International Private Bank
Climate Report

Table of contents

- Foreword 03
- Executive summary 05
- Governance 10
  - Board and Committee oversight 10
  - Management oversight 12
- Strategy 14
  - Understanding our business environment 14
  - Educating and advising clients 16
  - Offering investment strategies 16
  - Developing portfolio climate analytics and reporting capabilities 16
- Risk management 19
  - How we identify and assess climate-related risks and types of risk we manage 19
  - Identifying and managing climate-related risks through three lines of defense 19
  - Engagement activities with investee companies 21
- Metrics and targets 23
  - Historical metrics 23
  - Forward-looking metrics 24
  - GHG emissions of our assets under management 25
  - Emissions data coverage and limitations 26
  - Our sustainability commitments 26

Foreword

We are excited to present our inaugural 2023 Climate Report for the J.P. Morgan International Private Bank. This report outlines our efforts to understand and manage the risks related to climate change in our business.

At J.P. Morgan Chase & Co., we believe that businesses have an important role to play in addressing the challenges posed by our changing climate. At the International Private Bank, we are fiduciaries and trusted partners to clients in more than 30 countries. Our dedication to doing our part includes improving our understanding of the financial impact of climate change on our overall business as well as educating our clients to help them future-proof their investment portfolios.

As such, climate change is increasingly discussed in our annual flagship Long-Term Capital Market Assumptions ("LTCMA") publication. These proprietary forecasts offer a 10 to 15 year outlook across asset classes and serve as a foundation for how we advise our clients. This multi-asset research covers multiple regions including Europe, Middle East and Africa, Latin America, United States, and Asia Pacific and is aligned to long-term investment objectives with a multi-year shelf life. The LTCMAs are also one of the key inputs into goals-based planning, allowing us to develop customized wealth plans that align with our clients' desired outcomes.

We also closely monitor the evolving technology trends in the context of energy transition and the implications for our business and clients. The scale of the challenge has spurred a host of decarbonization commitments by governments and companies. We believe that this offers a major investment opportunity for our clients, with energy transition investments totaling USD 1.8 trillion in 2023, up 17% from 2022, and further estimates pointing to more than USD 4.8 trillion investment needed annually to stay on track with the Paris Agreement.

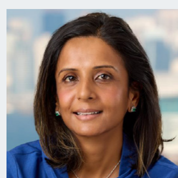
As an open-architecture platform, we are able to offer access to a variety of J.P. Morgan and third-party managers who are leaders in thinking about the impact of climate change and sustainability more broadly in their portfolios. We also leverage our position in the financial ecosystem to educate our clients through our flagship Sustainability Summits in Europe and Asia and through the publication of regular thought leadership on our websites.

This inaugural report is our first step in providing you with a clear and comprehensive view of our approach to assessing and managing the risks and opportunities related to climate change.

We hope you will read it with interest and continue to engage with us in conversations around this important topic.

Sincerely

Pablo Garnica
CEO, EMEA
Private Bank



Harshika Patel
CEO, Asia
Private Bank

Neha Coulon
Head of ESG,
International
Private Bank

Executive summary

Executive summary

About the International Private Bank

The International Private Bank ("IPB", "Company", "we" or "our") is part of J.P. Morgan Global Private Bank ("GPB") operating within the Asset and Wealth Management ("AWM") business of J.P. Morgan Chase & Co. ("the Firm", "JPMorgan Chase", "JPMC", "Firmwide"). The IPB includes Europe, Middle East and Africa ("EMEA"), Asia Pacific ("APAC") and the Latin America ("LATAM") region in addition to the Global Families Group. This report will focus on offerings and the platform available to our EMEA and APAC regional businesses as well as the part of our Latin America business that is booked into our JPM Suisse SA entity. The IPB sits across various J.P. Morgan Chase & Co. entities. These entities are either wholly-owned indirect subsidiaries or branches of wholly owned indirect subsidiaries of J.P. Morgan Chase & Co.

Our clients are primarily ultra-high net worth individuals, charities, endowments, and foundations. The IPB maintains a strategic focus on diversification in order to provide our clients with holistic advice and solutions on wealth management.

The IPB's offering can be broadly classified into Investment services and Credit and Banking services as follows:

1. **Investment services** through:
   - **Entrust:** a fully managed investment approach ("Discretionary", "Investment Management" (IM))
   - **Engage:** an Advisory service which entails a collaborative investment approach
   - **Execute:** a Self-Directed Investment approach ("SDI")
2. **Credit services:** lending offered primarily as Securities Based Lending ("SBL"), or against Mortgages, Specialized (Art, Airplanes and Yacht) and occasionally on an unsecured basis.
3. **Banking services:** providing a full range of cash management options.

Purpose of this Climate Report

This is the inaugural Climate Report of the IPB covering our APAC and EMEA branches and entities. In this report, we outline how we consider climate related risks and opportunities within the IPB. Whilst we continue to integrate climate considerations across our business, this inaugural IPB Climate Report focuses on our discretionary management activity within our Investments business, which is where we make investment decisions on behalf of our clients.

This report does not describe our efforts in our Banking or Credit businesses, since our activities primarily involve accepting deposits from, and lending to individuals. Although there is broad alignment across the J.P. Morgan group regarding our approach to assessing climate risks and opportunities, J.P. Morgan International Private Bank's approach is specific to its business, for example, where we consider these risks and opportunities from a fiduciary lens across assets that we manage on behalf of our clients. Therefore, in certain instances, this may differ from the approach taken by JPMorgan Chase & Co.

All data in this report is as of 31st December, 2023, with a reporting period of 1st January 2023 - 31st December 2023.

Structure of this Report

In line with Taskforce for Climate related Financial Disclosure ("TCFD") recommendations, this report is structured into four sections.

