We see significant opportunities in further mobilizing the full breadth of our business and franchise to support this effort. These include:

- > Expanding our commercial capabilities to help our clients measure and manage their climate-related exposure, such as:
  - a new cross-firm initiative to support our corporate clients on their decarbonization strategies
  - the recently launched Carbon Portfolio Analytics in our cross-asset digital client services platform, Marquee
  - a holistic ESG client advisory model with a climate segment
- > Developing new financing tools that are tied to progress on climate transition, such as bonds linked to related key performance indicators
- > Investing in climate solutions and emerging technologies that will be critical to enabling decarbonization in the hardest-to-abate sectors

We have also built a dynamic model to engage our clients on climate transition that leverages the breadth of resources and capabilities across our business. It is grounded in our commercial work with clients and catalyzed by our ten-year, \$750 billion commitment to sustainable finance. These efforts are further strengthened by strategic partnerships we have established in areas where we have identified gaps, or believe are able to drive even greater impact through collaboration. This includes our work as the founding

US bank member of OS-Climate, an open-source platform for climate data and analytical tools that will be critical for our clients to achieve their net zero ambitions. It also includes our climate finance partnership with Bloomberg, where we launched a Climate Innovation Fund alongside Bloomberg Philanthropies and the Asian Development Bank to provide essential de-risking capital for low-carbon economic development in South and Southeast Asia, a region that will play a critical role in the global climate transition.

*Accelerate & enable* —————>

our clients' climate transitions through innovative commercial capabilities and products

*Address financing, policy, data & knowledge gaps* —————>

in the broader ecosystem and drive greater impact through strategic partnerships

*Manage* —————>

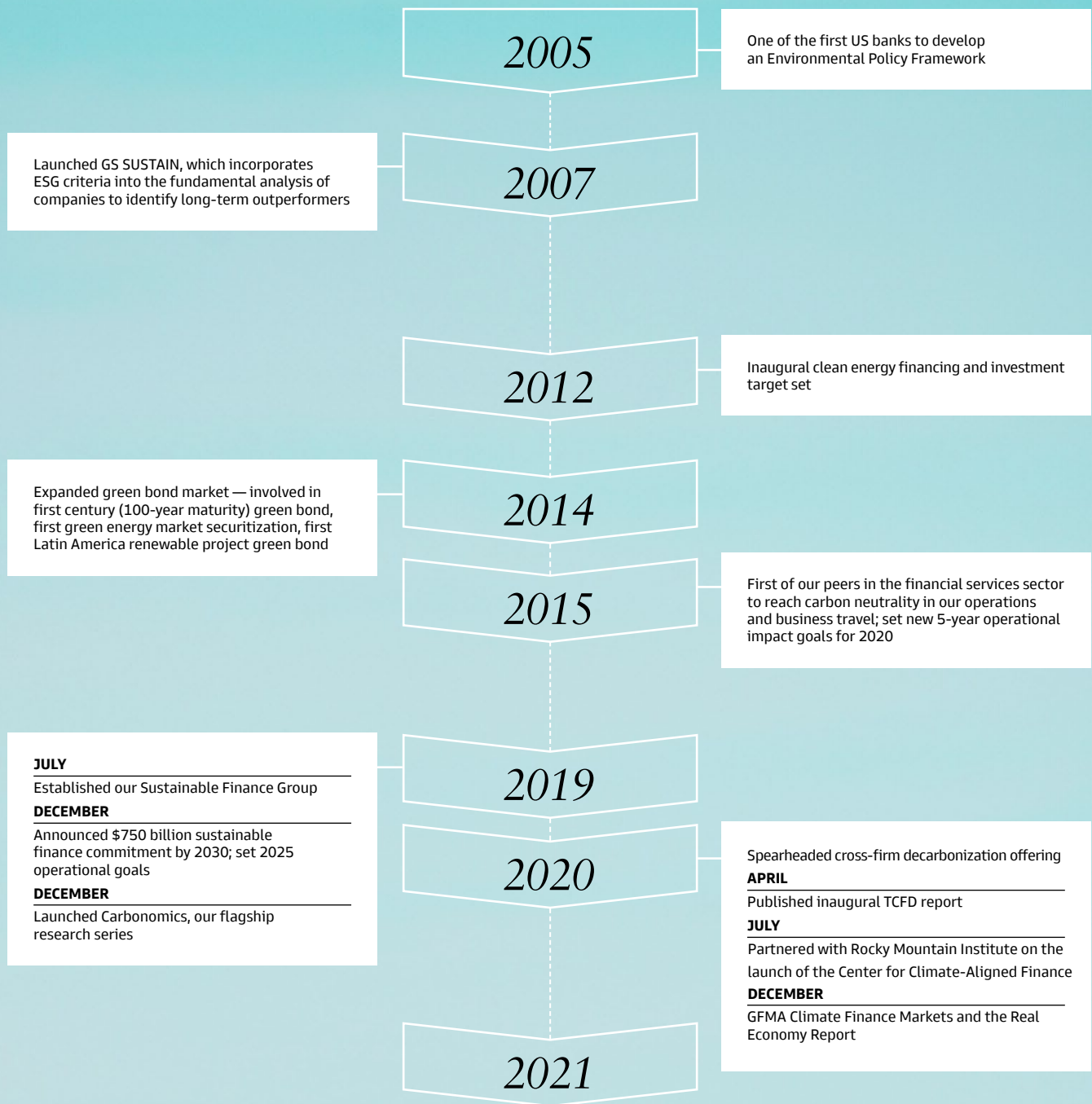
climate-related risk for our own business, supported by robust governance and policies

In March 2021, we announced our commitment to align our financing activities with a net zero by 2050 pathway. In this TCFD report, we share an initial set of targets for 2030, focused on sectors where we see an opportunity to proactively engage our clients, deploy capital, and invest in new commercial solutions. In a [report](#) we helped to inform with the Global Financial Markets Association (GFMA) that was published last year, it is estimated that \$100–\$150 trillion in investment is needed globally in the highest emitting sectors over the next three decades to transition to a low-carbon economy, demonstrating the critical role that capital markets can play to support and accelerate transition in the years ahead. Our initial set of targets for 2030 demonstrate our continued commitment to deliver on the goals of the Paris Agreement, and represent sectors of the economy where we believe companies will need massive support through capital and strategic advice to deliver on net zero goals.

Supportive public policy and technological advancement will be critical for financial institutions to effectively engage corporates in these sectors in transition and invest in new solutions. Further, accelerating policy action will be a key determinant in driving the pace at which we and our clients can achieve decarbonization goals across sectors and geographies. Achieving a just, orderly transition will require a collaborative, whole-of-society approach that includes contributions from both the public and private sectors.

In our second Task Force on Climate-related Financial Disclosures (TCFD) report, we share an interim roadmap for how we plan to deliver on our commitment to align with a net zero by 2050 pathway. We describe the significant work we have already undertaken to drive low-carbon transition efforts for our clients through the development of new commercial capabilities and innovative climate solutions. We also acknowledge that in addition to unprecedented opportunities, the effects of climate change present risks that have the potential to impact our business in a variety of ways. As a global financial institution, we are continuously assessing and managing the risks posed by climate change to our business through proprietary models that leverage the latest science and industry best practices on stress testing, and are further integrating climate into our firmwide business and risk practices more broadly.

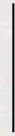
## OUR CLIMATE JOURNEY



<p><b>FEBRUARY</b></p> <p>Joined OS-Climate initiative as the US founding bank member</p> <p>Issued \$800 million inaugural Goldman Sachs sustainability bond</p>	<p><b>MARCH</b></p> <p>Announced net zero by 2050 pathway commitment; expanded operational carbon commitment to become net zero by 2030 in our operations and supply chain</p> <p>Joined UN Principles for Responsible Banking</p>	<p><b>APRIL</b></p> <p>Launched \$200 million Restore Fund in partnership with Apple and Conservation International (CI)</p> <p>Announced Goldman Sachs Bloomberg Climate Finance Partnership, including a Climate Innovation Fund alongside the Asian Development Bank</p>	<p><b>OCTOBER</b></p> <p>Joined Net Zero Banking Alliance</p>	<p><b>NOVEMBER</b></p> <p>Joined Forest Investor Club as a Founding Member, led by The Special Presidential Envoy for Climate</p> <p>Launched Carbon Portfolio Analytics for clients in Marquee</p>	<p><b>DECEMBER</b></p> <p>Published second TCFD report, including interim roadmap for net zero by 2050 commitment</p>
---	--	---	---	---	---



SECTION II



*Governance*

Addressing climate change is a core area of focus for our business, spanning our work with clients and counterparties, and how we manage risk. As such, we integrate oversight of climate-related risks into our firm’s centralized governance structures, from senior management to our Board of Directors. At the highest level, our Board of Directors oversees the management of the firm’s most significant risks, including climate-related risks. We have also established dedicated sustainability councils within each of our business divisions responsible for delivering on ESG-related priorities, including for those related to climate. This year, we established a new Firmwide Climate Steering Group, which provides oversight and guidance on the firm’s approach to managing climate-related risks and opportunities, including our net zero by 2050 pathway commitment. Within our Executive Office, our Sustainable Finance Group (SFG) serves as the centralized group that drives climate strategy and sustainability efforts across our firm, including commercial efforts alongside the firms’ businesses to advance climate transition and inclusive growth. SFG also engages with the firm’s stakeholders to stay abreast of and, where relevant, help inform sustainable finance and climate-related policy and also oversees firmwide environmental and social risk management and related guidelines. In addition, we have Risk division professionals focused on the development of our climate risk program.

BOARD OF DIRECTORS

PUBLIC RESPONSIBILITIES COMMITTEE AND RISK COMMITTEE

SENIOR MANAGEMENT

ENTERPRISE RISK COMMITTEE, FIRMWIDE CLIMATE STEERING GROUP

KEY DIVISIONS / GROUPS

RISK DIVISION, SUSTAINABILITY DIVISIONAL COUNCILS,  
SUSTAINABLE FINANCE GROUP, CORPORATE & WORKPLACE SOLUTIONS



## BOARD OF DIRECTORS

---

Goldman Sachs' **Board of Directors (the Board)** and its committees are responsible for overseeing the management of the firm's most significant risks, including climate-related risks, and place significant focus on reputational risk and long-term operations. Given the interdisciplinary nature of the oversight of sustainability and climate-related risks, the 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 utilizes to assess physical and transition risks and reviews of our sustainability and climate-related reporting.

The **Public Responsibilities Committee (PRC)** of the Board assists the 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 Board 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 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, in order 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 risk, including our approaches towards stress testing and integration into existing risk management processes.

## MANAGEMENT

---

At the firmwide level, the **Enterprise Risk Committee (ERC)** oversees all of the firm's financial and non-financial risks, including climate-related risk. The ERC, through its oversight of the Enterprise Risk Management Framework, monitors the firm's risk profile on both an aggregate and divisional level, inclusive of key trends, top and emerging risks, and significant events that potentially affect the firm's risk profile. The ERC is co-chaired by the Chief Risk Officer (CRO) and the firm's Chief Financial Officer (CFO), and includes senior firm leaders, many of whom are also members of other firmwide risk committees.

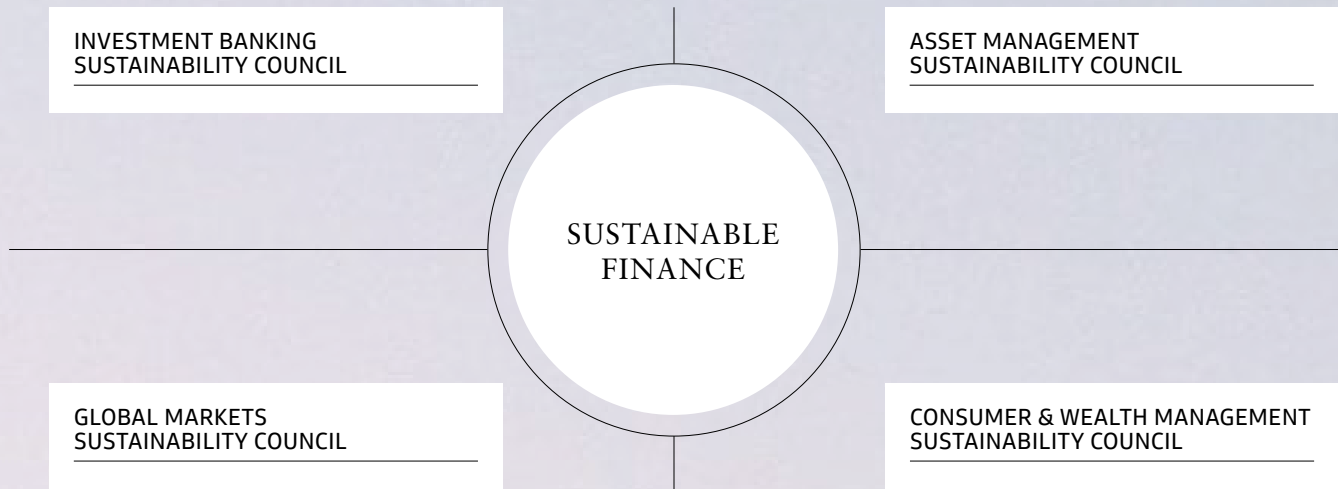
This year, we established the **Firmwide Climate Steering Group**, which convenes key senior stakeholders including those from the Executive Office, Risk, Controllers, Investment Banking, Asset Management and Global Markets to provide oversight for key climate-related risk and opportunity decisions, including interim goal setting to achieve our long-term net zero by 2050 pathway commitment. The group reviews progress and provides feedback on climate strategy, risk management, integration, and capabilities more broadly. This includes oversight of climate-related targets and climate reporting, related commercial engagement and integration strategy, and updates on climate risk management frameworks and capabilities.

# FIRM

## DIVISIONAL SUSTAINABILITY COUNCILS

Goldman Sachs has integrated climate transition into the way we strategically manage our business and identify commercial opportunities. We have established dedicated sustainability councils within each of our business segments to identify key ESG-related priorities, developing capabilities across work streams and delivering sustainability-focused solutions to clients in a holistic way, including on areas related to climate.

### EMBEDDING SUSTAINABILITY IN OUR ONE GS OPERATING MODEL



We have also developed a **Sustainable Asset Working Group** that discusses, guides, and validates client offerings and attributions at the transaction and product-level, as well as allocation methodology, towards our firmwide \$750 billion Sustainable Finance target. The target is built on commercial activity that is aligned with our firm's core sustainability pillars of climate transition and inclusive growth. The Sustainable Asset Working Group serves as an internal control group that ensures accuracy and accountability for our firmwide target, and consists of members from our business divisions, the Sustainable Finance Group and control-side personnel.

## SUSTAINABLE FINANCE GROUP

The Sustainable Finance Group (SFG), which reports to the Office of the Chairman, is responsible for partnering with the firm's global businesses to: i) deliver leading sustainability expertise and capabilities to our clients and ii) drive innovative market solutions that advance climate transition and inclusive growth. SFG also engages with the firm's stakeholders to stay abreast of and, where relevant, help inform sustainable finance and climate-related policy, and oversees firmwide environmental and social risk management and related guidelines. As part of the Executive Office and working across our global businesses, clients and stakeholders, SFG brings together the breadth of our knowledge and capabilities, including on climate-related risks and opportunities, to drive the firm's sustainability strategy.

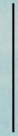
## RISK DIVISION

The Risk division is the independent risk oversight and control function of the firm. The division is responsible for the effective identification, monitoring, evaluation and management of the firm's financial and non-financial risks. With respect to climate risk, the Risk division is responsible for the development of the firm's climate risk program, including assessing the firm's climate risk, setting and evaluating risk appetite related to climate risk, as well as managing integration of climate risk into business and risk management practices.

## CORPORATE AND WORKPLACE SOLUTIONS

The Corporate and Workplace Solutions division (CWS) focuses on commercial management, client support, advisory solutions, strategic planning, risk management, people security, real estate strategy and the enablement of collaboration and productivity tools across the firm. CWS delivers a world-class work experience and environment, managing the firm's corporate real estate strategy, client engagement solutions, essential commercial and risk management functions and flexible digital workstyles that drive the firm's operating efficiency and productivity. CWS partners cross-divisionally to assess and plan for near- and long-term climate-related risks across our operations.