1. **Governance:** discusses how climate-related risks and opportunities feature in our governance and management structures.
2. **Strategy:** focuses on the key climate-related components of our strategy; understanding our business environment, educating and advising clients, offering investment strategies and developing portfolio climate analytics and reporting capabilities.
3. **Risk management:** explores how we identify and manage climate risks through our three lines of defense.
4. **Metrics and targets:** discloses the data and metrics of our 2023 carbon emissions across our assets under management for our discretionary business.

In this Executive Summary, we present the key highlights of the report and provide a summary of our disclosures for each of the TCFD recommendations (where applicable).

Summary of disclosures informed by the TCFD guidance for all sectors and supplemental guidance for Asset Managers[1]

Governance	
Describe the board's oversight of climate-related risks and opportunities.	Legal entity boards (or appropriate governance related committees) within the IPB business oversee senior management and challenge business activities and controls, which include, where appropriate, climate-related matters. The Line of Business ("LOB") Risk Committees (including the AWM Risk Committee) are responsible for providing the Firmwide Risk Committee with information on climate risks and climate-related initiatives, as appropriate.
Describe management's role in assessing and managing climate-related risks and opportunities.	Senior management, including certain members of the Firm's Operating Committee ("OC") and relevant leaders within each of our Lines of Business are responsible for strategy and execution on ESG matters (including climate risks and opportunities) across the Firm. The OC is the senior management body for the Firm and includes the Chief Executive Officer of Asset & Wealth Management. Subsidiary level executive management bodies tasked with overseeing progress towards strategic AWM business objectives include the J.P. Morgan Asset & Wealth Management Operating Committee and the J.P. Morgan Global Private Bank Operating Committee. Business units and functional groups are responsible for overseeing climate-related risks and opportunities as part of oversight in their respective roles.
Strategy	
Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	We recognize that climate-related risks and opportunities can manifest over different time horizons and we therefore consider climate-related risks and opportunities over the short-term (1-3 years), medium-term (3-5 years) and long-term (5+ years). In the short- and medium-term, transition risks may impact our business and clients, varying by sector and geography. Investments in relatively high-emitting sectors[2] may be at a greater risk from the transition to a low-carbon economy model, and experience knock-on effects on individual assets, particularly in jurisdictions with stronger carbon pricing policies or clean technology incentives. Acute risks from extreme weather events (e.g. floods and wildfires) may increase in frequency and severity over the medium-term, potentially leading to business disruptions for some of our clients, with second order[3] impacts on their assets with us. At the same time, physical risks, particularly those that are chronic in nature (e.g. sea level rise or average temperature increases), would be expected to increase in prominence over a longer time horizon, playing an important role in the regions in which the IPB businesses operate. These could negatively impact GDP growth, lower consumption levels and therefore have an impact on the overall economy and our business.

[1] This constitutes our Investments services across Discretionary/Investment Management business where we conduct Portfolio Management activity (also known as our Entrust business).
[2] Such as the sectors involved in a fossil fuel value chain; for example, companies within the oil and gas sector.
[3] The term "first order impacts" refers to impacts that directly affect an individual company, property, or consumer. The term "second order impacts" refers to secondary impacts to financial markets, local economies, or other businesses.

Strategy (continued)	
Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	In our role as a portfolio manager for our discretionary business, our climate-related strategy is built around several key components: 1. Understanding our business environment 2. Educating and advising clients 3. Offering investment strategies 4. Developing portfolio climate analytics and reporting capabilities The revenues within the IPB across our investments business are driven by the quantum of assets on our platform, which in turn are affected by inflows of new assets and the financial performance of all assets. In addition, our assessment of the impact of climate change on our business environment includes our ability to manage our margins effectively. Exhibits IV-V provide a non-exhaustive list of examples for these dimensions.
Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C increase or lower scenario.	We are developing portfolio and risk management tools and research focused on assessing products with climate-risk exposure and resilience. In view of this, we currently do not use climate scenario analysis to manage clients' portfolios and/or in any of our governance processes for our discretionary offering. We also do not report these metrics at the aggregate assets under management ("AUM") level. We continue monitoring this analytics landscape to better inform ourselves and our clients.
Risk management	
Describe the organization's processes for identifying and assessing climate-related risks.	J.P. Morgan Chase has developed a Climate Risk Framework (the "Framework") which sets forth the capabilities J.P. Morgan Chase uses to identify, assess and manage the impacts of physical and transition risk drivers. This framework is comprised of core firmwide risk capabilities central to enabling assessment, quantification, and management of the climate risks that may manifest across the Firm's diverse global footprint. With an aim to identify climate-related risks in our investments on behalf of clients, we are continuing to develop our management information and portfolio and risk management tools, and our research focused on assessing companies' climate-risk exposure and resilience. The IPB uses the industry standard approach to risk management of a 'Three Lines of Defense' model to create segregation of duties and minimize conflicts of interest. Climate risk is considered among other risks in this approach across relevant areas of the business.
Describe the organization's processes for managing climate-related risks.	Across the three lines of defense within the IPB, the first line of defense (as primary risk owners), i.e. Client advisors, Due Diligence teams (Manager Solutions, Investment Director Team ("IDT")), Investments Governance team, Portfolio managers and ESG teams are responsible for identifying, assessing, managing and monitoring risks, including climate-related risks. The risk and compliance teams act as the second line of defense. These independent functions provide oversight and effective challenge to the first line of defense, including with respect to sustainability-related disclosures. The third line of defense is made up of our Internal Audit team which provides independent oversight on risk management across the IPB, including climate risks where relevant. Various processes including conducting due diligence of strategies on the platform, managing climate risks within discretionary strategies to managing regulatory requirements related to climate change are managed and integrated within respective functions for which each team mentioned above have accountability.

Risk management (continued)	
Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Climate change is viewed as a risk driver that may impact existing types of risks managed by the Firm. The IPB continues to enhance the process to integrate climate related risks and their considerations in the overall risk management. At the IPB, the Independent Risk Management function is responsible to provide credible challenge across climate risk processes.
Metrics and targets	
Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Where information is available, the Due Diligence teams aim to monitor sustainability risks, including climate risks, as part of the qualitative due diligence process, recognizing that these risks can be potentially material to the performance of an investment strategy. Central to the assessment of third-party managers[4] is the annual ESG survey, which analyzes fund managers' approach to ESG matters within their strategies, including climate matters. From a climate perspective, third-party managers are asked questions which focus on if and how climate-related risks and opportunities are managed within the portfolio, metrics used to manage these, if scenario analysis is incorporated into their analysis and how active ownership and stewardship play a role in climate risk management. The teams also gather carbon footprint and other ESG data (where available) to aid in the analysis of potentially material climate risks and to better understand how third-party fund managers with specific climate-related objectives are performing against these objectives. In the discretionary space, insights into the carbon profile of specific holdings within a fund manager's portfolio can inform discussions regarding their engagement and voting objectives and management of climate risks. In addition to the above, we continue to develop our climate analytics capabilities, datasets and tools to assess and manage climate-related risks associated with our clients' investment portfolios containing strategies investing in the public markets. We also aim to identify investment opportunities related to the transition to a low-carbon economy in addition to continuing to monitor and identify investment opportunities related to the transition to a low-carbon economy.
Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Our carbon exposure metrics for our assets under management for 2023 are: • Scope 1+2 Emissions: 3 MtCO_2e, • Scope 3 Emissions: 17 MtCO_2e • Carbon footprint: 364 tCO_2e/$million invested • WACI (Corporate): 862 tCO_2e/$million revenue • WACI (Sovereign): 275 tCO_2e/$million GDP A CO_2 equivalent (CO_2e) is a unit of measurement that is used to standardize the warming effect of different greenhouse gases (over 100 years) in comparison to CO_2. For more information please refer to our Metrics section which discloses our Scope 1 and 2 GHG emissions.
Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	As of 2023, we have not set emissions targets for our overall assets under management. We continue to evaluate appropriate metrics that reflect our efforts across the entirety of our business.

[4] Third-party managers also include funds which are onboarded to our platform from J.P. Morgan Asset Management.

Governance

Governance

Governance oversight at the IPB helps foster an effective, risk and control environment. Our goal is to have decision-making processes and responsibilities that are clear, consistent, and aligned with our key business principles, including the exceptional client service and operational excellence which are at the forefront of everything we do. This also includes our approach to considering sustainability and climate risks. Our governance oversight promotes a culture of accountability and ethical conduct at every level, demonstrating our unwavering dedication to the highest standards of integrity.

Board and Committee oversight

The Firm's Board of Directors (the "Board") oversees the business and affairs of the Firm. The Board Risk Committee assists the Board in its oversight of management's responsibility to implement a global risk management framework reasonably designed to identify, assess, and manage the Firm's risks, including ESG and climate risks.

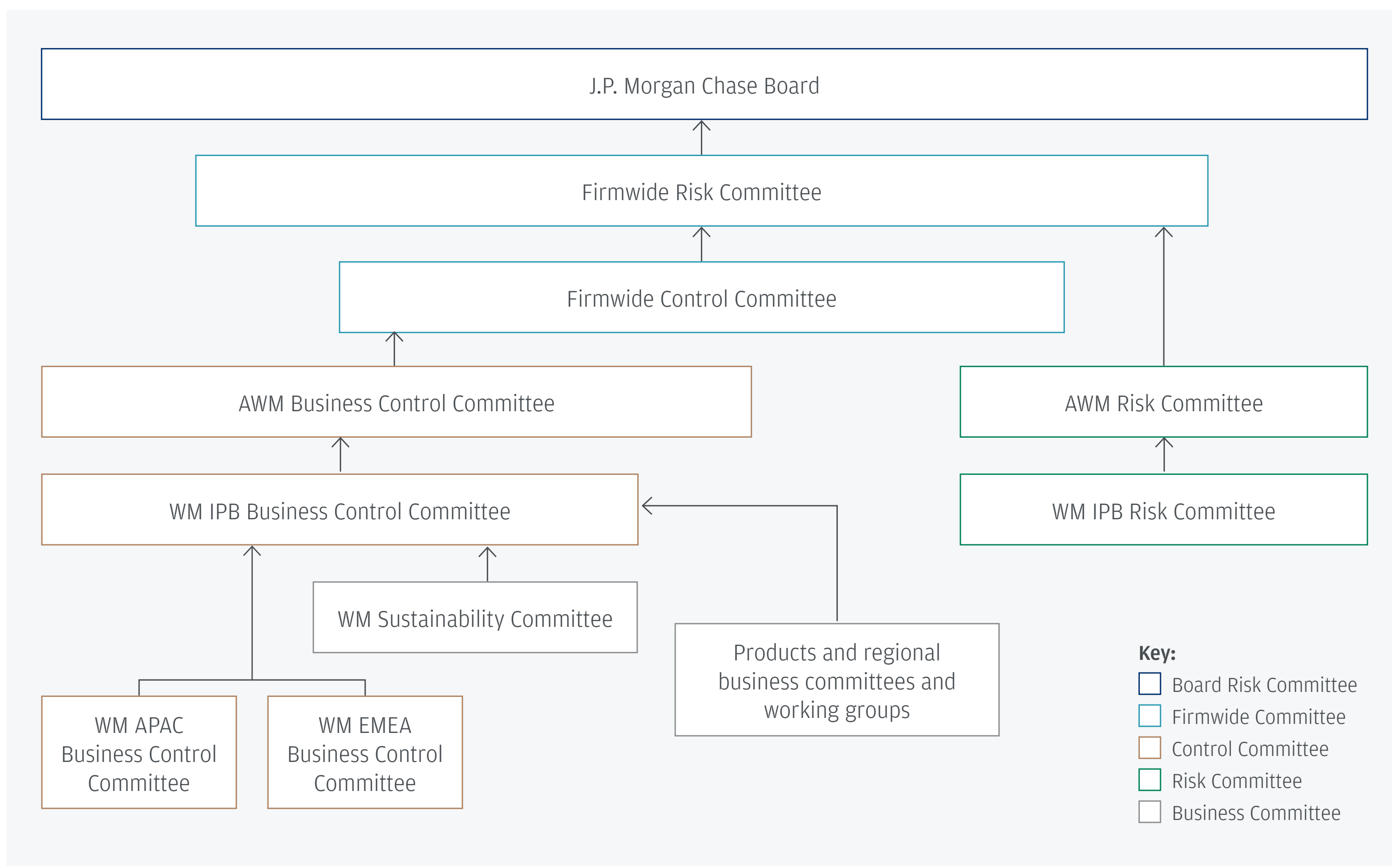
The LOB Risk Committees (including the AWM Risk Committee) are responsible for providing the Firmwide Risk Committee with information on climate risks and climate-related initiatives, as appropriate.