## SECTION III



# *Strategy*

## OUR CLIMATE STRATEGY

---

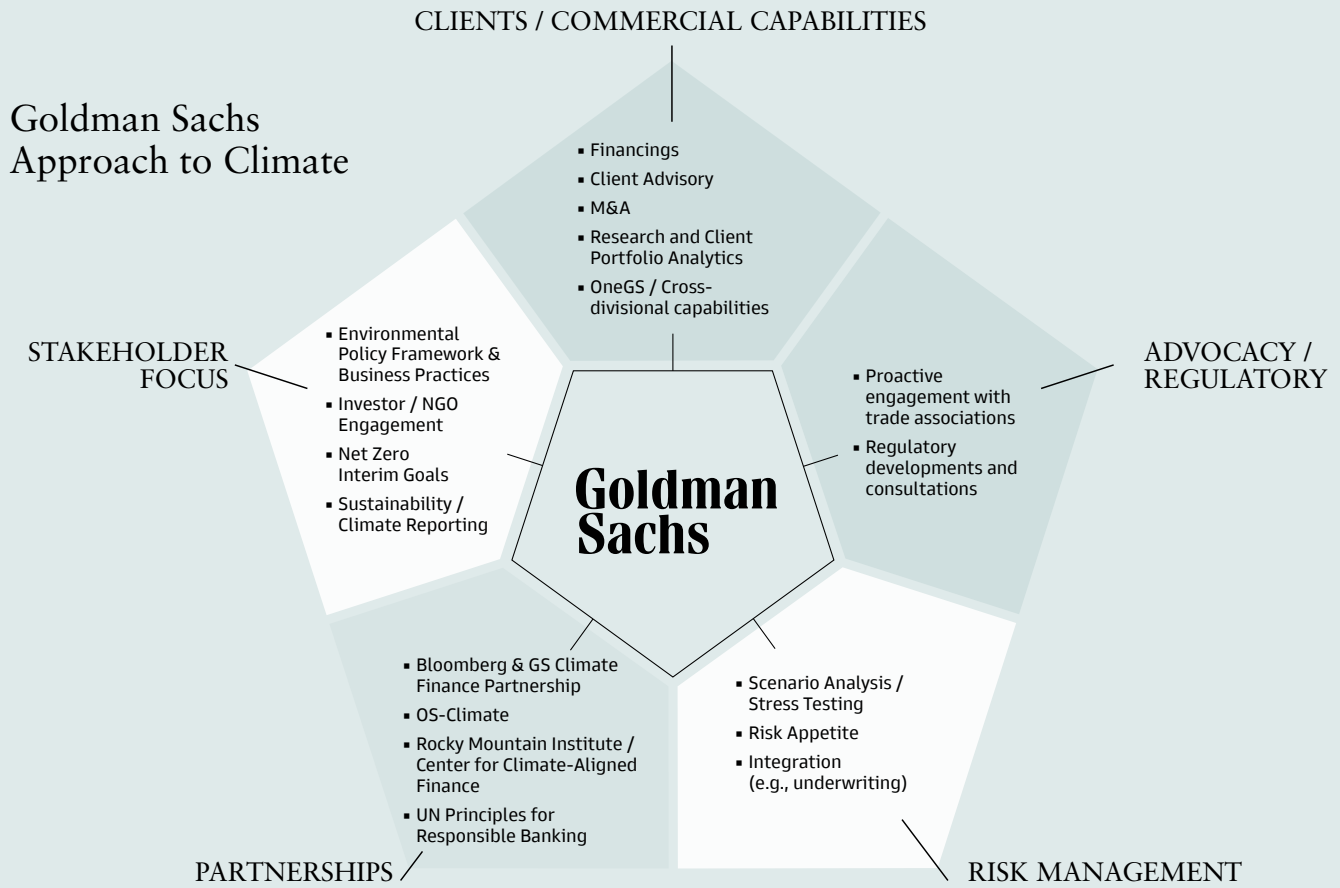
At Goldman Sachs, we view climate change through a broad lens. Our approach to climate is first and foremost grounded in the areas where we believe that we, as a financial institution, are able to drive the most material impact, which includes our work with clients to drive decarbonization in the real economy and drive progress towards net zero goals, how we engage partners and broader stakeholders, and how we manage climate-related risks for our firm.

In this section, we outline work we have done to date to expand our offering of commercial solutions and capabilities to help clients measure and manage climate-related risks and progress towards climate alignment goals. For example, we have developed a new and unique cross-firm decarbonization offering that includes a full suite of tools to help our corporate clients develop and execute on their climate-related strategies, including renewable energy and carbon offset procurement. We also outline risk methodologies for both physical and transition risk which serve as a foundation for measurement and integration of climate risk into business and risk practices across the firm, including stress-testing exercises to assess the potential impact of climate-related risks on our business.

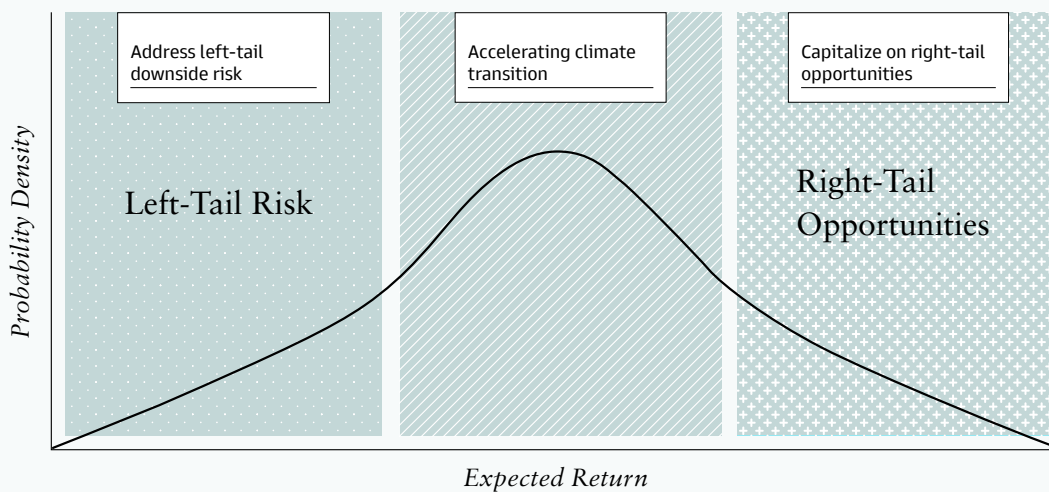
The global climate transition will require transformative change across sectors, regions, technologies and communities. As we build on our knowledge, insights and capabilities in these areas, we continue to refine and adapt our solutions. And in turn, as our understanding of climate-related risks and opportunities relevant to our business evolves, we continue to reevaluate our commercial strategy on climate and further integrate climate into our long-term business planning.

### INDEX

<b>Climate-Related Opportunities</b>	<b>13</b>
Cross-Divisional Solutions – Decarbonization Toolkit	16
Measure	17
Manage	18
▪ Corporates	18
▪ Investors	21
Driving Collective Impact on Climate	23
▪ Stakeholder Engagement and Advisory	24
▪ Collaborative Platforms for Innovation	25
▪ Memberships and Engagement	26
<b>Categorization of Climate-Related Risks</b>	<b>27</b>
<b>Climate Risk Stress Test Methodology</b>	<b>28</b>
▪ Physical Risk Stress Test Methodology	29
▪ Transition Risk Stress Testing Methodology	32



At Goldman Sachs, we view climate transition not only as a risk consideration but also as an important driver of efficiency and growth for our business. We have established a firmwide strategy on climate to manage risks and tap into opportunities that might otherwise be overlooked.



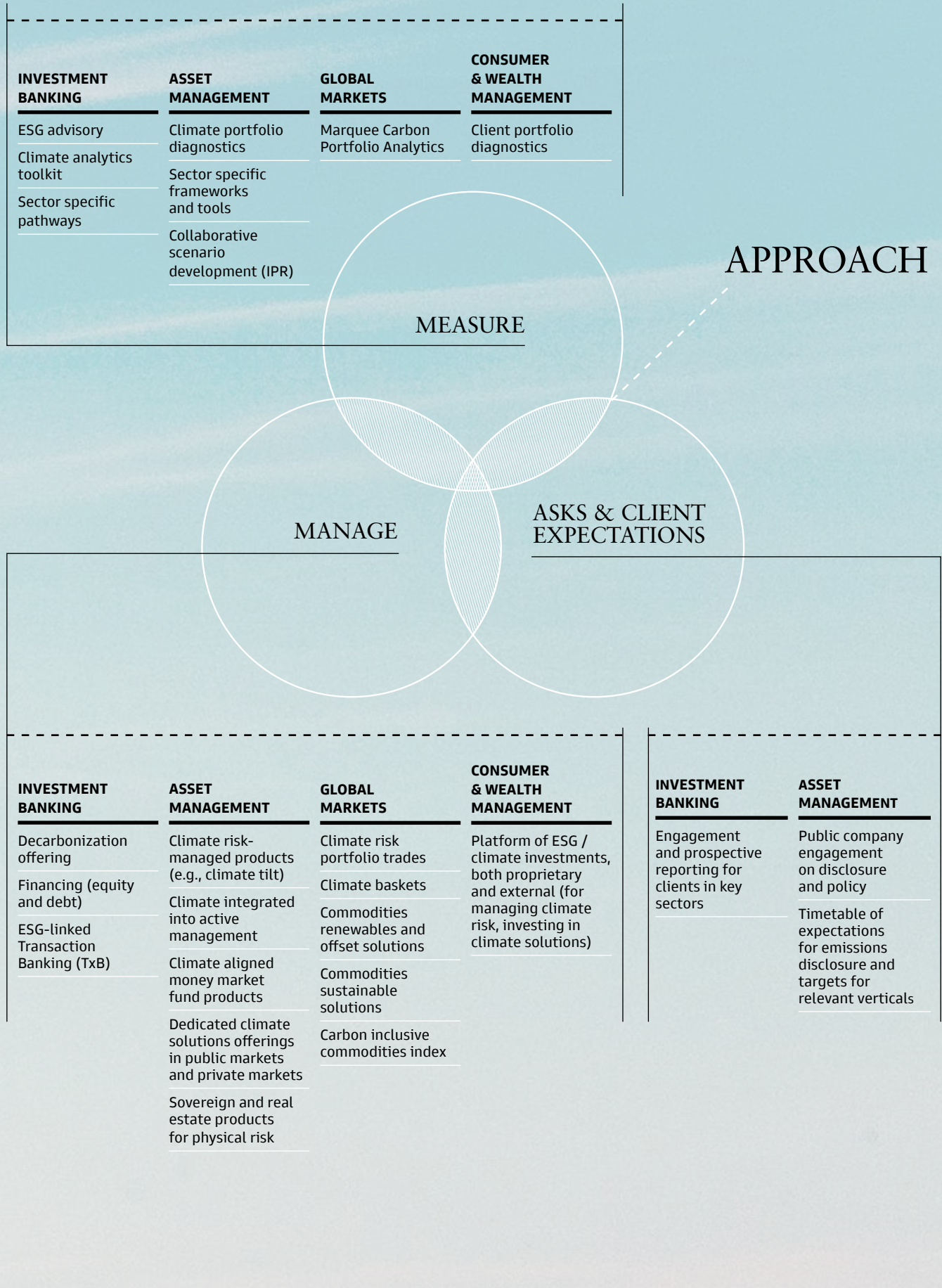
CLIMATE-RELATED OPPORTUNITIES

---

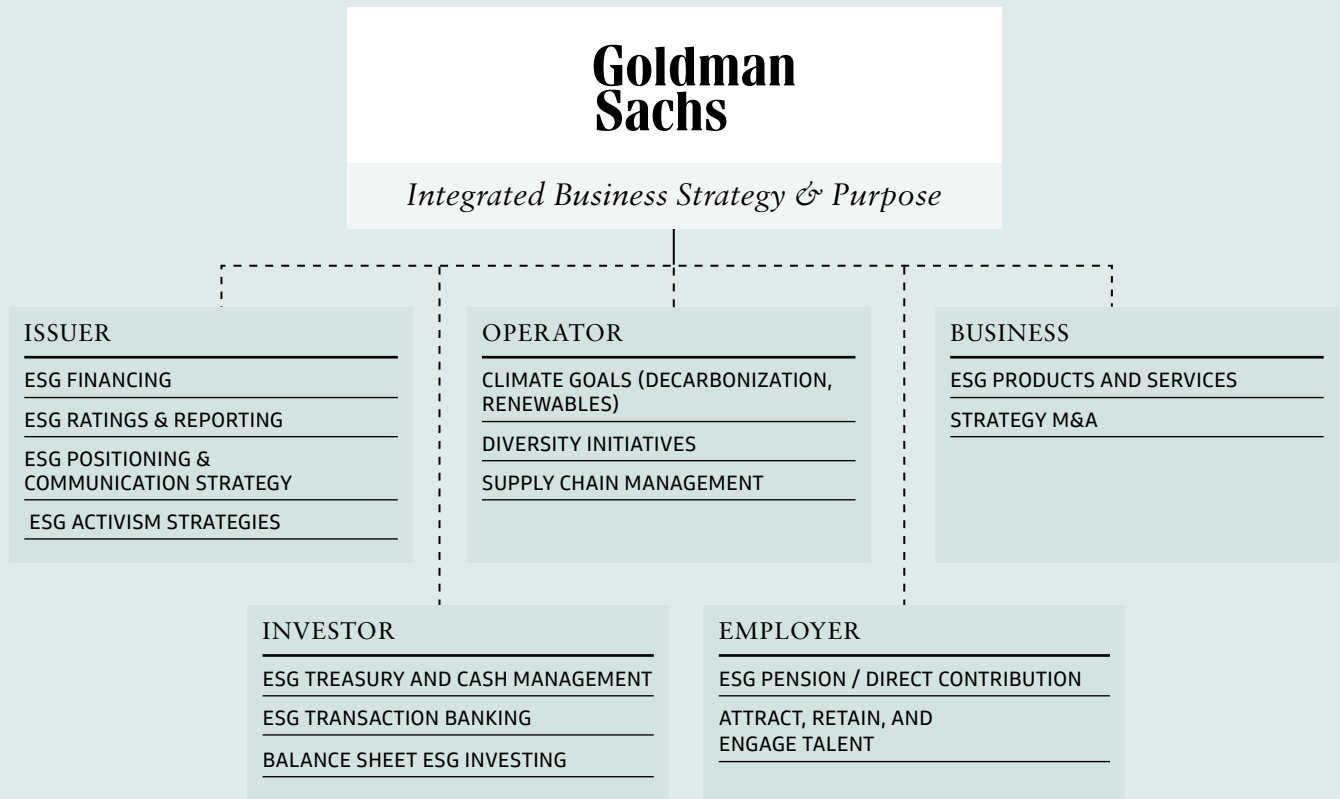
“Achieving an inclusive climate transition globally will require unprecedented levels of investment across the public and private sectors. We are leveraging our deep market expertise and insights to work collaboratively with our clients and with our partners to drive capital towards market-based climate solutions.”

|  
**DINA POWELL McCORMICK**  
GLOBAL HEAD OF SUSTAINABILITY AND INCLUSIVE GROWTH

At Goldman Sachs, we have developed a firmwide commercial model that leverages the full breadth and depth of our commercial franchise, with the goal of bringing the best of Goldman Sachs offerings to bear on all of our sustainability and climate-related efforts. We leverage insights and perspectives from our own experience managing climate-related risks and opportunities for our business, which is complemented by the additional insights we draw from our holistic engagement strategy with clients, civil society and the public sector. This cohesive approach to climate that is centered on active engagement allows us to develop a unique view of the market and identify potential financing gaps with an aim towards ultimately driving climate solutions for our clients through strategic advice, innovative financing tools, investment and commercial capabilities. We have established the Sustainable Finance Group as a way to centralize and drive efficiency across sustainability initiatives, and deliver coordinated firmwide solutions to our clients.



CROSS-DIVISIONAL SOLUTIONS



 **DECARBONIZATION TOOLKIT**

In 2020, the firm spearheaded a new cross-firm initiative to engage with our corporate clients to offer a full suite of tools to assist with their decarbonization strategies, including renewable energy and carbon offset procurement. The toolkit employs our OneGS model, seeking to deliver a seamless, front-to-back experience for our clients who look to partner with us on their decarbonization goals. In 2021, we have spoken with over 150 corporate clients across 12 industry groups on the entire spectrum of decarbonization solutions.

We have recognized that different geographies, industries, and even clients within each industry are at different stages of their decarbonization journey and we must be able to scale solutions in a way that make it relevant for each industry and client depending on where they are in their path to net zero emissions. As such, our solutions are tailored into two primary offerings:

**CARBON MITIGATION SOLUTIONS**

**Providing solutions to meet net zero commitments**

Renewable Power Solutions:

- Supporting corporates in relation to power purchase agreements, power price risk management as well as renewable energy certificates procurement (Global Markets)
- Providing investment structures for on-site solar and energy storage facilities (Asset Management Renewable Power Group)

Carbon Offset Solutions:

- Structuring voluntary carbon offset supply portfolios or carbon offset linked investments for clients in nature and technology based solutions (Global Markets and Asset Management)
- Supporting corporates in their compliance with emissions trading schemes through financing and risk management structures, as well as providing access to the compliance carbon markets for investors (Global Markets)

**CLIMATE TRANSITION FINANCING**

**Accelerate efforts and leverage key industry and firmwide groups**

Green Bonds, Loans & Other Financing Structures:

- Use of Proceeds based / Sustainability / KPI-linked structures (Investment Banking)

Project Financing: Raise capital for decarbonization and climate transition projects (Investment Banking):

- Greenfield projects (ex. green hydrogen, renewable diesel, sustainable aviation fuel, carbon capture and sequestration, etc.)
- Brownfield / transition projects (ex. refinery retrofit for renewable diesel, conversion of coal-fired power plant transition, wind down of legacy emissions-intensive assets, etc.)

This year, we had a notable transaction to showcase our focus on client decarbonization. We helped finance the construction of a large-scale premium building products facility using upcycled waste to create 98% recycled content.



## MEASURE

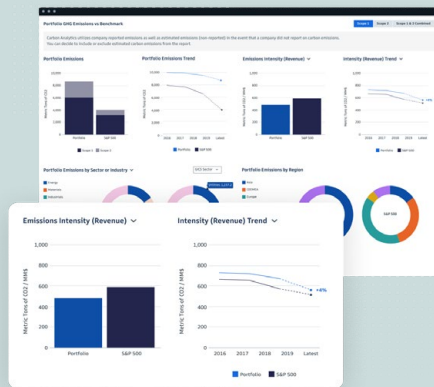
The first step for many of our clients in their climate transition is understanding their climate impact and vulnerabilities. Additionally, the sustainability landscape for corporates and financial institutions is extremely dynamic with new and evolving expectations and challenges for our clients. We seek to stay ahead of the curve and remain mindful that we move in lockstep with them, continuously advising them on best practice and developing tools that help them manage these issues.

## ESG ADVISORY

In Investment Banking, we have developed a formalized ESG client advisory model with a focus on providing differentiated insights into market trends, investor approaches and ESG vulnerability assessments. We have piloted an ESG Vulnerability Assessment with a climate segment and will look to further broaden our client reach.

### MARQUEE

[Marquee](#) is Goldman Sachs' digital marketplace for institutional investors, delivering unparalleled, cross-asset access to Global Markets. The platform allows us to share the analytics, data, and tools that we use internally, with clients. In October 2020, we launched the Marquee ESG client portal, a curation of all ESG capabilities and tools we make available to clients. It features resources like ESG commentary, thought leadership pieces across asset classes, ESG fund flow analytics, ESG thematic baskets, and ESG datasets.



### CARBON PORTFOLIO ANALYTICS

With sustainable finance becoming an increasing focus for our clients, Goldman Sachs is committed to helping navigate this journey. We recently announced the launch of [Carbon Portfolio Analytics](#) on [Marquee](#). Our clients will now be able to analyze their portfolios through a carbon lens. Housed within Marquee's portfolio analytics ecosystem, Carbon Portfolio Analytics allows clients to measure and manage their carbon footprint. Beyond providing carbon data, this new offering has been designed to provide tools and analytics empowering clients to understand their portfolio risks and opportunities from a carbon perspective, and may inform their own investment decision-making. Clients are able to:

- Analyze the carbon footprint of public equity and corporate bonds
- Measure emissions across carbon data (Scope 1 and 2), carbon intensity levels (by enterprise value, revenues or market capitalization) and net zero & SBTi commitments
- Compare carbon emissions against a benchmark
- Deep dive on the root cause of carbon emissions by sector, industry and region
- Compare the carbon intensity levels of different companies

## PARIS-ALIGNMENT TOOLKIT

This year, we piloted a Paris-alignment toolkit with Oil & Gas and Utility clients. The toolkit leverages stakeholder-driven analytics to help companies in carbon-intensive sectors understand how investors view them in light of the climate transition and address potential risks. We have been working to further deepen the toolkit with new analytics as these companies look to advance their decarbonization efforts.

## CLIENT PORTFOLIO DIAGNOSTICS

Within Private Wealth Management, we have developed a customizable portfolio diagnostic tool that assesses a client's public market holdings in respect of select categories of ESG data in line with the firm's focus on climate transition and inclusive growth. We seek to provide the most comprehensive view of a client's portfolio based on data availability.

## MANAGE

### COMPREHENSIVE DECARBONIZATION SOLUTIONS

Our clients, from corporate issuers to asset owners and managers, turn to our sustainable finance business for tailored advice, innovation and market-leading execution across all transaction types. The coverage and depth of our sustainable finance toolkit have put us in a leadership position in the market and we have been particularly active on more “structured” and less “vanilla” products such as sustainability-linked, green convertible or even catastrophe bonds.

### CORPORATES

#### FINANCING (DEBT & EQUITY)

In Investment Banking, we seek to deliver holistic services to our clients including integrating ESG into their financing activities through green, social and sustainability bonds, sustainable KPI-linked issuances, and leveraging equity offerings such as an IPO to catalyze their sustainability mission and goals. In this effort, we have been at the forefront of the market and driven several innovative “firsts.”



#### DEBT

**First Sustainable Development Goals (SDG) linked Bond:** In 2019, Enel priced the world's first ever SDG-linked bond, where Goldman Sachs acted as Structuring Bank and Joint Bookrunner in the deal including an SDG feature. Since then Enel has continued to accelerate transition to sustainable financing instrument issuing a total amount of €46.2 billion across EUR, GBP, USD.

**First Sustainability Catastrophe Bond:** In 2020, we served as Joint Structuring Agent and Joint Bookrunner on the World Bank's (International Bank for Reconstruction and Development) four catastrophe bonds that will provide the Government of Mexico with financial protection of up to \$485 million against losses from earthquakes and named storms for four years. This was the first ever catastrophe bond where noted proceeds can be used by IBRD to finance sustainable development projects.

**First Sustainability-linked Bond in O&G:** In May 2021, we also acted as Sustainability Structuring Advisor on Eni's Sustainability-Linked Finance Framework, representing the first ever Oil & Gas company to publish such a framework. KPI linkages in the framework include renewable installed capacity, net carbon footprint upstream (Scope 1 and 2), absolute net (Scope 1, 2 and 3) GHG emissions and net carbon intensity (Scope 1, 2 and 3).

And in June 2021, Goldman Sachs served as active Bookrunner for Spanish oil company Repsol's €1.25 billion debut sustainability-linked bond issuance, with a coupon step-up that is triggered based on ability to reduce the company's carbon intensity indicator by 12% by 2025, and by 25% by 2030.

**First Sustainability-linked Bond in Airspace:** In April 2021, we acted as Bookrunner on Aeroporti di Roma (AdR), an Italian airspace operator's, €500 million, ten-year sustainability-linked bond, representing the first ever public issuance for this type of company in the airspace industry. The bond's KPIs aim for a 53% decrease in Scope 1 and 2 emissions by 2027, and maintenance of their Airport

Carbon Accreditation (ACA) Level 4+ rating – a carbon management certification program – and the reduction in per passenger Scope 3 emissions by 7% by 2027 (excluding aircraft sources).

**First Sustainability-linked Bond in Mining:** In May 2021, we acted as a Joint Bookrunner on a sustainability-linked bond for The Weir Group. As a multinational mining technology business which designs, manufactures and supports engineered equipment in the mining, construction and infrastructure industries, they are part of an industry that is a major contributor to global industrial carbon emissions. Their offering is linked to the company's commitment to reduce Scope 1 and 2 GHG intensity emissions by 30% by 2024.

**First Euro High Yield Sustainability-linked Bond:** In March 2021, Goldman Sachs acted as Joint Global Coordinator, Joint Physical Bookrunner & Ratings Advisor for Public Power Corporation (PPC), Greece's largest generator and supplier of electricity, on the issuance of a €650 million 5-year sustainability-linked bond. This was the first ever sustainability-linked bond in the European sub-investment grade bond market and links the bond's coupon with PPC's CO2 emissions target, a 40% reduction by 2022 (compared to a 2019 baseline).

**First Green Convertible in EMEA:** In 2020, Goldman Sachs was Green Structurer, Joint Global Coordinator and Joint Bookrunner on the first European green convertible bond offering and a following €600 million Rights Issue in April 2021 for Neoen, a European independent renewable energy developer. Proceeds of Neoen's green convertible bonds will be allocated to finance renewable energy production (solar PV, wind power) or storage activities in consistency with EU taxonomy requirements and with Neoen's green bond framework website, contributing towards Neoen's target of having more than 5 GW in capacity in operation or under construction by the end of 2021. We continue to maintain a leading position in the market on green convertible bond offerings.

 EQUITY

This year, we acted as advisor on the \$8 billion **ReNew Power** (ReNew) business combination with Special Purpose Acquisition Company (SPAC) RMG Acquisition Corporation II. Additionally, our early investment in ReNew has enabled it to become India's leading renewable energy provider with an asset base of over 10 GW, including capacity already won in competitive bids.

In November 2020, Goldman Sachs acted as advisor for **View Inc.'s** (View) \$1.6 billion SPAC merger with CF Acquisition Corp II and Joint Placement Agent for a \$300 million PIPE Financing, representing the first green certified equity private placement globally. View is a Silicon Valley-based smart window company and produces next-generation smart windows that use artificial intelligence and machine learning to tint the glass, optimizing natural light while controlling heat and glare to enhance mental and physical well-being for occupants, while also reducing energy consumption and greenhouse gas (GHG) emissions.


First European SPAC Focused on Energy Transition – Goldman Sachs served as Global Coordinator and Joint Bookrunner for **Transition (TRAN)**, a SPAC's, €200 million private placement of shares to be listed on Euronext Paris. TRAN is the first European SPAC dedicated to energy transition and was formed for acquiring businesses with principal operations in the energy transition sector (renewable energy production and energy efficiency).

 ESG PRODUCT INNOVATION – TRANSACTION BANKING

Goldman Sachs Transaction Banking (TxB) provides smart solutions for clients' day-to-day treasury operations. Earlier this year, we rolled out an innovative solution, ESG-linked demand deposit accounts, to help our clients build a smarter and greener treasury. We partnered with global water technology company, Xylem, to structure a solution to meet their specific needs, with the yield on the account linked to the company's 2025 ESG targets, including use of 100% process recycled water in its major facilities by 2025.

 CLEAN ENERGY – CORPORATE SOURCING

Goldman Sachs Renewable Power Group (GSRPG), Goldman Sachs Asset Management's renewable energy investing platform, is a leading owner of distributed generation in the US with over 2.5 GW of total projects. GSRPG offers companies, municipalities and universities a wide product offering including on-site solar and storage facilities, as well as direct wholesale, physical and virtual PPAs. In addition, GSRPG offers long-term supply of Renewable Energy Certificates (RECs), which can be applied to clients' sustainability goals.

 RENEWABLE ENERGY – POWER TRADING, RISK MANAGEMENT

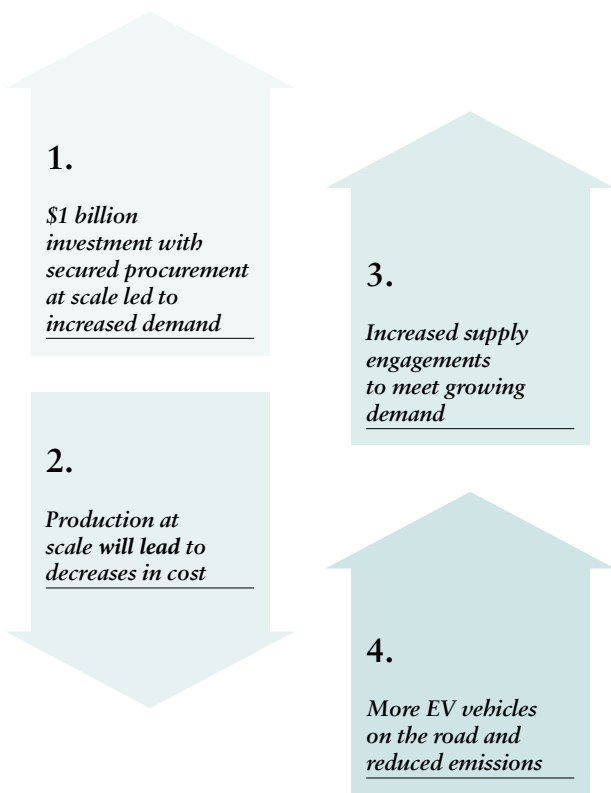
Goldman Sachs' Power Trading group has been a participant in the North American and European energy markets for over 20 years and has long-standing relationships with renewable energy developers, utilities, and retail energy companies serving corporate energy needs. Our Power Trading group acts as an intermediary to source renewable energy for clients (VPPAs) and provides other complex and long-term risk management solutions. Further, it is active in the offtake and supply of Renewable Energy Credits (RECs) across the US.

 CARBON MARKETS – TRADING, RISK MANAGEMENT, FINANCING

Goldman Sachs has been active in the major compliance carbon markets such as the EU ETS and the California ETS for over 10 years. The firm is also active in the growing global voluntary carbon offset market. Within the Compliance and Voluntary Carbon Markets, Goldman Sachs offers a variety of trading, financing and risk management solutions to help corporates and investors manage their carbon exposure and meet their sustainability goals. Goldman Sachs is also a member of several industry and advisory bodies such as the "Taskforce on Scaling Voluntary Carbon Markets", a private sector-led initiative working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement.

 SUSTAINABLE TRANSPORT – BATTERIES / STORAGE

Alongside Volkswagen (VW), Goldman Sachs helped lead over \$4 billion in equity investment across three consecutive equity rounds into Swedish EV battery manufacturer, **Northvolt**. The equity raised to date has helped Northvolt execute on its long-term business plan to be a leading lithium-ion cell manufacturer focused on the automotive / electric vehicle and energy storage end markets, and secure over \$30 billion of customer contracts.



We have also oriented our coverage to focus specifically on the auto technology space and have conducted more than \$30 billion of debt and equity financing activity and more than \$30 billion of announced M&A through the end of November 2021. Notable transactions include Rivian's \$13.7 billion IPO, the largest of its type in 2021, Aurora's \$10.6 billion SPAC merger with Reinvent Technology Partners, and Cruise's \$2.8 billion private placement.



**As the world faces growing threats from both climate change and loss of biodiversity, nature-based solutions – investments in nature and natural capital that both reduce emissions and remove carbon from the atmosphere – present a significant opportunity to address these challenges.**

Employing our OneGS model, a first-of-its-kind carbon removal initiative was launched in April 2021 with Conservation International (CI) and Goldman Sachs – Apple’s \$200 million fund, called the “Restore Fund”. It is a nature-based investment fund focused on sustainable forestry to mitigate Apple’s carbon footprint while seeking to generate a financial return. This effort supports Apple’s goal to become carbon neutral across its supply chain and products by 2030, which will require significant investment in carbon removal.

A traditional and common model to address residual emissions, buying carbon offsets is difficult to scale, can be costly and may carry risks regarding offset quality. The Restore Fund model enables Apple to accurately account for the amount of carbon offset through sequestration in forests and ecosystems, with oversight from CI to ensure projects meet rigorous environmental and social standards. Additionally, the model offers Apple greater control over the social and environmental benefits of the project by being an investor in the project. Apple will have the ability to scale the project over time to match its carbon removal goals.

At a time when demand for nature-based solutions is increasingly outpacing supply of quality projects, this highly scalable model serves as a new and highly innovative solution to carbon removal that can be leveraged to meet growing net zero ambitions. We will continue to develop such customized solutions to meet clients’ needs, leveraging our expertise on social and environmental issues alongside traditional capital capabilities.

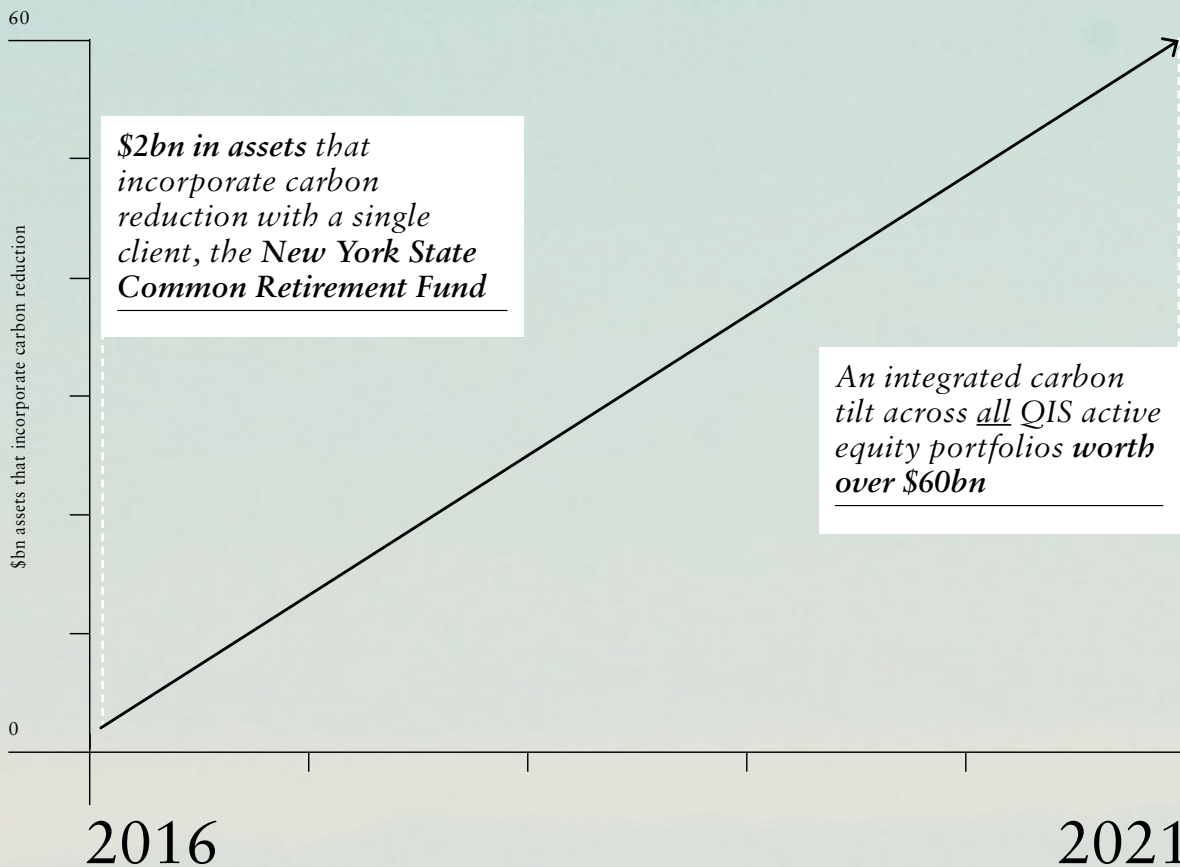
INVESTORS

Our Asset Management and Global Markets businesses continue to innovate and scale their offerings to meet our clients’ increasing demand for ESG-related products and solutions.