Exhibit I illustrates the governance structure and Exhibit II provides detail on the roles and responsibilities of each of the governance committees.

The Boards of the legal entities in which the IPB operates oversee senior management who are responsible for setting business strategy aligned to long-term value creation for our clients.

In some instances, the boards or senior management committees may create sub-forums that promote the advancement of sustainability initiatives across our in-scope legal entities and branches within the IPB. For example, our EU business that operates out of J.P. Morgan SE ("JPMSE")

EXHIBIT I – GLOBAL PRIVATE BANK FIDUCIARY GOVERNANCE HIERARCHY



has established an ESG Forum which is sponsored by the CEO and EMEA Head of ESG. Participants of the JPMSE ESG Forum consist of senior members across all lines of business and key stakeholders of JPMSE, and it contributes to advancement of our ESG agenda. In our Asia business, that operates out of J.P. Morgan Chase Bank, N.A., Hong Kong and Singapore branches, we have established a dedicated APAC ESG Business Forum and APAC ESG Governance Forum to consider sustainability-related matters and escalate any matters to the relevant location management committees and branch level committees.

See Exhibit III for a list of some of these management committees.

EXHIBIT II – DESCRIPTION OF GOVERNANCE COMMITTEES

Governance body	Responsibilities	Frequency[5]
The Asset and Wealth Management Business Control Committee	The Global Private Bank is part of the Firm's AWM LOB. The AWM Business Control Committee ("BCC") defines and monitors the AWM-wide control framework in adherence with firmwide guidelines and assists the AWM CEO in providing relevant control oversight for the global AWM business.	Monthly
International Private Bank Business Control Committee	The IPB BCC provides oversight of the operational risk and control environment for the IPB business, inclusive of Operational Risk, Compliance, and Conduct Risks, for proper identification, management and monitoring of existing and emerging risks, control issues, errors, remediation actions, and trends.	Monthly
Wealth Management (WM) Investments Governance Committees	The WM Investment Governance Committees serve as oversight to the onboarding and ongoing monitoring of WM managed and third-party offerings and their related attributes (such as ESG-related designations). The WM Investment Review Committee ("IRC") is responsible for reviewing and approving non-WM managed offerings, such as third-party managed funds. The WM Investment Performance Governance Committee ("IPGC") is responsible for the ongoing review of the investment performance of these third-party managed offerings. The WM Internal Product Oversight Committee ("IPOC") is responsible for reviewing and approving internal products managed by WM. The WM Portfolio Governance Committee ("PGC") is responsible for the ongoing oversight of these WM-internally managed products. These committees (collectively, "WM Investment Governance Committees") are business-owned with representatives across Business (First Line of Defense) and Second Line (e.g. Risk and Compliance).	IRC: Weekly IPGC: Quarterly IPOC: Ad-hoc PGC: Quarterly
Wealth Management Sustainability Committee	The Wealth Management Sustainability Committee is responsible for reviewing, assessing, and providing ongoing oversight of key sustainability activities and provides strategic direction regarding the Sustainable Investing platform for Wealth Management globally. The committee focuses on five pillars of information: Regulations, Data and Insights, Marketing, Strategic Solutions, and News/Updates.	Monthly

[5] Each of the governance bodies/committees meets with such frequency and at such times as it is determined in their respective charters (which may allow for additional ad hoc meetings).

Management oversight

Senior management, including certain members of the Firm's Operating Committee ("OC") and relevant leaders within each of our LOBs are responsible for strategy and execution on ESG matters (including climate risks and opportunities) across the Firm.

The OC is the senior management body for the Firm and includes the Chief Executive Officer of Asset & Wealth Management. Subsidiary level executive management bodies tasked with overseeing progress towards strategic AWM business objectives include the J.P. Morgan Asset & Wealth Management Operating Committee and the J.P. Morgan Global Private Bank Operating Committee.

Our IPB ESG team also conducted mandatory training for our senior managers across the IPB, covering topics such as understanding climate risk, scenario analysis and the various approaches used across the Investment Bank and the IPB to understand and manage climate risk. In addition, we continue to train our advisors on ESG including greenwashing related risks, with recent mandatory training taking place in our Asia and Swiss offices.

EXHIBIT III – MANAGEMENT COMMITTEES

Management committees	Responsibilities
JPMorgan Chase & Co. Operating Committee	The most senior firmwide management body, responsible for developing and implementing corporate strategy and managing operations. • The OC is comprised of the Firm's Chief Executive Officer (CEO), Chief Risk Officer (CRO), Chief Financial Officer (CFO), General Counsel (GC), CEOs of each of the LOBs and other senior executives. • J.P. Morgan Asset Management AWM CEO is a member of the JPMC Operating Committee. • Senior management provide the full Board and/or the Board Risk Committee with more in-depth information on specific climate-related matters.
J.P. Morgan Asset & Wealth Management Operating Committee	• A senior management body overseeing business segment operations and strategy across J.P. Morgan Asset Management and J.P. Morgan Wealth Management businesses. • The committee is led by the CEO of Asset & Wealth Management.
J.P. Morgan Global Private Bank Operating Committee	• Led by the CEO of J.P. Morgan Global Private Bank business segment, the Global Private Bank Operating Committee sets the Private Bank's priorities and business vision. • This body of senior leaders receives periodic updates on sustainability and climate-related initiatives.