CLIMATE RISK MANAGEMENT PRODUCTS

Our Quantitative Investment Strategies (QIS) team began managing climate strategies in 2016, working with New York State Common Retirement Fund to significantly reduce the emissions profile of its US equity portfolio while remaining within defined risk tolerances. Since then, the suite of climate approaches has expanded significantly. GSAM’s QIS team has implemented a climate tilt across all of their active equity portfolios, covering more than \$60 billion in assets as of September 2021.

*Our history in low-carbon investing*



## CLIMATE RISK PORTFOLIO TRADES

---

In Global Markets, we have incorporated ESG considerations such as exclusion lists and scores into our credit portfolio trading capabilities. This allows clients to efficiently allocate inflows to a portfolio of bonds that matches their ESG criteria or simply to rebalance an existing portfolio to track a new ESG benchmark that is more in line with their sustainability goals.

## PHYSICAL RISK INTEGRATION – REAL ESTATE

---

Goldman Sachs Asset Management Real Estate has adopted a process to not only identify exposure to physical climate risk, but also translate findings into action. When conducting due diligence on an asset, investment teams leverage a dedicated hazard-based screening tool, developed with input from environmental risk experts, to assess physical climate risk exposure, related commercial and economic impacts, and potential mitigants that could create value while reducing physical climate risk within the portfolio.

## TRANSITION AND PHYSICAL RISK INTEGRATION – SOVEREIGNS

---

Goldman Sachs Asset Management’s sovereign economists have long incorporated ESG considerations in their assessment of sovereign bonds, with a particular focus on governance and social factors. Recently, we have formalized this process into a Sovereign ESG rating that has enhanced our analysis of environmental factors related to climate change. Goldman Sachs Asset Management’s sovereign country assessments now leverage a dataset that matches climate physical risk exposure to the distribution of population, agricultural production and overall GDP creation within countries. We further evaluate the transition risk of a country by taking into consideration nationally determined contribution (NDC) plans that outline medium-term climate policies. Our transition risk dataset also evaluates a country’s carbon emissions gap, namely the gap between current greenhouse gas emissions and an emissions reduction target. The application of such tools helps our economists better assess climate risk and reflect it in our investment decisions.



### DEDICATED CLIMATE SOLUTIONS OFFERINGS IN PUBLIC MARKETS

---

In March 2020, Goldman Sachs Asset Management launched a **Global Environmental Impact Equity Strategy**, which is the firm’s first dedicated impact solution in public markets. The strategy aims to deploy capital across five key investment areas that drive greater environmental sustainability: Clean Energy, Resource Efficiency, Sustainable Consumption, the Circular Economy and Water Sustainability.



### DEDICATED CLIMATE SOLUTIONS OFFERINGS IN PRIVATE MARKETS – HORIZON FUND

---

The Sustainable Investing Group (SIG) is one of our primary platforms for direct-impact investing in private markets. The SIG manages the Horizon Environment and Climate Solutions Fund, a growth-oriented private equity strategy focused on helping companies meet their sustainability goals by providing growth capital to businesses who offer environment and climate solutions across five core themes: Waste and Materials, Sustainable Food and Agriculture, Ecosystem Services and Water, Clean Energy, and Sustainable Transport.

## DRIVING COLLECTIVE IMPACT ON CLIMATE

To effectively mitigate climate risk and reach broader social goals on climate, Goldman Sachs is keenly aware that we need to work as part of a greater ecosystem of efforts. To move forward together, we actively engage clients, investors, advocacy groups and multi-stakeholder organizations working to address the pressing issue of climate change. In executing this holistic engagement strategy, we have identified gaps that will need to be addressed to accelerate the transition to a low-carbon economy, and channeled our resources towards these efforts. These efforts are both externally facing and deeply tied to our business, including proprietary research that helps our clients and investors understand decarbonization and sustainable growth's impacts on the real economy. When we cannot address these gaps alone, we aim to drive greater impact through strategic collaboration with partners. We partner with industry groups and coalitions to drive collaboration, spur progress toward net zero, help build new markets, and advance a globally-coordinated approach to climate transition policy.

**Global Investment Research (GIR):** The GS SUSTAIN team provides thought-leading research, data tools and analysis that equip investors, companies and other stakeholders with resources to understand how innovation, regulation and implementation of ESG factors influence investment outcomes and broader capital flows. GS SUSTAIN's data tools help to identify what it believes to be the most relevant Environmental & Social (E&S) exposures for a company's sector and Governance (G) exposure relative to the company's region and the global SUSTAIN ESG universe. These metrics form the framework through which to evaluate corporate ESG engagement. Through GS SUSTAIN, GIR has been at the forefront of bringing greater investor attention to the importance of ESG factors as a way of understanding how companies are managing 21st-century business risks. GS SUSTAIN publishes investment research along with other ESG tools such as Product Alignment, E&S Operations, Governance and Controversies scores for almost 7,000 companies, along with datasets on UN SDG and EU Taxonomy alignment, many of which have been externalized via API so that clients are now able to upload their portfolios and get detailed ESG performance information.

Earlier this year, GS SUSTAIN published a new report, [Green Capex: Making Infrastructure Happen](#). GIR expects Green Capex will be the dominant driver of global infrastructure over the next decade, with \$6 trillion of investment needed annually to decarbonize the world, address water needs and shore up transportation and other critical systems. The report addresses the products and technologies that need investment, what is on track, where there is capacity for additional Green Capex among publicly traded companies, sectors where Green Capex is needed more urgently to help alleviate future supply-chain bottlenecks, and how companies investing in Green Capex have received support from equity markets. GS SUSTAIN has also published a Net Zero Guide which aims to help corporates and investors make sense of the multiple frameworks, strategies and tools available to help meet net zero objectives.

## CARBONOMICS

Carbonomics is our flagship research series, led by Global Investment Research, that focuses on the economics of decarbonization and sustainable growth.

This research series includes: i) a proprietary analysis of the decarbonization cost curve across over 100 different clean technology applications, ii) modeling of three global Net Zero scenarios by technology and sector, iii) a deep dive into the key drivers of clean technology innovation (hydrogen, renewables, carbon capture, batteries), iv) an analysis of the impact of capital markets and carbon markets on global capital allocation and v) a methodology to assess Implied Temperature Rise scores for corporates' decarbonization strategies. We hosted our second **Carbonomics: The Green Engine of Economic Recovery Conference** virtually in London on November 16, 2021, with over 4,000 registered attendees following speakers including 40 CEOs of leading corporates and key policymakers to discuss their strategies to deliver sustainable growth across all the key global industries.

### [Introducing the GS Net Zero Carbon Models and Sector Frameworks:](#)

A global transition to net zero will require decarbonization across multiple industries and sectors, with existing and emerging clean technologies playing a critical role in driving the pace of decarbonization. In this report, Goldman Sachs Research presents modeling for two paths to net zero carbon, with two global models of decarbonization by sector and technology, leveraging the team's proprietary Carbonomics cost curve. A global path to net zero by 2050 (Goldman Sachs' Carbonomics 1.5°C scenario) has the potential to transform not only the global energy ecosystems but also the economy and society's standard of living. The report finds a wide range of investment opportunities associated with what GIR believes are the key infrastructure milestones required to achieve net zero emissions by 2050, with an expectation for a cumulative \$56 trillion of green infrastructure investments to reach net zero, encompassing >2% of GDP by 2032.

GIR also translates its global net zero models into pathways for emission intensity reduction for 30 key emitting corporate industries, providing alternative energy transition scenarios for investors and corporates to leverage. The GIR global net zero models are dynamic and expected to evolve over time as the costs of existing technologies change and as innovation leads to further decarbonization across sectors.

**China Net Zero – The Clean Tech Revolution:** China's pledge to achieve net zero carbon by 2060 joins the rapidly increasing number of national net zero pledges worldwide and represents two-thirds of the approximately 48% of global emissions from countries that have pledged net zero. It is evident that China's net zero journey will be critical in achieving global net zero ambitions. In this report, Goldman Sachs Research models the country's potential path to net zero by sector and technology, laying out \$16 trillion of clean tech infrastructure investments by 2060 that could create 40 million net new jobs and drive economic growth and covers the year 2020. Numbers for each category reflect absolute amounts derived by summing up company data without taking into account factors such as portfolio weight or investment size. 'Net CO2 emissions saved' has been calculated by subtracting each company's Scope 1 and 2 emissions from its corresponding gross total of saved CO2 emissions. This also includes Scope 1 and 2 emissions from companies that did not report data on the amounts of CO2 emissions saved.

## STAKEHOLDER ENGAGEMENT AND ADVISORY

---

As the focus on measuring and managing climate alignment accelerates, stakeholders face a dizzying array of metrics and methods. To help guide our clients and the firm, we are collaborating with various groups developing methods, metrics and frameworks for the financial sector with an aim to support greater consistency, comparability and utility in approaches to measuring the financial sector contribution to climate alignment.

As a member of the **UN's Portfolio Alignment Team**, convened by UN Special Envoy on Climate and Finance, Mark Carney, we worked with other financial institutions to develop guidance on the use of portfolio alignment metrics for the TCFD-commissioned report, '[Measuring Portfolio Alignment](#)'. Portfolio alignment metrics are tools for diagnosing financing or investing alignment with the objective of the Paris Agreement to limit global temperature rise to well below 2°C. As interest has grown in measuring alignment, approaches have proliferated, but they are often divergent and may be opaque. The report looks to foster convergence of approaches through 26 best practice recommendations, and increase the transparency of methodological choices.

As a leading European think tank, 2 Degrees Investing Initiative (2Dii) is one of the leading organizations working on the development of portfolio alignment methods. In 2015, 2Dii developed the first approach to measuring portfolio alignment with climate goals – the Paris Agreement Capital Transition Assessment (PACTA) – an open-source tool that measures alignment of portfolios in 8 sectors with various climate change scenarios consistent with the Paris Agreement. The group offers an interesting and valuable counterpoint

to other available methods – measuring forward-looking capacity and production plans to measure the influence of financial institution's portfolios on alignment in the real economy. As a member of the **PACTA Advisory Group**, we advise on the governance of the PACTA methodology to support wider adoption of the PACTA approach and are working to provide greater connectivity across alignment measurement initiatives.

As a member of the **UN Principles for Responsible Banking**, a platform for partnering with the financial sector to deliver on the Paris Agreement goals, we acknowledge the broad, collaborative industry effort required to address climate change. Using this platform to collaborate with our clients, peers and broader stakeholders, we are committed to setting business related climate goals and are sharing a set of interim targets in this report (refer to Metrics and Targets section). Earlier this year, we also joined the **Net Zero Banking Alliance**, a UN-sponsored and bank-led platform that looks to develop standards for bank commitments to net zero. We remain committed to partnering with our clients, industry peers and policymakers to deliver in the transition to net zero.



## COLLABORATIVE PLATFORMS FOR INNOVATION

To unlock the financial sector’s full capacity to aid in the global transition to net zero, participants will need to overcome significant data, analytic, and economic gaps. Addressing these challenges will require significant innovation and collaboration across the financial sector for which we’re at the frontlines.

Quality, timely climate-related information is a prerequisite for financial institutions in managing climate risk and essential for our clients in advancing their climate alignment goals – but today, climate-related data is often fragmented, inconsistent and difficult to access. This year, Goldman Sachs helped launch **Open-Source Climate**, a collaborative platform aimed to develop open-source data and analytics for climate risk management and climate-aligned finance and investing. GS was the first US bank founding member of this global, cross-industry coalition. We look to bring our expertise in climate risk, product development and financial reporting to the platform in an effort to develop tools to help companies, asset managers and investors more consistently and effectively evaluate progress towards decarbonization goals – including an open-source Data Commons, an open-source physical risk tool, and a prototype for an Implied Temperature Rise methodology.

Global transition to a low-carbon economy will require a supportive policy environment, and in some cases, accelerated policy action to support the orderly transition of industries and sectors. In early 2021, we joined **Inevitable Policy Response** (IPR) as a strategic partner, alongside several other financial institutions. IPR looks to provide investors with a forward assessment of global climate policy development and assess the impact on the real economy. In October, the IPR program released a major new [forecast](#) of accelerated climate policy before 2025, which shows achieving the Paris Agreement of well below 2°C is possible if policymakers build on the current national decarbonization plans with significant but realistic policy action. The report also finds that achieving 1.5°C requires rapid change and policy acceleration at a global level, with developing nations playing a particularly critical role. As a next step, IPR is looking to further explore application in company and sector valuation models. As a strategic partner, we provide ongoing input to the project with the goal to help establish IPR as a reference standard for the climate transition and a useful tool to guide policy action as well as assessment of risk in asset management portfolios.

We are a Founding Partner of the **Center for Climate-Aligned Finance**, which was established by RMI in July 2020 to help the financial sector transition the global economy toward a zero-carbon, 1.5°C future. With deep partnerships in finance, industry, government, and civil society, the Center works to develop decarbonization agreements within high-emitting sectors, build global frameworks for climate alignment, and support financial institutions in decarbonizing their lending and investing.

Launched in October 2021, **Just Climate** is a new investment business dedicated to climate-led investing, with the mission of limiting global temperature rise to 1.5°C by directing and scaling capital towards the most impactful climate solutions. Launched by Generation Investment Management, Just Climate will seek to invest globally in climate solutions across energy, transport, industry and buildings as well as natural climate solutions, food agriculture and oceans, with consideration for several dimensions of a just transition. As a founding strategic investor, Goldman Sachs Asset Management will look to partner with Just Climate and other

stakeholders to further support investment in impactful climate solutions that are permanent, additional, timely and at the relevant scale.

At COP26 during the World Leaders Summit’s Forest Day session, the US government launched the **Forest Investor Club**, a network of leading public and private financial institutions and other investors that will aim to unlock and scale up investments that support sustainable, climate-aligned outcomes in the land sector. As a Founding Member of the Forest Investor Club, Goldman Sachs commits to work with partners to increase the scale and geographic scope of investment in restoration, conservation, sustainable agriculture and forestry, and green infrastructure.

### GOLDMAN SACHS BLOOMBERG CLIMATE FINANCE PARTNERSHIP

In April 2021, we announced a Climate Finance partnership with **Bloomberg** that aims to develop and launch commercial products and innovative financing vehicles in service toward a broader mission of accelerating climate transition efforts while stewarding global leadership on key themes. By leveraging data alongside capital, we are accelerating the development of commercial products that will help corporations and investors measure their climate impact, assess climate risks, and transition to net zero. Together with Bloomberg Philanthropies, we have launched a **Climate Innovation Fund** to deploy capital and catalyze investment in clean energy projects across developing markets, with a special focus on India and Vietnam. The fund, structured as a blended financing facility and seeded with \$25 million of grant capital, has the potential to unlock up to \$500 million in private sector and governmental investments in critical solutions to accelerate technologies and markets for a net zero future. Managed by the Asian Development Bank, the fund will target projects with direct, measurable positive climate-related outcomes including clean energy systems, sustainable transport and energy efficiency.

*“It’s imperative for risk capital to support new technologies and low-carbon solutions that help us to build a more sustainable future. The Climate Innovation Fund will serve to catalyze investment in new, low-carbon technologies in under-invested parts of the global economy. We are proud to be working alongside Bloomberg Philanthropies and the Asian Development Bank on this important initiative.”*

**DAVID SOLOMON**  
CHAIRMAN AND CEO OF GOLDMAN SACHS

## MEMBERSHIPS AND ENGAGEMENT

---

We also look to engage collaboratively with our clients and the companies we invest in through investor coalitions and memberships in multi-stakeholder working groups, demonstrating our commitment to work with the broader community to drive better climate outcomes.

Goldman Sachs Asset Management is a member of the **Institutional Investors Group on Climate Change (IIGCC)**, and is closely engaged with IIGCC on the Paris Alignment Investment Initiative, 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, we participate in informing developing standards and advancing our engagement strategies.

---



Goldman Sachs Asset Management is a member of **Climate Action 100+**, an investor initiative dedicated to ensuring the world's largest corporate greenhouse gas emitters take necessary action on climate change. The initiative includes ~600 investors which together comprise over \$55 trillion in AUM<sup>1</sup>. We believe our participation in the initiative strengthens our commitment to using engagement to accelerate the climate transition.

---



As a member of the **World Economic Forum's Transition Finance Working Group**, our investment bankers and our Sustainable Finance Group have collaborated with clients across industries and peer financial institutions to develop sector economic frameworks, identify transition barriers, and develop practical solutions to improve the flow of capital to green projects in hard-to-abate sectors, such as steel, aviation, shipping, chemicals and trucking.

---

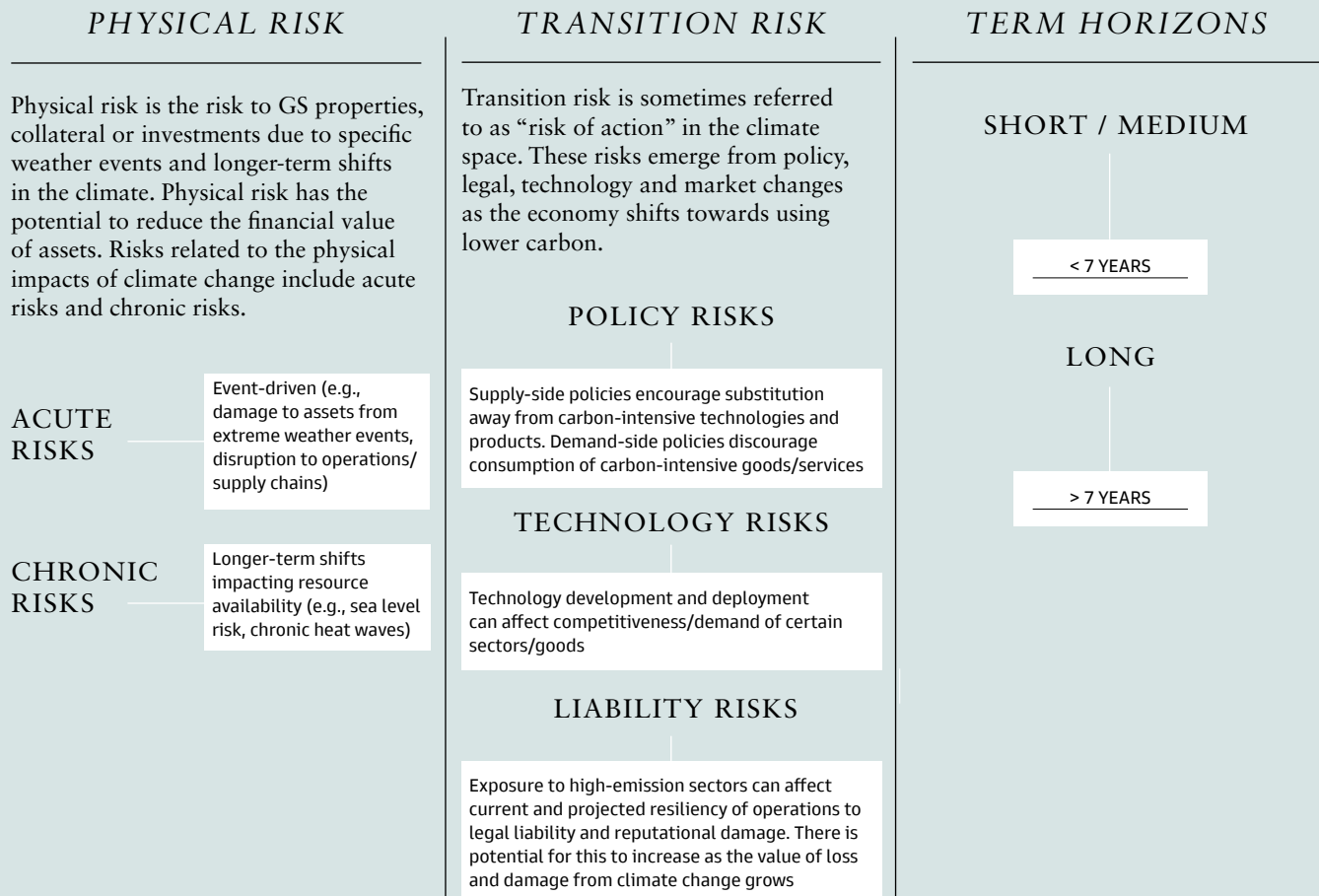


<sup>1</sup><https://www.climateaction100.org/whos-involved/investors/>

In addition to our work with clients and partner organizations to drive impact on climate transition in the real economy, we have also developed a strategic framework for addressing the risks posed by climate change on our businesses and operations.

## CATEGORIZATION OF CLIMATE-RELATED RISKS

In the assessment of the firm's climate risk drivers, we value the benefit of categorizing climate risks. Broadly speaking, climate risk can be categorized into physical risk and transition risk. **Physical risk** is the risk that asset values may decline as a result of changes in the climate, while **transition risk** is the risk that asset values may decline because of changes in climate policies or changes in the underlying economy due to decarbonization. These risks are incorporated in the firm's comprehensive risk taxonomy, which includes both financial and non-financial risks to the firm. The following figure depicts physical and transition risk in more detail.



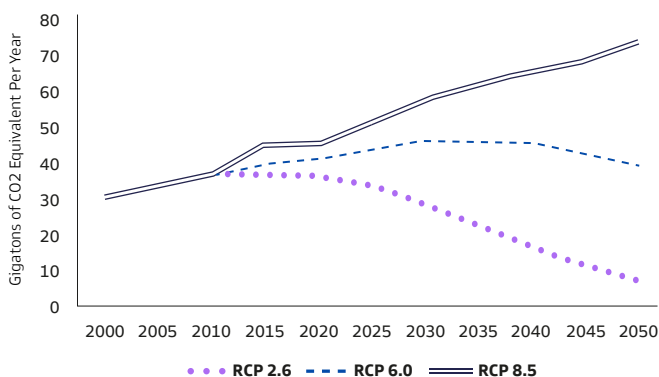
We outline the integration of climate risk into our existing risk practices in the Risk Management section and also outline integration with our businesses later in this section. Physical and transition risks may have meaningful impacts in the short, medium and long term. It is important to develop thought leadership on evaluating climate risk across these time horizons.

## CLIMATE RISK STRESS TEST METHODOLOGY

Informed by the results of our risk identification process, we have developed methodologies for both physical and transition risk. This is a foundation for quantifiable measurement and integration of climate risk into relevant risk management processes throughout the firm. We use a variety of measurement methodologies to assess the potential impact of climate-related risks, and perform scenario analysis to identify vulnerabilities and risks. Based on our findings and also as industry-wide capabilities advance, including data availability, we are continuously evaluating relevant enhancements to our approach.

In both our physical and transition risk stress testing, we leverage open-source data and models used by the scientific and climate policy communities. For physical risk stress tests, we employ a combination of open-source data Global Circulation Models (GCM) and our internal methodologies to project how climate variables such as temperature may evolve over time at different geographical locations. In our transition risk stress tests, we use Integrated Assessment Models (IAM) as a foundation to which we add our internally developed methodologies. IAMs, which are open-source models used by the climate policy community, combine a physical climate model with an underlying economic model.

The Representative Concentration Pathway (RCP) scenarios are projected paths for how greenhouse gas (GHG) emissions will evolve over time. The scenarios infer assumptions about climate policy changes as well as economic and demographic developments. The figure below depicts the path of GHG emissions to 2050 for several RCP scenarios. In our climate stress testing, we use five RCP scenarios.



RCP 8.5: A downside climate scenario, where no climate policy action is taken to reduce or slow the path of GHG emissions. GDP is assumed to grow slowly implying stagnating technological progress while population grows quickly, which in turn increases energy demand. With decreased technological progress and increased energy demand, coal-based energy production increases from current levels. This is a very high GHG emission pathway that is much worse than implied by current climate policies.

RCP 6.0: A business-as-usual scenario broadly consistent with current climate policies extrapolated into the future. In RCP 6.0, carbon dioxide emissions peak around 2080 and then decline.

RCP 4.5: A scenario in which there is partial compliance with the goals of the Paris Agreement in the long run, with emissions continuing to increase until about 2030 and then slowly declining over the rest of the century. RCP 4.5 is a stabilization scenario, where the employment of policy and technologies helps to reduce the GHG emissions.

RCP 3.7: A scenario in which there is good but not full compliance with Paris Agreement emission targets, resulting in temperature increases close to but above 2°C with high likelihood. RCP 3.7 is partially aligned with the Paris Agreement, and considered as an intermediate scenario between RCP 2.6 and RCP 4.5.

RCP 2.6: A scenario in which the total temperature rise would be expected to remain under 2°C. This scenario is consistent with the Paris goal of limiting temperature increases to 2°C, but not necessarily consistent with the Paris ambition to limit temperature increases to 1.5°C<sup>2</sup>. RCP 2.6 is a stringent scenario that would require serious, immediate changes in current climate policy across the globe. In this scenario, GHG emissions start to decrease from 2020, and will finally reach zero by 2100. This scenario also assumes the existence of negative GHG emissions, such as those produced by carbon dioxide absorption by trees.

In our physical risk stress test analysis, we use RCP 8.5, since it is the most conservative scenario out of the above. In our transition risk stress test analysis, we use RCP 6.0 to represent current climate policy and RCP 2.6, RCP 3.7, and RCP 4.5 to represent the effects of potential climate policy changes.

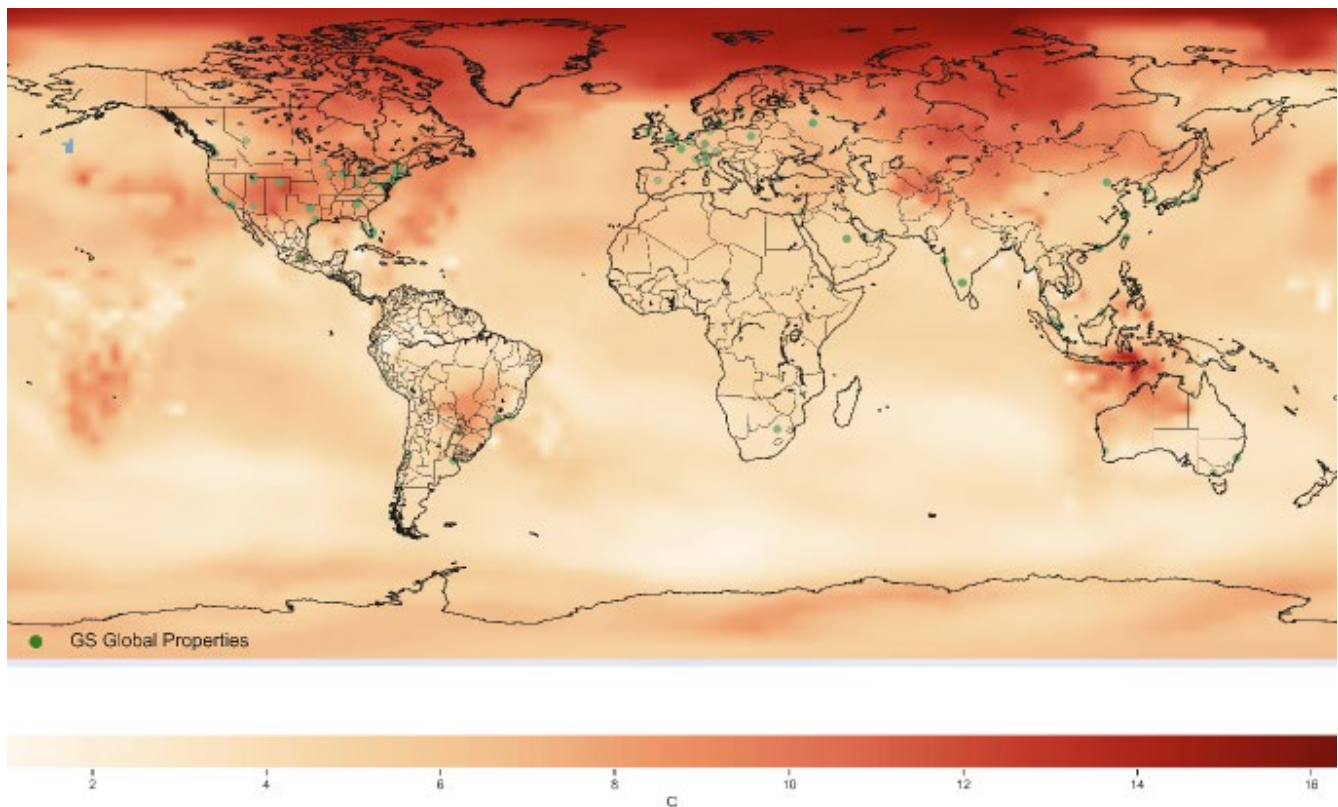
<sup>2</sup>We have also performed some estimates of the effects of RCP 1.9, a scenario that is consistent with the Paris ambition to limit temperature increases to 1.5°C.

## PHYSICAL RISK STRESS TEST METHODOLOGY

We derive our GCM climate projections from the Coupled Model Intercomparison Project (CMIP), which are a collection of GCM models that have been run under a set of standardized scenarios, including the RCP scenarios.

The GCM output is sourced from publicly available information and includes daily high and low temperatures, as well as daily precipitation globally until the year 2100 with quarter-degree by quarter-degree global spatial resolution under RCP 4.5 and RCP 8.5 scenarios – the chosen baseline and stressed scenarios of choice. The data is illustrated in the figure below for one GCM model, which shows maximum temperature change (annual mean) by the end of the 21<sup>st</sup> century under the more severe RCP 8.5 climate change scenario. For example, it shows the temperature delta of nearly 16°C near the ice caps, which may affect global sea levels and induce coastal flooding events.

### *Temperature change by the end of the 21<sup>st</sup> century under RCP 8.5*



Our modeling approach relies on GCM projections and its underlying spatial resolution framework. We have developed relevant physical climate risk factor methodologies and calculate overall severity of these risk factors for relevant future horizons under both the RCP 4.5 and 8.5 scenarios, although we use RCP 8.5 as our stress scenario in the physical risk methodology. The global physical climate risk calculation allows for retrieval of the outcomes based on geo-coordinates as inputs, and position-level risk classification based on those outcomes. With global physical climate risk stress maps, we are able to identify physical risks over future periods at different geographical locations.

## PHYSICAL RISK FACTORS AND SCORING

---

Leveraging open-source GCM models and our internal methodologies, we have developed a climate scoring approach for seven physical risks. Although not directly related to human-caused climate risk, we have also included a scoring methodology for earthquake risk. In the following, we describe our treatment of these eight physical risks in more detail.



### 1. FREQUENCY OF EXTREME TEMPERATURE

---

Climate change, in general, is expected to cause an increase in daily temperatures (both highs and lows) for most global locations under both baseline and stressed RCPs, including heat waves and high humidity.

Based on GCM model output for temperature and precipitation, we defined a set of extreme temperature cases, i.e., Hot Days, Consecutive Hot Days and Hot and Wet Days. The corresponding risk index is established based on the number of days in a given year when the criteria for these three extreme weather event types is met.



### 2. HEAT STRESS INDEX

---

For heat stress in direct sunlight, we adopted the Wet Bulb Globe Temperature (WBGT) measurement, which combines relative humidity with standard temperature measurement to produce a single comprehensive and highly relevant heat stress index. Based on the GCM model output, we developed an algorithm to estimate WBGT for any given geo-coordinates.



### 3. WATER STRESS AND DRYNESS INDEX

---

Severe drought conditions may be caused by global warming, even in regions where such events have been historically rare. We use GCM output to calculate the local dryness index which we employ to project the total renewable freshwater resources.



### 4. INCREASE IN ENERGY DEMAND FOR COOLING PURPOSES

---

As temperature rises, demand for additional energy for cooling purposes will increase. In our physical risk model, we evaluate an increase in energy consumption for cooling purposes versus a baseline, which considers historical electricity usage patterns and projections of daily high temperatures from GCM data.



### 5. HURRICANES AND TYPHOONS

---

Some major metropolitan areas are located in coastal areas where cyclones (hurricanes and typhoons) are frequent. Since hurricane activity is not a direct output of GCMs, we analyze historical hurricane data for global locations and summarize it via a hurricane/typhoon index that encodes the number of historical events and the corresponding maximum sustained wind speed for the given location. The extreme precipitation that sometimes occurs during these events is captured in the GCM projections, and its physical risk impact is captured in our flood risk index.



### 6. SEA LEVEL RISE, COASTAL FLOODS, AND NON-COASTAL FLOODING

---

Real estate properties located in coastal and low-lying areas are at high risk from Sea Level Rise (SLR). Due to the irreversible loss of continental ice caps, these risks will continue even if the global mean temperature is stabilized. Over time, these properties will become more susceptible to coastal flooding and likely see impact on their asset values and local economies. We construct a SLR index that measures how often a coastal flood would occur in the future if it occurred once in 100 years historically. Non-Coastal Flooding (NCF) refers to the flooding events that are not necessarily driven by SLR and may occur in landlocked areas far away from seas and oceans.



### 7. WILDFIRE

---

We measure wildfire risk by factoring in both number of annual wildfires and size. The projected wildfire index is scaled by temperature, based upon the underlying assumption that high temperature corresponds to higher wildfire impacts. We use the temperature projections from the GCM output which is then paired with wildfire historical data.



### 8. SEISMIC ACTIVITY AND EARTHQUAKE RISK

---

We rely on historical data to derive the intensity (as measured by the Mercalli scale) for a global location, given the earthquake epicenter and its magnitude. The derived index summarizes the damage potential for buildings resulting from an earthquake.

For each of these physical climate risk indices, we categorize the physical risk severity (extremely high, high, medium, low). The figure below depicts the metrics for the eight physical risks. Based on the analysis conducted so far, the impact of physical risk on our portfolio is low, although we continue to monitor the severity of impacts as well as firm resiliency.