Strategy

Strategy[6]

Our climate strategy is structured around the following core components:

- **Understanding our business environment**
  Assessing the impact of climate risks and opportunities on our business and the business environment in which we operate, and training senior management around these risks.
- **Educating and advising clients**
  Educating clients about climate risks and opportunities in their portfolios and offering strategies to meet their climate-related investment needs.
- **Offering investment strategies**
  Offering over 200 ESG, sustainable and climate-related third-party investment strategies and WM-managed portfolios (i.e. portfolio of funds managed on a discretionary basis).
- **Developing portfolio climate analytics and reporting capabilities**
  Improving our understanding of climate risks in our investment portfolios.

Understanding our business environment

We recognize that climate-related risks and opportunities can manifest over different time horizons and we therefore consider climate-related risks and opportunities over the short-term (1-3 years), medium-term (3-5 years) and long-term (5+ years).

Climate risk includes both transition risk and physical risk as outlined below.

Transition risk refers to the financial and economic implications associated with a societal adjustment to a low-carbon economy. Transition risk drivers include possible changes in public policy; adoption of new technologies; and shifts in consumer preferences. Transition risks may also be influenced by changes in the physical climate.	**Physical risk** refers to economic costs and financial loss associated with a changing climate. Acute physical risk drivers include increased frequency or severity of climate and weather events (e.g. floods, wildfires, tropical storms, etc.). Chronic physical risk drivers include more gradual shifts in the climate such as sea level rise, persistent changes in precipitation levels and average ambient temperature increases. Indirect physical risk drivers include the second order effects of these acute and chronic risks, such as supply chain disruptions or changes to property valuations.

Source: JPMorgan Chase & Co Climate Report 2023

In the short and medium-term, transition risks may impact our business and clients, varying by sector and geography. Investments in relatively high-emitting sectors[7] may be at a greater risk from the transition to a low-carbon economy model, and experience knock-on effects on individual assets, particularly in jurisdictions with stronger carbon pricing policies or clean technology incentives.

Acute risks from extreme weather events (e.g. floods and wildfires) may increase in frequency and severity over the medium-term, potentially leading to business disruptions for some of our clients, with second order[8] impacts on their assets with us.

At the same time, physical risks, particularly those that are chronic in nature (e.g. sea level rise or average temperature increases), would be expected to increase in prominence over a longer time horizon, playing an important role in the regions in which the IPB businesses operate. These could negatively impact GDP growth, lower consumption levels and therefore have an impact on the overall economy and our business.

Revenues in our investments business are driven by the quantum of assets on our platform, which in turn are affected by inflows of new assets and the financial performance of all assets. In addition, our assessment of the impact of climate change on our business environment includes our ability to manage our margins effectively. Exhibits IV-V provide a non-exhaustive list of examples for these dimensions.

[6] The focus of this section is primarily assessing climate risk. For more information on the wider IPB ESG strategy please see our IPB ESG Report – May 2024.
[7] Such as the sectors involved in a fossil fuel value chain; for example, companies within the oil and gas sector.
[8] The term "first order impacts" refers to impacts that directly affect an individual company, property, or consumer. The term "second order impacts" refers to secondary impacts to financial markets, local economies, or other businesses.

EXHIBIT IV – EXAMPLES OF POTENTIAL RISKS AND OPPORTUNITIES DIRECTLY IMPACTING OUR MARGINS AND ABILITY TO CAPTURE NEW FLOWS

Climate risk drivers	Potential risk example
Type – Transition	
Policy and Legal	Risk associated with increased regulatory requirements for private banks globally or increased litigation risk through additional legal requirements
Reputation risks	Risk associated with the perception of how the IPB is responding to climate-related risks
Markets and customer preferences	Risk that changing client preferences result in clients choosing to move to a private bank which is more aligned to their climate objectives
Type – Physical	
Acute risks	Risk that extreme weather events could affect IPB business operations
Chronic risks	Risk that chronic effects of climate change could have a negative impact on IPB business operations

Climate-related opportunities	
Product and services	There is an opportunity to develop products which align to existing and potential clients' climate objectives

EXHIBIT V: EXAMPLES OF POTENTIAL RISKS AFFECTING OUR INVESTMENTS BUSINESS AND CLIENTS

Climate risk drivers	Risk example and potential portfolio impact[9]
Transition risk	
Policy and Legal Tightening climate policies and regulations aimed to aid the transition to the low-carbon economy	**Portfolio company impact:** Increased regulation compliance costs for investee companies affecting P&L **Portfolio impact:** Decreased portfolio valuation and AUM
Reputation Portfolio companies in certain sectors could be affected by negative or positive media coverage and public perception of their climate efforts	**Portfolio company impact:** Business/revenue loss due to negative reputation **Portfolio impact:** Decreased portfolio valuation and AUM
Consumer preferences Changes in consumer behavior and preferences, particularly unexpected, e.g. demand for low-carbon electricity or low-emission manufacturing products	**Portfolio company impact:** Reduced revenues from declining demand for the portfolio company's goods and services, e.g. coal mining companies in the face of peaking demand for coal **Portfolio impact:** Decreased portfolio valuation and AUM
Technology Innovation and improved commercial viability of new technology solutions	**Portfolio company impact:** Increased cost of implementing new low-carbon technology solutions or loss of market share due to new technologies/solutions **Portfolio impact:** Decreased portfolio valuation and AUM
Physical risk	
Physical climate change **Acute:** impacts of extreme weather events on investee companies	**Portfolio company impact:** Disruptions to employee travel and productivity impacting company's P&L, increasing insurance premia **Portfolio impact:** Decreased portfolio valuation and AUM
Chronic: sustained long-term climate impacts on investee companies	**Portfolio company impact:** Increased costs of adapting to climate impacts, reduced employee productivity from sustained higher temperatures, increasing insurance premia for real assets in the areas with rising sea levels **Portfolio impact:** Decreased portfolio valuation and AUM

In light of these risks, we believe the next section of our climate strategy is very important.

[9] The impact on specific portfolios will depend on factors such as the investment strategy, size of exposure to portfolio companies subject to positive/negative impacts (as summarized in the table) and the level of diversification within each portfolio. See the Risk management section ('Managing climate risks in discretionary strategies') for more information.

Educating and advising clients

Our clients encompass Ultra-High Net Worth individuals ("UHNW"), charities, endowments and foundations. For many of them, there is a growing curiosity about the latest developments in climate change and the low carbon transition and the expected impact that this may have on their investment portfolios.

Education and advice on these topics is a key priority for us in order to help our clients navigate the complexity of investing through the transition to a low-carbon world and in light of the potential physical risks from climate change. We regularly publish thought leadership on a variety of topics related to climate change, the energy transition and the impact of rising temperatures on investment portfolios. We have also been publishing an Annual Energy Paper for 14 consecutive years, that discusses the developments and challenges related to the energy transition.

Climate change is also increasingly featured in the annual flagship Long-term Capital Market Assumptions ("LTCMA") report. This report provides a 10 to 15 year outlook across asset classes and serves as a foundation for how we advise our clients on their strategic asset allocation, in order to construct diversified and resilient portfolios for a world in transition. This multi-asset research covers multiple regions and is aligned to long-term investment objectives with a multi-year shelf life.

We also host events, such as the Sustainability Impact Summit ("SIS") which takes place in London annually. In September 2023, we hosted our 5th annual SIS, convened by experts in business, science, and conservation, to share experiences and insights across a wide range of ESG and climate-related topics with our clients. Promoting sustainability in their respective fields, panelists discussed innovations, best practices and cutting-edge methodologies that make them optimistic about the future. The SIS has evolved into a flagship annual gathering attracting over 2,500 guests from around the globe, representing $300 billion in capital. For further information on the 2023 SIS, please visit our J.P. Morgan Private Bank webpage.

Sustainability has also garnered significant attention in Asia, as evidenced by strong attendance at our events in Shenzhen, Hong Kong, and Singapore. Our inaugural Asia Sustainability and Impact Summit in December 2023 delved into topics including decarbonization in real estate, blockchain's role in carbon tracking, ESG integration in funds, and developments in the sustainable food sector.

Offering investment strategies

As a result of the above-mentioned trends, we have seen an increase in interest from our clients in sustainable investing[10] products that we offer on our IPB platform, across both public and private markets.

Our Sustainable Investing product offering in the IPB includes over 200 third-party investment strategies and WM-managed portfolios (i.e. portfolio of funds managed on a discretionary basis), and includes equity, fixed income, alternative, and multi-asset class products. These strategies are subject to our proprietary due diligence process outlined in the Risk management section of this report. Our investment strategies (i.e. third-party investment strategies and WM-managed portfolios) are considered to incorporate ESG characteristics in their investment process if they satisfy our internal IPB internal criteria[11].

Since 2015, we have been evolving our sustainable investing product offering to reflect the opportunity set and the evolving climate product offering in the market. The IPB fund platform includes a range of climate-related strategies, focused on companies contributing to the low-carbon transition by decarbonizing their businesses, and/or providing solutions for climate change mitigation or adaptation. These strategies are considered based on their intentionality, with support from third-party data sources.

We aim to continue building out the selection of offerings available on our platform for clients interested in gaining exposure to both climate solutions (mitigation, adaptation) as well as decarbonization strategies, whether on a standalone basis or as part of our discretionary offerings.

Developing portfolio climate analytics and reporting capabilities

The IPB continues to make progress to better understand climate risk in our investment portfolios. Over the past year, we have evaluated multiple third-party ESG data providers to assess their climate-related data offerings and incorporate it into our client and corporate reporting. We continue to work with these third-party data providers to enhance data coverage, and metrics to help drive strategic decision-making.

In doing so the IPB also considers applicable regulatory and legislative requirements as part of its decision-making process by which it delegates various functions or services.

[10] Sustainable Investing is an umbrella term we use to describe investment approaches that incorporate financial as well as social and environmental objectives.
[11] IPB internal ESG criteria for individual funds and investment solutions is grounded on the regulatory disclosures (EU SFDR Article 8 and 9 for the underlying funds) with an additional assessment by the due diligence team, and for the purposes of managed investment solutions (our portfolio of funds discretionary offering), there is a requirement for 80% of the portfolio to be invested in Article 8 or 9 products.

Our research and data strategy is key to improving our understanding of climate risks in our investment portfolios. This will include enabling our portfolio managers to monitor climate risk in their investments, allow our Manager Selection teams to monitor the investment and research practices of the third-party managers that we offer on our platform, and to identify relevant climate-metrics to share with our clients to enable them to better understand the impact of their portfolios on climate change and vice-versa.

Our centralized team of research experts collaborates with our investment, regulation, due diligence, legal and risk professionals to develop an ESG research agenda, with a focus on:

- better understanding climate and sustainability risks[12] and opportunities in our investment portfolios,
- keeping up to date with the evolving ESG data landscape; and
- responding to regulatory and client reporting requirements

This team is supported by our dedicated ESG data clearing house, which is a cross-functional collaboration between sustainability specialists, portfolio managers, manager selection team and data experts. The team is tasked with assessing, onboarding and integrating relevant data solutions (from third-party data vendors).

We also have two new efforts underway to improve our clients' and our internal understanding of climate-related topics.