PHYSICAL RISK	RATING CATEGORY	INTERPRETATION
Extreme Temperature	↓ Low Risk	Zero consecutive hot (>95°F) days
	↑↑ High Risk	20 consecutive hot days or more
Heat Stress	↓ Low Risk	Moderate and hard work is allowed
	↑↑ High Risk	Limited moderate work, hard work is forbidden
	↑↑↑ Extreme High Risk	Exercise is forbidden. Very high risk for heat casualties
Water Stress	↓ Low Risk	Water Stress (WS)<20%
	↑ Medium Risk	20%<=WS<75%
	↑↑ High Risk	75%<=WS<100%
	↑↑↑ Extreme High Risk	WS>=100% (insufficient water supply)
Energy Consumption	↓ Low Risk	No increase in consumption from baseline
	↑↑ High Risk	Consumption increased 20% from baseline
Hurricane (Saffir-Simpson Hurricane wind scale 1-5)	↓ Low Risk	Produce no damage
	↑ Medium Risk (1-2)	Extreme dangerous winds will cause extensive damage
	↑↑ High Risk (3-4)	Devastating damage will occur
	↑↑↑ Extreme High Risk (5)	Catastrophic damage will occur, a high percentage of framed homes will be destroyed, with total roof failure and wall collapse
Coastal Flooding Frequency & Sea Level Rise	↓ Low Risk	100-year flood returns once in 100 years or less
	↑ Medium Risk	100-year flood returns between 2 and 5 times in 100 years
	↑↑ High Risk	100-year flood returns more often than 5 times in 100 years
Wildfire (Size Class of Fire by National Wildfire coordinating group)	↓ Low Risk (Class A, B, C)	Wildfire size less than 100 Acres
	↑ Medium Risk (Class D, E)	Wildfire size between 100 to 1000 Acres
	↑↑ High Risk (Class F)	Wildfire size between 1000 and 5000 Acres
	↑↑↑ Extreme High Risk (Class G)	Wildfire size greater than 5000 Acres
Seismic Risk (Ranks 1-10)	↓ Low Risk (1-4)	1 = Not felt, 2 & 3 = Weak, 4 = Light
	↑ Medium Risk (5-6)	5 = Moderate, 6 = Strong
	↑↑ High Risk (7-8)	7 = Very strong, 8 = Severe
	↑↑↑ Extreme High Risk (9-10)	9 = Violent, 10 = Extreme

## TRANSITION RISK STRESS TESTING METHODOLOGY

---

Transition risk emerges from policy, legal, technology and market changes resulting from the shift to a lower carbon economy. For example, when implementing the Paris Agreement, carbon-intensive sectors may suffer from transition risk due to regulatory pressures and changed market preferences.

### METHODOLOGY

---

We project the effects of a climate policy change from the base case, RCP 6.0, to other scenarios such as RCP 4.5, RCP 3.7, or RCP 2.6. Since countries may implement decarbonization policies in different ways, changes to industries will also depend on where they are located and how the policies evolve over time. In addition, different industries or sectors have different business cycles, and are influenced by transition risk in different ways. As a result, we model transition risk by generating risk factor shocks such as equity shocks, credit spread shocks and credit rating shocks by country and by industry under different climate policy scenarios. Once we develop the shocks, we apply them to Goldman Sachs' portfolios to produce stress tests and assess impacts.

#### 1. INTEGRATED ASSESSMENT MODEL (IAM)

---

Our transition risk stress test uses the outputs of an open-source IAM to assess climate change policies and technology strategies globally over long time horizons. The IAM takes into account the world's energy, agriculture and land use systems together with a physical climate change model, and has been widely used by the climate research community to study the effects of climate policies.

#### 2. TRANSITION RISK SCENARIOS

---

As discussed, we consider several scenarios or climate policies represented by Representative Concentration Pathways (RCPs), which are widely used by the climate research community to help standardize and improve comparability of climate change analysis. The current policy is roughly consistent with RCP 6.0, where emission peaks around 2080 and then declines. RCP 6.0 is used as the base scenario in our transition risk analysis. The following stress scenarios are considered:

- 1) a scenario in which the Paris Agreement is implemented by all countries, like RCP 2.6 and RCP 1.9
- 2) a scenario in which the Paris Agreement is partially implemented in line with current policy plans, like RCP 3.7 and RCP 4.5

When implementing each scenario, we assume that a credible policy change is announced and that the market consequently adjusts credit ratings and prices of affected companies and trades. In each

stress test, we estimate the change in credit ratings that would result from each policy change as well as the changes in equity and credit prices that are consistent with those credit rating changes. We then reprice all affected assets on our balance sheet to measure the total change in value that would result under each scenario.

#### 3. TRANSITION RISK STRESS TEST PROCESS

---

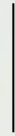
Our transition risk model takes current carbon dioxide emission data, projected emission paths and historical empirical relationships among equity prices, credit spreads and credit ratings as inputs, and produces estimated risk factor shocks (for example, equity shocks) on the firm's portfolio when transitioning from the base scenario to a stress scenario. Losses, under various RCP scenarios, are then estimated using these shocks.

Using our current approach, we have estimated the magnitude of potential losses in equity investments and wholesale loans across RCP scenarios. These estimates assume that changes in climate policies have an immediate impact on market prices and related economic and market variables. Under this approach, we are actively monitoring the estimated loss impact from transition risk to the firm but deem the impact to be manageable. We will continue to refine our estimates and methodologies.

As a firm, we are beginning to integrate climate scenario analysis and the associated proprietary physical and transition risk stress testing capabilities into our Risk Management Framework. Further integration efforts are captured in the Risk Management section.



## SECTION IV



## *Risk Management*

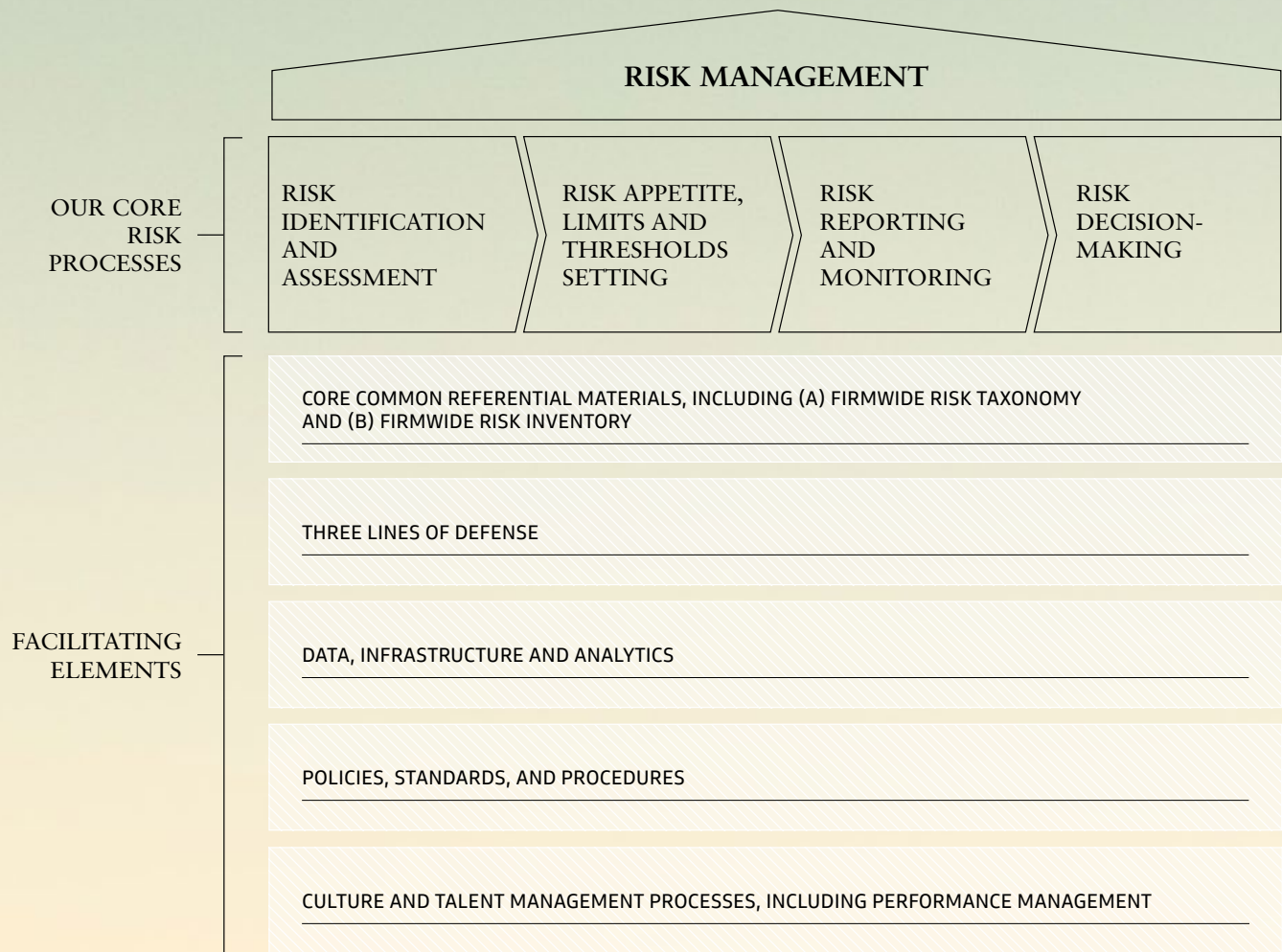
“Climate risk is an increasingly important component of our overall risk management program. We are committed to continuing to advance our climate risk management capabilities, building on the firm’s deep culture of risk management.”

**BRIAN LEE**  
CHIEF RISK OFFICER

In our inaugural TCFD report published in 2020, we outlined our firm’s approach to managing climate-related risks across our business. Over the past year, we have continued to make significant enhancements to our climate risk management framework, including steps to further integrate climate into the firm’s broader risk management processes. In our firmwide risk identification process, we identify and classify climate risks, which are then stressed in our physical and transition risk stress testing methodologies. In this section, we describe the climate risks identified by this process and then examine how they are treated in our climate stress tests. We also describe how we have begun to integrate climate risk into our credit risk reviews and underwriting processes. Lastly, we describe other functions at the firm which are responsible for reviewing climate and environmental risks, specifically for firmwide business transactions and our operations.

## RISK IDENTIFICATION AND ASSESSMENT

Risk identification is the first of four core processes in Goldman Sachs’ Enterprise Risk Management Framework and serves as the foundation for other risk processes across the firm.



Goldman Sachs’ risk discovery is based on “top-down” and “bottom-up” processes from our policies, standards and procedures to our data, infrastructure and analytics, culminating with a comprehensive inventory of firmwide risks. Our inventory is then organized into risks and risk factors that can be assessed for materiality. Risks are designated as either material, immaterial, tail or monitored based on projected loss from stress testing or projected increase in capital requirement. We also incorporate expert judgment to assess materiality given that no single metric can reflect every consideration.

As a global financial institution, climate-related risks manifest in different ways across our businesses. While we see significant climate-related opportunities across our financing, investing, advisory, and risk management activities with clients, we understand that extreme weather events may disrupt operations or affect the value of our investments, negative financial impacts on clients from climate change may increase credit risk, and involvement in certain industries associated with climate change may pose reputational risk. Our business structure and strategy helps us to manage overall climate-related reputational risks and increases our ability to participate in climate-related opportunities.

As part of risk identification, we consider physical and transition risks as drivers that impact broader categories of risk.

Examples of the impact of climate change on broader categories of risk include:	<i>Term Horizons</i>
<p><b>Credit Risk:</b> Higher probabilities of default and/or diminishing collateral value due to lower corporate profitability from transition risk and/or damage to physical assets.</p>	<p>SHORT / MEDIUM ————— &lt; 7 YEARS</p>
<p><b>Market Risk:</b> Decreases in value of holdings, particularly related to real estate exposure.</p>	<p>LONG ————— &gt; 7 YEARS</p>
<p><b>Operational Risk:</b> Potential damage to firm offices and/or equity real estate investments from climate change factors impacting the operational use of those assets.</p>	<p>The firm's Risk Appetite Statement (RAS) now incorporates climate-related risks and opportunities. Over time, our investment in risk metrics will continue to inform risk reporting and management. We are beginning to integrate climate risk factors as described in the Strategy section into our broader risk analysis capabilities as well as for select new transactions during the transaction due diligence process.</p>
<p><b>Liquidity Risk:</b> Potential liquidity outflows resulting from the transition risk scenario, in line with other ad hoc macro-financial scenario analysis.</p>	

## INTEGRATION OF CLIMATE RISK INTO RISK MANAGEMENT

As we integrate climate risk into broader risk management, we have begun incorporating climate risk into the firm's credit evaluation and underwriting processes for select industries.

We are evaluating the impact of transition risk on a portion of the firm's current credit risk portfolio. The Greenhouse Gas Protocol divides emissions into 3 scopes: 1) direct emissions, 2) indirect emissions (such as purchased electricity) and 3) value chain emissions. Based on sectors' GHG emission profiles, we categorize sectors into high, medium or low in transition risk.

In addition, transition and physical risks are now evaluated as part of transaction due diligence for select loan commitments, and consider climate risk factors and mitigants in the loan approval process. We are also updating credit risk policies to reflect climate risk considerations.

**PARAMETERS**

Longitude

Latitude

Name

**Apply**

**Physical Risk Property Info**

Property Name: Houston | latitude: 29.76 | longitude: -95.37

**Physical Risk Summary**

- By sourcing the same data that specialized climate consulting firms use, ERM analysis has developed methodology to project under two scenarios important global climate statistics for locations anywhere in the world at any time from now until the year 2100.
- To project these climate metrics, we selected MIROC model out of 21 global circulation models under 2 scenarios, RCP 8.5 and RCP 4.5, and downloaded the physical risk output. We also collected data from other sources on physical risk projections.
- RCP 8.5 is a business as usual climate disaster, a scenario that would occur if no action was taken to preserve or improve the environmental well-being from today, GDP grows slowly and population grows quickly.
- RCP 4.5 is essentially implementation of a policy change similar to the Paris Accord.
- This absolute rating is mainly based off of industry standards.
- Site scores reflect the percentiles of 2050 climate risk factor indices for risky locations within the Physical Risk Global Grid.

**Physical Risk Summary Table**

Physical Risk	Site Score	2050 Rating	2020 Rating
Frequency of Extreme Temperature	44	High	Medium
Heat Stress	49	Extremely High	High
Hurricanes & Typhoons	70	Medium	Medium
Coastal Floods & SLR	99	Extremely High	Low
Wildfire	45	Medium	Medium
Non Coastal Floodings	92	High	Low
Energy Consumption Increase	58	Medium	Low
Water Stress	54	Extremely High	High
Seismic Risk	7	Low	Low

Rows: 9

## ENVIRONMENTAL & SOCIAL RISK MANAGEMENT

---

Appropriate oversight by our senior management groups and Board of Directors, as well as robust policies and practices, help us to manage a broad spectrum of financial and non-financial risks across our businesses. We proactively manage and report publicly the material impacts of sustainability-related risks to our firm, including environmental and social risks through our Environmental & Social Risk Management framework. At the highest level, dedicated teams within our Legal, Compliance and Executive Office divisions broadly examine legal, regulatory, reputational, environmental, social and governance risks, and review potential transactions through a risk management lens. At an operational level, in-house specialist teams within our Risk division guide environmental, health and safety (EHS) standards for our investing activities. These teams also perform EHS due diligence on proposed investment transactions, helping business teams identify and mitigate potential risk.

Our Environmental Policy Framework (EPF) outlines the firm's approach to environmental and social risk broadly. The EPF includes certain restrictions for carbon-intensive sectors such as thermal coal mining, coal-fired power, and Arctic oil. Clients in carbon-intensive sectors are subject to enhanced due diligence to understand their climate-related impacts and approach to climate-related risks. A key aspect of our approach includes active engagement with our clients and the companies we invest in to help them improve on ESG-related matters, as feasible.

## OPERATIONS

---

For our physical assets, the Firmwide Operational Risk and Resilience Committee, which is a sub-committee of the Enterprise Risk Committee, oversees business continuity planning and crisis management efforts, including planning for climate-related impact. The committee oversees efforts related to:

- Regular resiliency reviews
- Comprehensive infrastructure and business continuity assessments
- Overall real estate site selection and management strategy
- Business continuity planning and remote access infrastructure

We also consider such risks through all stages of our corporate real estate strategy, from site selection and building design to occupancy and facilities management. Within our operations, we utilize various metrics and dashboards to prioritize and track risks that pose a threat to the health and safety of our employees or to the firm's critical infrastructure assets that support core business functions.

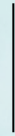
This past year we refreshed a physical climate hazard exposure screening analysis of our entire global asset portfolio. This assessment supported prioritization of sites which are considered critical and highly exposed to climate change impacts. We are currently reviewing this data and working to integrate it into future plans.

## VENDORS

---

As part of our commitment to assess our global supply chain for ESG risks, we review all vendors in spend categories which are deemed to have an inherently high ESG risk. We also consider factors such as modern slavery risk countries and expected annual spend to determine what level of further due diligence is required, including the completion of ESG self-assessment questionnaires to understand alignment with our ESG minimum standards and our Vendor Code of Conduct.