- **Client reporting:** We are developing client reporting to capture the various sustainability attributes of investment portfolios, including metrics related to sustainability risk and carbon emissions. We aim to roll this out to our clients in the IPB in the near future.
- **Climate scenario analysis:** We are exploring the current range of data and climate scenario analysis approaches offered by different external providers. However, we also acknowledge that this is an evolving space with data and methodological limitations so we currently do not use climate scenario analysis to manage clients' portfolios and/or in any of our governance processes for our discretionary offering. We also do not report these metrics at the AUM level. We will continue to monitor this analytics landscape to better inform ourselves and our clients.

Emissions data beyond listed equities, corporate bonds and sovereign debt is limited due to still developing methodologies, the lack of disclosures (e.g. private equity funds, securitized bonds) and challenges associated with data collection (e.g. hedge funds). Our private markets team continue to be in dialogue with fund managers on our platform to improve data capture and disclosures for underlying portfolio assets.

[12] Sustainability Risks (SFDR Article 2(22) definition): A sustainability risk refers to an environmental, social or governance event or condition that, if it occurs, could cause a negative material impact on the value of the investment.

Risk management

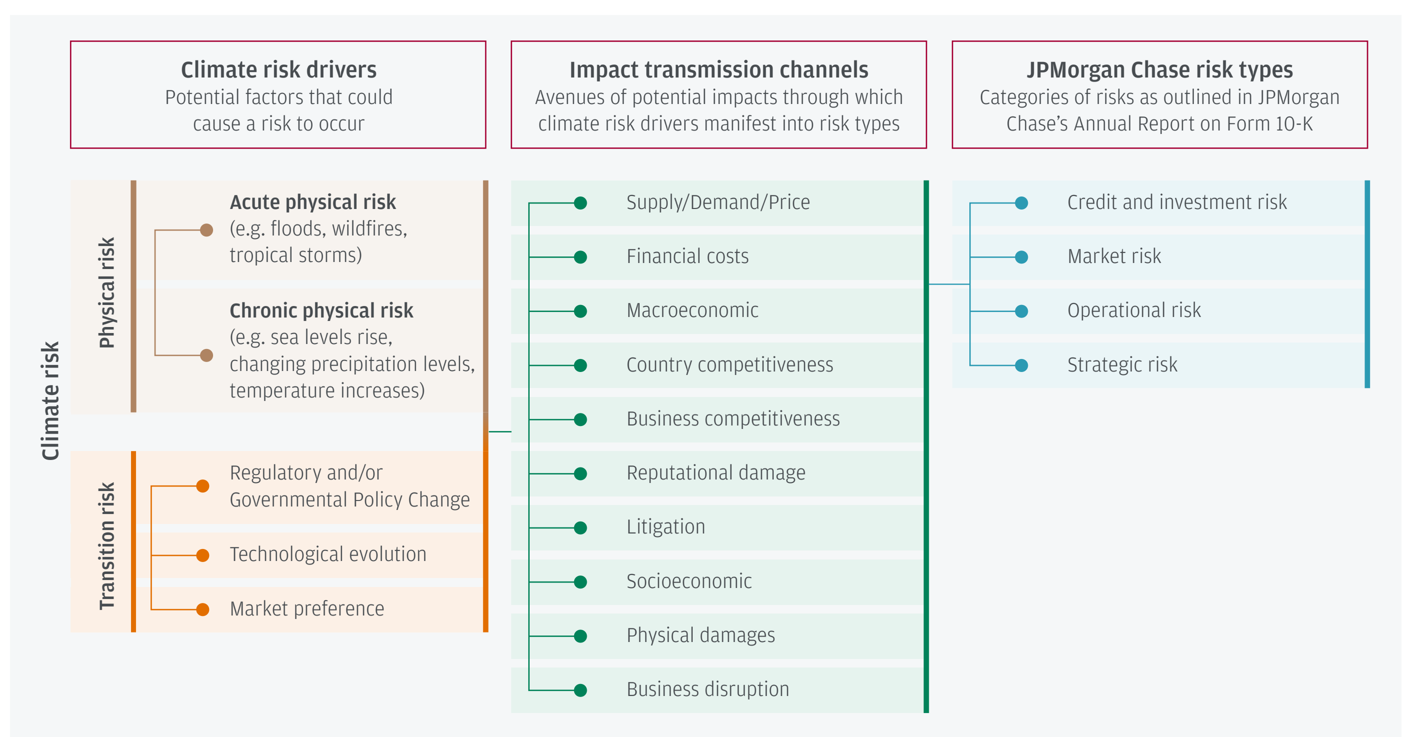
Risk management

How we identify and assess climate-related risks and types of risk we manage

J.P. Morgan Chase has developed a Climate Risk Framework (the "Framework") at the firmwide level, which sets forth the capabilities J.P. Morgan Chase uses to identify, assess and manage the impacts of physical and transition risk drivers. This framework is comprised of core firmwide risk capabilities central to enabling assessment, quantification, and management of the climate risks that may manifest across the Firm's diverse global footprint.

As part of the Framework, the LOB and corporate, are responsible for the identification, assessment, and management of climate risks present in their business activities and for adherence to applicable climate-related laws, rules and regulations.

EXHIBIT VI. TRANSMISSION CHANNELS OF CLIMATE RISKS INTO POTENTIAL RISKS[13]



The IPB continues to enhance the process to integrate climate-related risks and their considerations in the overall risk management. Within the IPB, the Independent Risk Management function is responsible for providing credible challenge across climate risk processes.

Identifying and managing climate-related risks through three lines of defense

The IPB uses a 'Three Lines of Defense' model to manage risks, to create segregation of duties and minimize conflicts of interest. Climate risk is considered among other risks in this approach across relevant areas of the business.

First line of defense

The first line of defense (First Line) is comprised of client advisors, due diligence teams (Manager Solutions, Investment Director Team (IDT)), Investments Governance team, Portfolio Managers and ESG teams. These teams are responsible for identifying, assessing, managing and monitoring risks, including climate-related risks, in line with the Firmwide framework outlined above. On the next page we discuss examples of how different teams manage climate-related risks within the First Line.