## SECTION V

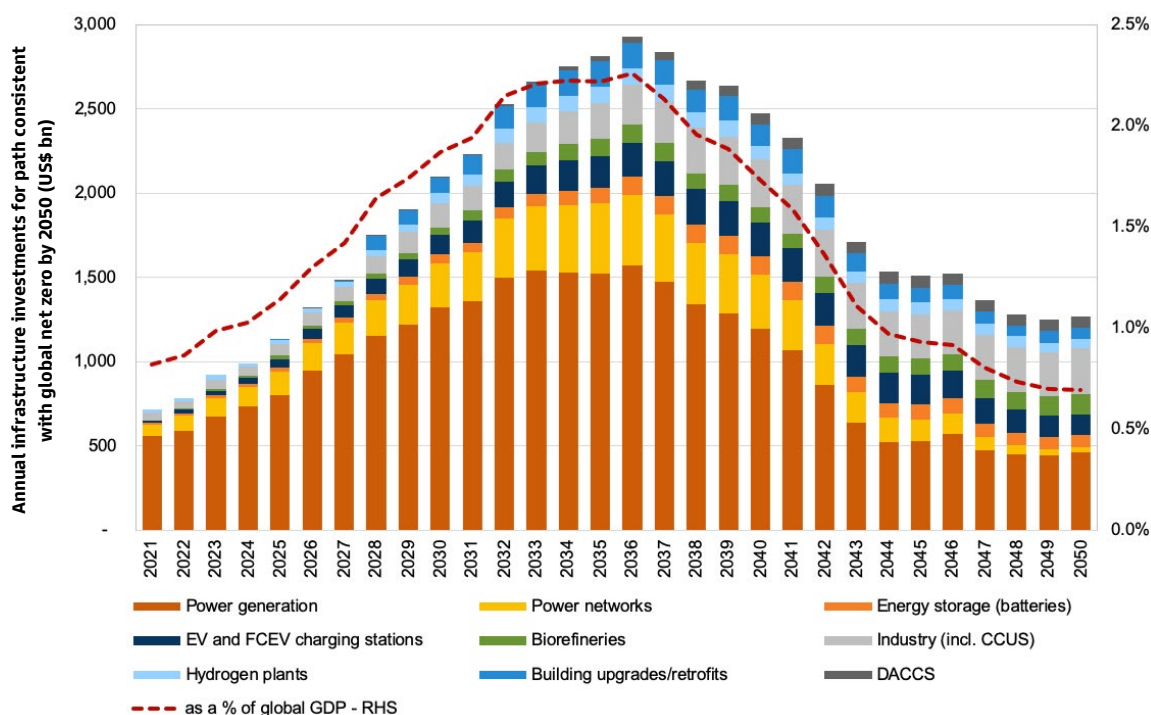


### *Metrics & Targets*

As outlined in this report, Goldman Sachs’ approach to addressing climate change is grounded in our commitment to drive decarbonization in the real economy in partnership with our clients. We have prioritized climate transition in our commercial efforts with clients, leveraging insights from our experience managing climate for our own business and holistic engagement strategy to develop a comprehensive commercial offering that supports our clients’ low-carbon transition efforts.

In 2019, we set a firmwide goal to drive \$750 billion towards sustainable advisory, financing and investment activity over the next decade. In a little more than a year, we surpassed one-fifth of that goal with approximately \$150 billion in commercial activity, with the majority dedicated to climate transition.

We expect the need for capital to fund the infrastructure required for climate transition to increase significantly in the coming decades. Goldman Sachs’ Carbonomics research estimates a global investment opportunity of **\$56 trillion** in clean infrastructure alone to meet its 1.5°C aligned sectoral pathways (~\$1.9 trillion in average annual investments), highlighting the key role the private sector can play in supporting the hardest-to-abate sectors in decarbonization through capital and strategic advice.



Source: “Carbonomics: Introducing the GS net zero carbon models and sector frameworks”, June 23, 2021.

We are also introducing interim targets related to our commitment to support the goals of the Paris Agreement, which includes aligning our business with a net zero by 2050 pathway. Notably, we recognize that the ability for us and our clients to achieve climate-related goals will depend on a variety of factors including policy action, technological advancement and the ambition of clients’ decarbonization commitments. Our approach highlights where these gaps remain material, and will continue to advocate for the system level change that is required to address divergence between the ambition and the reality of current economic and policy frameworks globally.

## 2030 SECTOR TARGETS

---

### OUR APPROACH

Goldman Sachs supports the goals of the Paris Agreement, which includes aligning our business with a net zero by 2050 pathway. In this section of the report, we share an initial set of business-related, ranged targets for 2030 across three sectors: Oil & Gas, Power and Auto Manufacturing. Our initial interim targets focus on sectors where we see an opportunity to proactively engage our clients, deploy capital required for transition, and invest in new commercial solutions to drive decarbonization in the real economy. These are also areas where we believe our firm can have the most material impact, and where we have sufficient data available and ability to engage clients on decarbonization.

The development of our interim net zero targets was a cross-divisional effort that involved sector experts across our business, Sustainable Finance, Risk, Controllers and other key groups and encompassed in-depth strategic assessments of opportunities and constraints required to decarbonize the sectors we have selected. In addition, we worked closely with our consultant, Oliver Wyman, to conduct a preliminary baseline emissions analysis for our 2019 exposure and embed our net zero commitment in our commercial and client activities.

A Firmwide Climate Steering Group comprising leaders across our business, Risk, Controllers and Executive Office oversees the firm's strategy on climate, including the development of our interim

targets to deliver on our net zero commitment. The Firmwide Climate Steering Group will continue to be engaged in evaluating progress towards our interim goals.

In addition, we believe in the importance of working collaboratively with industry peers, clients, policymakers and other stakeholders to deliver on the transition to net zero. As a participant in the United Nations convened Net Zero Banking Alliance (NZBA), and member of the Global Financial Alliance for Net Zero (GFANZ), we have joined over 450 firms in the financial services industry in enabling the decarbonization of the global economy and promoting transparency and accountability in our net zero strategy.

“In order to meet society’s ambition for a smooth transition to a sustainable future, the financial sector must play a vital role in providing advisory expertise and mobilizing capital to support clients in developing breakthrough technologies and executing commercially smart transition plans. Goldman Sachs has undertaken a thoughtful and rigorous firmwide approach towards reaching net zero emissions in the global economy.”

**JOHN COLAS**

PARTNER AND VICE CHAIRMAN OF OLIVER WYMAN FINANCIAL SERVICES AMERICAS,  
CO-LEADER OF OLIVER WYMAN'S CLIMATE AND SUSTAINABILITY PLATFORM



Our commitment framework is underpinned by the following core principles:

Real Economy Impact

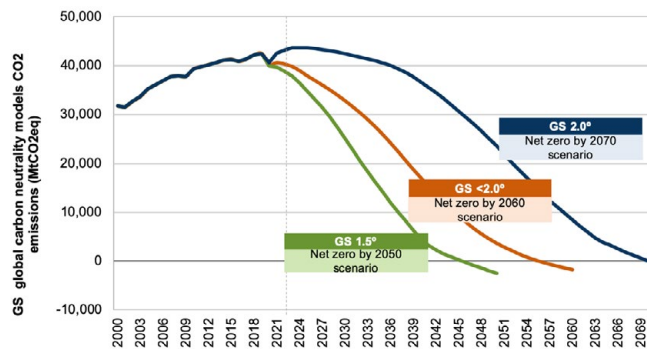
Client Solutions

Materiality

Sustainable Growth

REAL ECONOMY IMPACT – ESTABLISH TARGETS THAT ACCELERATE REAL WORLD DECARBONIZATION FOR OUR CLIENTS

The collective impact of public policy, corporate action, technological advancements, and changes to consumer behavior will be needed to align the world to a net zero pathway. We are committed to partnering with our clients, investors and the public sector to support the goals of the Paris Agreement, including a goal towards limiting global warming to well below 2°C, and we share the ambition to limit warming to 1.5°C above pre-industrial levels. At the same time, we recognize that there are substantial gaps between the benchmark 1.5°C aligned scenarios and the current state of policies, commitments and technologies. This is a gap that we cannot close on our own. We present ranged interim targets that are consistent with the ambition of the Paris Agreement but highlight where these gaps remain material. We will continue to advocate for the system level change that is required to address these gaps, while continuing to expect our clients to adhere to prevailing market, regulatory and reporting standards. This is illustrated by examining the global paths to net zero produced by the Goldman Sachs' Carbonomics research.



The use of cost curves at the heart of Carbonomics results in pathways that are more reflective of the required technological progress and sensitive to resiliency of the social and policy transformations that are required to meet carbon budget objectives, relative to alternative scenario options. The Goldman Sachs' Carbonomics 1.5°C net zero path (GS 1.5°C) is an aspirational path consistent with limiting global warming to 1.5°C and achieving net zero global emissions by 2050, and is based on carbon budgets from IPCC<sup>3</sup>. GS 1.5°C implies the need for transformational changes across all key parts of the global energy ecosystem and broader economy.

As noted, Carbonomics starts with the same science-based carbon budgets from IPCC as other research scenarios and builds out pathways based on the costs of different technologies and approaches to decarbonization, which we view as more relevant for a financial institution that does not control the pace or direction of global public policy, but can finance and invest in new technology solutions alongside our clients. We therefore decided to calibrate the lower bound of the range for our targets against the 1.5°C aligned sectoral pathways from our Carbonomics research. The Carbonomics emissions path for global net zero carbon by 2050 reflects the aspirational goal we are striving to reach in partnership with our clients and other stakeholders throughout the economy, recognizing that achieving these goals will be dependent on acceleration of policy and technological advancement. The upper bound of the range is a level based on a set of industry assumptions that are specific to our current and forward-looking portfolio, that we commit to manage our business below, and is anchored in a view of rapid decarbonization of our portfolios within the evolving policy and technology environment. For all sectors, the upper bound of the range is in line with or more ambitious than well below 2°C scenario expectations from Carbonomics, representing a commitment to go well beyond the current state. The trajectory for our portfolio, just as in the global economy, will not necessarily follow a linear path as we continue to work with clients across these sectors in different regions to support their low-carbon transitions.

The process of decarbonizing the global economy will have major implications for our clients and the communities they serve globally. A just transition will be critical, particularly for developing markets and traditionally underserved communities, and to avoid unintended consequences that may undermine the durability of policy action. Over time, we will monitor for updates on the progress of the policies, commitments and technologies that impact these sectors. If important developments occur, we will evaluate the appropriateness of potential adjustments to our target ranges.

<sup>3</sup>The Goldman Sachs Carbonomics 1.5°C net zero path assumes a carbon budget for remaining net cumulative CO2 emissions from all sources from 2020 to be c.500 GtCO2, in line with the IPCC AR6 WGI Summary for Policymakers, and consistent with a 50% probability of limiting warming to 1.5°C by 2100.

## CLIENT SOLUTIONS – FOCUS ON DEVELOPING INNOVATIVE PRODUCTS AND SERVICES TO SUPPORT OUR CLIENTS IN TRANSITION

Our north star in designing our framework is an understanding that our role is to help our clients take action that accelerates decarbonization. This means acting both at an individual company and a system level. We recognize that our clients will require a diverse set of advice, capital and financing solutions to measure, manage and execute on their decarbonization strategies, and are leveraging the capabilities across our business to support them in this effort. Reflecting this holistic approach to accelerating climate transition, we have included both direct and facilitated financing activities in our initial scope of review.

### Our 2019 baseline and 2030 targets include:

- corporate lending commitments
- debt and equity capital markets financing; and
- other on-balance sheet debt and equity investments

These represent important business activities for Goldman Sachs where we have the data and approaches available to measure and manage our financed emissions. Industry practice is still evolving in some areas, and we would highlight two points of note in our design choices.

For our corporate lending commitments, we measure exposure to clients based on the full lending commitment, including undrawn balances. This allows us to capture the total credit we have made available to our clients, rather than focusing solely on the funded balances in a given year. We believe this is both a more meaningful measure of our commitment to our clients, and a more stable metric to track, measure and manage.

Capital markets facilitation is not currently a requirement of NZBA, however we consider this to be a core service that we provide to our clients and as such have included it in our expanded definition of client financing in scope for net zero target setting. Our approach incorporates capital markets facilitated financing that takes into account our attributed deal volumes, which is better aligned to our corporate lending commitments, and explicitly considers the role of low-carbon finance. Here we look at transactions and structures that are targeted toward a specific set of low-carbon technologies. We consider this an important way that we can support the provision of capital to companies who may be high emitters today but who are taking important steps to reduce their emissions. We recognize this is a relatively new area and there is no accepted industry-wide guidance on emissions intensity accounting for capital markets facilitated financing, and we will continue to engage on emerging approaches, leveraging the approach we have developed.

## MATERIALITY – START IN SECTORS OF GREATEST IMPACT

Delivering on the goals of the Paris Agreement will require action and collaboration across the entire corporate sector. We have prioritized three sectors for this first iteration of targets: Oil & Gas, Power, and Auto Manufacturing<sup>4</sup>.

### In prioritizing these sectors, we considered a variety of factors:

- Materiality to global emissions
- Materiality to our own financial exposures and balance sheet profile
- Data available to measure our clients' emissions intensity profiles
- Feasible sectoral decarbonization pathways in use by the industry

Our current estimate of in-scope sector activity, across Oil & Gas, Power, and Auto Manufacturing accounts for approximately 38% of our total portfolio of carbon-intensive sector activities<sup>5</sup> and approximately 9% of overall GS portfolio for the relevant business activities. There is currently insufficient available data to accurately reflect the carbon intensity of the remaining 62% of carbon-intensive sector exposures. Targets for a significant majority of remaining carbon-intensive sectors will be announced in line with current guidelines from the NZBA, before the fourth quarter of 2024.

<sup>4</sup>Our target is specifically focused on light duty vehicle auto manufacturing, including both cars and light trucks for passenger and commercial uses.

<sup>5</sup>Per NZBA guidelines, these sectors include: agriculture; aluminium; cement; coal; commercial and residential real estate; iron and steel; oil and gas; power generation; and transport

SUSTAINABLE GROWTH – SUPPORT GROWTH FOR EMISSIONS EFFICIENT BUSINESSES

We have chosen to set targets on a physical emissions intensity basis (e.g., kilograms of CO2e per megawatt hour of electricity generated) for our three priority sectors, reflecting the close tie between the level of a company's emissions and the scale of its production. Measuring our portfolio through an intensity lens enables us to effectively manage and support our clients in transition by:

- **Normalizing for company size and scale of production:** We work with clients across the value chain in these different sectors, and with companies of different sizes. An intensity-based approach improves comparability across clients in our portfolio.
- **Allowing for growth in businesses that are emissions-efficient:** This is particularly relevant for sectors like Power where production is expected to increase significantly over the decade, in line with science-based decarbonization pathways. As companies ramp up greener electricity production, an absolute emissions metric may create unintended consequences in preventing capital flow to these companies. The same applies

to companies that are leading their sector in emissions efficiency, for whom growth that takes market share from less efficient competitors can drive sector-level decarbonization.

- **Reducing volatility as a result of short-term changes in production levels:** For example, most recently global emissions fell in 2020 due to a slow down in production and reduced demand for end-use fossil fuels during the COVID-19 pandemic. Emissions have rebounded as reopening policies take hold around the world; for example, the International Energy Agency (IEA) has forecast that demand for electricity will increase by 5% in 2021 and to record levels in 2022. An intensity-based approach normalizes for volatility like this in emissions caused by macro events rather than true decarbonization.

We calculate our portfolio metrics for a given sector by reviewing client-level intensities, and aggregating the client results on an exposure-weighted basis.

$$Sector\ Portfolio\ Emissions\ Intensity = \sum \left( \frac{CLIENT\ EMISSIONS}{CLIENT\ PRODUCTION} \right) \times \left( \frac{CLIENT\ FINANCING}{SECTOR\ PORTFOLIO\ FINANCING} \right)$$

OUR 2030 TARGETS

As described above, the lower bounds of our targets are aligned to net zero pathways from Goldman Sachs' Carbonomics research, which assumes carbon budgets in line with the IPCC<sup>6</sup>. While the underlying scenario methodologies are differentiated for GS 1.5°C, the resulting carbon intensity levels for 2030 are close to, and in some cases more ambitious than, scenarios provided by other providers. The upper bounds for all sectors reflect a rapid decarbonization in the context of evolving policy and technology dynamics. In all three sectors, our proposed target ranges are aligned with the goals of the Paris Agreement to limit the increase in global average temperature to well below 2°C above pre-industrial levels. As demonstrated in recent years where we've seen both significant declines and increases to sectoral emissions due to exogenous forces, we do not expect the pathway to these 2030 goals to be linear.

2019 BASELINE AND 2030 TARGETS FOR OUR PRIORITY SECTORS

SECTOR	METRIC	2019 BASELINE	2030 TARGETS	% REDUCTION 2019-30
<b>OIL &amp; GAS</b>	gCO2e / MJ	72	56 – 60	17 – 22%
<b>POWER</b>	kgCO2e / MWh	417	147 – 219	48 – 65%
<b>AUTO MANUFACTURING</b>	gCO2e / km	152	70 – 77	49 – 54%

The results above reflect the emissions, production, and scenario data available today. We are supportive of vendors continuing to expand data coverage, along with supporting improved disclosure quality and reliability in the corporate sector. We will continue to monitor the data landscape in this space and calibrate our methodologies accordingly.

Our framework will incorporate the use of carbon credits (or offsets), where these are high quality, additional and verified (e.g., nature based removals, carbon capture usage and storage). Going forward, we expect governance around carbon credits to be further developed, including a common language around describing different types of credits, appropriate use of credits in net zero plans, and market infrastructure that supports verification, liquidity and ease of access. We will continue to identify carbon mitigation opportunities and evolve our framework and methodology in line with industry standards and general market practice.

Ensuring a just and resilient transition will require continued support for these sectors – we will continue to work with our clients in these sectors, providing capital and strategic advice to support their decarbonization efforts.

<sup>6</sup>The Goldman Sachs Carbonomics 1.5°C net zero path assumes a carbon budget for remaining net cumulative CO2 emissions from all sources from 2020 to be c.500 GtCO2, in line with the IPCC AR6 WGI Summary for Policymakers, and consistent with a 50% probability of limiting warming to 1.5°C by 2100.

## SECTOR METHODOLOGY DETAIL

### OIL & GAS

For the Oil & Gas sector, we measure emissions intensity as a function of emissions, measured as grams of carbon dioxide equivalent, and megajoules of embedded energy produced by the company.

$$\text{Oil Gas Client Intensity} = \frac{\text{Scope 1 + Scope 2 + Scope 3 End Use Emissions} - \text{Carbon Offsets (gCO2e)}}{\text{Embedded Energy Produced (MJ)}}$$

### MEASURING EMISSIONS AND PRODUCTION

We have included Scope 1–3 emissions to capture emissions related to fossil fuel extraction and its end-use combustion as fuel for other sectors across the economy. Emissions are reported in carbon dioxide equivalent, and include impacts from methane and flaring, to provide a more comprehensive view on related emissions from the sector instead of a siloed focus on carbon dioxide. While we recognize that end-use Scope 3 emissions are not directly controlled by Oil & Gas companies, they contribute the majority of emissions within this sector. For many clients the reduction in Scope 3 emissions intensity will need to be aided by significant developments in policy, technology, and downstream consumption.

Production is measured as the embedded energy produced across companies within the sector. We include the embedded energy in Oil & Gas produced as well as in power generated. Some clients in the Oil & Gas sector will look to diversify their operations away from Oil & Gas and into renewable power generation, and invest in new technologies to decarbonize their activities. Our methodology reflects and incentivizes this strategy.

### ACTIVITIES IN SCOPE

Our evaluation of the Oil & Gas sector includes specialized upstream producers and downstream refiners, as well as integrated companies operating across the value chain. The primary driver of emissions for the Oil & Gas sector is end-use fuel combustion. By focusing our performance metrics on companies with upstream extraction and/or downstream refining operations, we are able to hone in on and incentivize changes to the type (and level) of crude product being extracted as well as refined products being produced.

In the current iteration of our targets, Oil Services and Midstream companies are excluded from scope. Firstly, these sectors are not conducive to an intensity metric (i.e., these companies play a supporting role in the sector but do not individually own the extracted Oil & Gas or the refined products). Secondly, as part of our data gathering process we also measured absolute emissions for our client base. For those clients where emission data was available, their emissions do not contribute as significantly to our overall portfolio emissions. We will continue to monitor absolute emissions internally for these sub-sectors and may reassess our target-setting methodology over time if these drivers change.

### DATA SOURCES

In addition to leveraging data disclosed by our clients in their own company reporting, we have leveraged emissions and production data from Wood Mackenzie, Asset Resolution, S&P TruCost, and Bloomberg to calculate our clients' intensities. There is a small subset of clients for which emissions and production data is not readily available. To bridge this gap, we use an averaging approach that is based on companies with similar operations as a proxy.

Our 1.5°C target is based on the sectoral pathways published in Goldman Sachs' Carbonomics research, and these pathways include emissions from methane and flaring as well as carbon dioxide. This has significant real world implications at a sector level. For example, the scenario assumes a rapid increase in the scale of carbon capture technology, the electrification of end-use sectors such as transport, and a significant shift toward production of petrochemicals and renewable fuels as opposed to refined Oil & Gas for consumption in the industrial, transport and power sectors.

This is a significant shift from today and existing policy. A reduction in oil demand post 2025 is also observed in the Goldman Sachs Carbonomics <2°C scenario, which is consistent with global net zero by 2060 (a decade later) and the ambitions laid out in the Paris Agreement.

## POWER

---

For the Power sector, we measure emissions intensity as a function of emissions, measured as kilograms of carbon dioxide equivalent, and megawatt hours of electricity generated by the company.

$$\text{Power Client Intensity} = \frac{\text{Scope 1 Emissions – Carbon Offsets (kgCO}_2\text{e)}}{\text{Electricity Generated (MWH)}}$$

### MEASURING EMISSIONS AND PRODUCTION

---

We have included only Scope 1 emissions in the Power sector target. Scope 1 emissions are responsible for the majority of overall Power sector emissions. We also believe that focusing on emissions from the combustion of fossil fuels will place appropriate focus on the activities requiring the most change, and help drive appropriate levels of investment to transition accordingly.

We measure production for this sector in terms of a company's own power generation.

### ACTIVITIES IN SCOPE

---

Our evaluation of the Power sector is specific to electricity generation, and we include in scope generation activities of specialized producers as well as integrated electric and multi-utilities. We prioritized power generation activities given its material contribution to overall sector emissions, in particular those companies that have legacy coal and fossil fuel plants still in operation. Furthermore, renewable energy will play an increasingly important role in the next decade in sector decarbonization. To support power generation emissions intensity reduction of our clients, we will continue to work with clients in both an advisory and financing capacity to help them decarbonize their generation fleets and expand low-carbon power capacity.

In the current iteration of our targets, we do not include Transmission & Distribution companies in scope. These companies are not conducive to a production based metric as they do not generate electricity themselves. Transmission & Distribution companies also do not contribute significantly to overall Power sector emissions. We will monitor emissions internally for these sub-sectors and subject to any material developments may consider the appropriateness of related adjustments to our methodology over time.

### DATA SOURCES

---

In addition to leveraging data disclosed by our clients in their own company reporting, we have leveraged emissions and production data from Asset Resolution, S&P TruCost, and Bloomberg to calculate our clients' intensities. There is a small subset of clients for which emissions and production data is not readily available. To bridge these gaps, we use an averaging approach that is based on companies with similar operations as a proxy.

Our 1.5°C target is calibrated to the Goldman Sachs Carbonomics 2021 scenario. Aligning to this pathway requires an unprecedented shift away from fossil fuels, including natural gas, and toward renewable power generation in both emerging and developed markets. For example, the GS 1.5°C Carbonomics path estimates fossil fuel based power generation would represent only 32% of total power generated by 2030 in a net zero scenario from 2019 levels of ~64%. This compares to the Stated Policies scenario, and Announced Pledges scenario, that rely on 45–50% of fossil fuel-based power generation, reflecting the policy gap today to attain 1.5°C. This shift away from fossil fuel based power to renewables and alternative sources also requires a significant scaling in battery storage capabilities across the sector.

## AUTO MANUFACTURING

For the Auto Manufacturing sector, we measure emissions intensity as a function of emissions, measured as grams of carbon dioxide equivalent, and expected life-time kilometers travelled for new vehicles manufactured by the company. Our target is specifically focused on light duty vehicle auto manufacturing, including both cars and light trucks for passenger and commercial uses.

$$\text{Auto Manufacturing Client Intensity} = \frac{\text{Scope 1 + Scope 2 + Scope 3 TTW Emissions} - \text{Carbon Offsets (gCO2e)}}{\text{Vehicle Lifetime (km)}}$$

### MEASURING EMISSIONS AND PRODUCTION

We have included Scope 1 and 2 and Scope 3 tank-to-wheel (TTW) emissions in our intensity metric. TTW emissions, also known as tailpipe emissions, captures the emissions from fuel that are generated while driving. The primary lever for decarbonizing the light transport sector is a widespread shift from Internal Combustion Engines (ICE) vehicles to electric and hybrid alternatives. The inclusion of TTW emissions into the way we measure our clients emissions intensity is consistent with this decarbonization strategy. For the Auto Manufacturing sector, TTW emissions are considered Scope 3 but are directly controlled by the type of vehicles produced.

We account for all light duty vehicles produced by a manufacturer in our analysis, including both cars and light trucks for commercial or passenger use. Heavy duty truck production is not included in scope.

### ACTIVITIES IN SCOPE

Our evaluation of the Auto Manufacturing sector, at this time, is specific to light duty vehicle manufacturers. As noted above, heavy duty vehicle production is excluded from this metric at this time. Our priority focus on auto manufacturers is consistent with the global need to shift vehicle fleets away from ICE and toward electric and hybrid alternatives. A ramp up in production and availability of these low-intensity alternatives, and reduced ICE stock, should also have a knock-on effect to other parts of the automotive value chain (e.g., consumer auto loans are more likely to be for an electric vehicle, fleets for car rental companies will shift to include more electric and hybrid models, etc.).

At this time we do not currently include emissions from automotive parts producers in our metric (by excluding Scope 3 upstream emissions) or as a standalone sector due to lagging data quality and transparency on upstream supply chains for our manufacturing clients. We will continue to monitor the data landscape in this space and calibrate our methodology accordingly.

### DATA SOURCES

In addition to leveraging data disclosed by our clients in their own company reporting, we have leveraged emissions and production data from S&P TruCost, Asset Resolution, and IHS Markit. We also leverage data from the Transition Pathway Initiative and the International Council on Clean Transportation. There is a small subset of clients for which emissions and production data is not readily available. To bridge these gaps, we use an averaging approach that is based on companies with similar operations as a proxy.

The Auto Manufacturing sector, specifically light duty vehicles, is contingent on a shift away from ICE vehicles to electric and hybrid alternatives. The GS 1.5°C net zero Carbonomics model estimates new energy light duty vehicle sales to be 69% of total light duty vehicle sales in 2030 under a net zero scenario. In addition to changes in customer behavior, critical investments in infrastructure (e.g., EV charging) are needed.

Our 1.5°C target is based on the Goldman Sachs Carbonomics 2021 pathway for light duty vehicle production in the auto manufacturing sector. An important consideration for our methodology is that it is based on new vehicles produced and sold by manufacturers, as opposed to legacy stock still in circulation.

## IMPLEMENTATION OF TARGETS

---

As mentioned, these sectoral targets are a key step forward in our journey to align our financing portfolio to a net zero pathway by 2050. We are committed to expanding our target-setting framework to include additional sectors that are material to our financing portfolio.

In addition to ongoing reporting to the market and our stakeholders, we intend to use these targets to drive business strategy. Our efforts to baseline the portfolios in scope and estimate 2030 targets required detailed client-level analysis and these reviews were conducted collaboratively with subject matter experts across the business, sector teams, Risk, Controllers, and Executive Office. This granular analysis will inform our engagement with clients on their decarbonization efforts. Over time, we aim to further embed these targets into our risk management framework.

Our immediate focus is on automating and standardizing the emissions reporting process to allow for frequent, recurring reporting of our portfolio intensity versus our stated targets. This includes setting up infrastructure across our businesses to provide real-time visibility into changes in portfolio intensity metrics and to support client engagement. We will also continue to expand governance around our decarbonization offering, particularly as it relates to green financing transactions captured in our underwriting methodology. Our Firmwide Climate Steering Group will review changes in our portfolio intensity, progress against our targets, and relevance of key design decisions.

## SUSTAINABILITY FOR OUR OPERATIONS & SUPPLY CHAIN FOR 2030 NET ZERO TARGET

---

At Goldman Sachs, we acknowledge that doing our part in advancing climate transition includes our own business operations. We have been carbon neutral across our operations since 2015, and in March 2021, we announced our accelerated commitment to achieve net zero for our own operations and supply chain by 2030. Across our business operations, we have committed to deepening our performance in key areas such as energy management and direct renewable energy sourcing by 2025, and net zero is the natural next step of our climate journey.

Every year since 2015, we have been steadily reducing our absolute emissions for our own operations. We've developed a plan to help guide our course of action over the next ten years to reach our goal of net zero across our operations and supply chain. We bucket our activities across four key areas:

- **Operations:** Our firm has been carbon neutral across our operations since 2015, which includes all of our facilities globally along with business travel. By the end of 2020, over 70% of our facilities had achieved LEED Gold or equivalent green building certifications, we showed a 27% decrease in absolute energy use across our operationally controlled facilities (exceeding our goal by over 10%) and we had procured 100% renewable energy.
- **Vendor Commitment and Engagement:** Many of our vendors have net zero commitments already in place. We will track their progress in meeting these commitments, which will help us meet our goal. We expect vendor commitments to reducing carbon footprint to become an increasingly important part of our sourcing discussions. In addition, we are working with our supply chain on emissions disclosure and reduction. In 2021, we joined CDP Supply Chain as a lead member to engage with our key vendors to disclose their emissions to us, understand their climate actions and put action plans together to reduce those emissions. This includes encouraging our vendors to set their own commitments and disclose their emissions publicly,

and working jointly on projects that help them achieve their own operating efficiencies, whether it is supporting them with energy efficiency projects, incorporating more renewables into their own operations or helping them gain access to high-quality carbon offsets.

- **Employee Engagement:** The actions and decisions of our employees will impact the emissions which are remaining for the firm to mitigate. We will launch an internal green traveller program to help educate and inform our employees and bring them on our journey to net zero, enabling them to make smarter decisions that generate fewer emissions – whether it's business travel related or the way they commute to and from the office.
- **Carbon Removal:** Addressing our remaining emissions to get to net zero will require investment in carbon removal, a market that is still nascent. We are partnering with our financing groups to bring new carbon removal technology solutions to market, enabling achievement of net zero carbon not only for ourselves, but also for others. These purchases will remove carbon from the atmosphere, rather than simply avoid new carbon from being generated.

Additionally, Goldman Sachs discloses key environmental metrics pertaining to its business operations in our annual [Sustainability Report](#).

## SECTION VI



*Next steps for progress*



## NEXT STEPS FOR PROGRESS

---

At Goldman Sachs, our commitment to address the impacts of climate change is grounded in our firm's strategic priorities to support sustainable economic growth and financial opportunity. We have embraced climate transition as a key driver of both risk and opportunity for us and our clients, and have made significant progress in integrating climate as a foundational element of our business and risk practices. We have developed an integrated business model that leverages the full breadth of resources across our firm, and the insights from our experience managing climate for our own business, and channels that into a comprehensive commercial offering for our clients that supports their climate transitions. We also recognize that climate change is an important dimension to the risk profile of our business and our clients and are continuing to enhance our approach to assess and manage climate-related risks relevant to our business and our own operations. As data, methodology and tools related to climate risk are further developed and the industry's understanding of climate-related impacts evolves, we will continue to refine our approach and further integrate climate risk into our risk management processes, long-term business strategy and financial planning.

Going forward, we remain committed to deliver on the goals of the Paris Agreement, with a focus on facilitating decarbonization in the real economy, in partnership with our clients. Our commitment is grounded in our long-term goal to align our business with a net zero by 2050 pathway, and the interim goals we share in this report serve as a preliminary roadmap for how we are working to make these goals a reality through active engagement with our clients and broader stakeholders. We will continue to actively engage our clients, including those in the hardest-to-abate sectors of the economy, across all stages in their transitions, to provide strategic advice and capital that support ambitious transition plans while taking into account the unique considerations that exist for their business, regions and markets in which they operate.

In the coming year, we expect to focus our efforts on further integrating our initial set of interim goals within our Credit Risk and business evaluation processes, enhancing our own emissions related disclosures, and tracking and reporting on progress. In the future, we will look to expand our initial set of

interim business targets to other portfolios, taking into consideration factors such as materiality to our business and global emissions, data availability and feasible industry decarbonization pathways. We will also look to address any practical implications and potential constraints for our work in setting targets across sectors, such as public policy, technology and innovation, regulatory requirements and social justice considerations.

As a leading financial institution, we will strive to remain leaders in driving climate transition. Importantly, the global transition to an inclusive, low-carbon economy cannot be achieved without collaboration across the public and private sectors. Public policy should take into consideration the significant investment and technological development required to facilitate a just and orderly transition across industries, sectors and communities, as well as growing energy demand across the world. We look forward to working with our clients, investors, policymakers and partners in this effort – and in doing so, work together towards a more sustainable future for our economy, people and the planet.

This document is not a product of Goldman Sachs Global Investment Research. This document should not be used as a basis for trading in the securities or loans of the companies named herein or for any other investment decision. This document does not constitute an offer to sell the securities or loans of the companies named herein or a solicitation of proxies or votes and should not be construed as consisting of investment advice. This material is not intended to be used as a general guide to investing, or as a source of any specific investment recommendations. Goldman Sachs is not providing any financial, economic, legal, accounting, or tax advice or recommendations. This material does not purport to contain a comprehensive overview of Goldman Sachs products and offering and may differ from the views and opinions of other departments or divisions of Goldman Sachs and its affiliates.

We have included in this report statements that may constitute “forward-looking statements.” Forward-looking statements are not historical facts or statements of current conditions, but instead represent only our beliefs regarding future events, many of which, by their nature, are inherently uncertain and outside our control. These statements are not guarantees of future results or performance and involve certain known and unknown risks, uncertainties and assumptions that are difficult to predict and are often beyond our control. These statements relate to, among other things, our goals, targets, aspirations and objectives, and actual outcomes and results may differ materially from those expressed in, or implied by, any of these forward-looking statements. Factors that could cause our results to differ from the forward-looking statements include global socio-demographic and economic trends, energy prices, technological innovations, climate-related conditions and weather events, legislative and regulatory changes, and other unforeseen events or conditions. In addition, important factors that generally affect our business and operations can be found under “Risk Factors” in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2021, and in subsequent reports filed with the SEC. This report contains statements based on hypothetical or severely adverse scenarios and assumptions. These hypothetical scenarios may not occur, and actual events may be significantly different from these hypothetical scenarios. These statements should not necessarily be viewed as being representative of current or actual risk or forecasts of expected risk.

The disclosures included in this report are being provided in connection with our application of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Our approach to the disclosures included in this report differs from our approach to the disclosures we include in our mandatory regulatory reports, including our filings with the Securities and Exchange Commission (SEC). This report is intended to provide information from a different perspective and in more detail than that required to be included in other regulatory reports, including our filings with the SEC.

**Goldman  
Sachs**