[13] List is not exhaustive. We continue to refine our taxonomy based on an evolving understanding of how climate-related risk drivers may manifest as risks to the Firm.

Conducting due diligence of strategies on the platform

The IPB considers sustainability risks as part of qualitative due diligence processes. This is in place for:

- Funds held in its Discretionary Investment Management strategies
- Certain Undertakings for Collective Investment in Transferable Securities funds ("UCITS")
- Certain Alternative Investment funds ("AIFs") over which investment advice is provided

As part of this qualitative due diligence process, third-party managers[14] and WM-managed strategies undergo a "4P" due diligence process. This aims to determine if a strategy has the people, philosophy, process and performance in place to deliver competitive returns in line with its investment objective. It also includes a review and evaluation of the investment managers' processes regarding ESG broadly, as applicable and as cited in their materials and disclosures.

Where information is available, the Due Diligence teams aim to monitor sustainability risks, including climate risks, as part of the qualitative due diligence process, recognizing that these risks can be potentially material to the performance of an investment strategy. The teams use a range of data and tools to conduct this analysis. Central to the assessment of third-party managers is the annual ESG survey, which analyzes fund managers' approach to ESG matters within their strategies, including climate matters. From a climate perspective, third-party managers are asked questions which focus on if and how climate-related risks and opportunities are managed within the portfolio, metrics used to manage these, if scenario analysis is incorporated into their analysis and how active ownership and stewardship play a role in climate risk management.

The teams also gather carbon footprint and other ESG data (where available) to aid in the analysis of potentially material climate risks and to better understand how third-party fund managers with specific climate-related objectives are performing against these objectives. In the discretionary space, insights into the carbon profile of specific holdings within a fund manager's portfolio can inform discussions regarding their engagement and voting objectives and management of climate risks.

Finally, the teams consider regulatory disclosures like those from the Sustainable Finance Disclosure Regulation ("SFDR") (which requires funds and discretionary strategies to integrate sustainability risks (inclusive of climate/environmental risks[15]) into investment decision-making) (where available) and/or third-party data in their assessments. They may then conduct additional due diligence on the degree to which ESG and sustainability considerations including climate risks and opportunities are embedded in the investment process.

Additionally, in private markets, a selection of climate-related strategies are offered as part of our impact investing product offering. The impact designation of a strategy is based on our proprietary Impact Management Framework, which facilitates a consistent evaluation and relative comparison of individual investment opportunities from an impact perspective.

EXHIBIT VII: THE "4P" DUE DILIGENCE PROCESS

As of March 31, 2023.

[14] Third-party managers also include funds which are onboarded to our platform from J.P. Morgan Asset Management.

[15] Environmental risk is the risk of impacts to the environment as a result of action or inaction by the firm's clients. Impacts to the environment can include, but are not limited to, impacts on the physical landscape, climate, biodiversity and ecosystems, air, soil, and water.

Managing climate risks in discretionary strategies

As part of weekly guidelines and threshold monitoring process, we have developed a framework to identify and assess potential climate and environmental risks for our discretionary strategies and third-party funds invested in public markets[16]. This framework consists of a quarterly quantitative assessment of a portfolio's carbon footprint compared to its respective benchmark index, supplemented by further qualitative due diligence assessment for cases flagged for potential environmental risk. Such cases are then presented to the respective WM Investment Governance Committee along with a due diligence recommendation, as it relates to the strategy's status on the platform (to remain open and available for investment, to temporarily close to further investments or to remove it from the platform).

Due Diligence teams may recommend either a change in the strategy's status on the fund platform (as described above), or to keep the strategy's platform status unchanged, whilst continuing to monitor the respective manager's processes for managing the climate risks highlighted.

The respective Committee is the final approver of the status assigned to a strategy. Note that, where a quantitative assessment cannot be completed (e.g. due to insufficient data coverage), only a qualitative assessment is carried out on an annual basis.

Managing regulatory requirements related to climate change

The IPB monitors the development of global and regional requirements related to climate change and sustainability through the GPB Future Regulations Forum. This forum is responsible for identifying new regulations, including ESG regulations and maintaining a horizon scanning tracker.

Any regulations or consultation papers relevant to ESG or climate require a review which entails mapping our current operating model to identify any necessary enhancements for compliance. External consultancies or industry groups may be engaged to gain further insight and provide independent validation of our interpretation of relevant requirements.

Stakeholders and functional groups across the business assess and manage any changes required to their business activities in order to meet these regulations. As a global company, we are subject to a range of regulatory requirements which we consider collectively in the context of our wider global ambitions. We focus on implementing these regulations in a manner consistent with our business strategy and climate risk management process.

Second line of defense

The Independent Risk Management ("IRM") function is part of the second line of defense, which is separate from, and independently assesses and challenges, the first line of defense risk management practices. IRM is also responsible for the identification of risks within its respective organization, adherence to applicable laws, rules and regulations and for the development and implementation of policies and standards with respect to its own processes.

Third line of defense

Internal audit is the third line of defense, providing independent oversight on risk management across the IPB, including climate risks where relevant. Internal audit conducts testing and evaluation of processes and controls across the Firm, assessing their effectiveness. This scrutiny and testing is intended to verify that procedures are robust and aligned with business principles set by senior leadership.

Engagement activities with investee companies

The GPB does not directly undertake shareholder engagement activities with investee companies (because of the nature of its private wealth business and client base). However, GPB engages with third-party portfolio managers[17] both before and during the period of investment as part of the selection and ongoing monitoring processes, including requesting information about third-party portfolio managers' approaches to engagement with investee companies.

Due diligence teams collect information on third-party portfolios via requests for information and questionnaires. These questionnaires may include requests for information on ESG integration and on engagement/stewardship, as well as other ad hoc or thematic questionnaires.

The GPB does not have asset class or sector-specific guidelines or exclusions based on ESG for investments because of the nature of its business.

[16] Our publicly listed discretionary strategies are inclusive of third-party advised SMAs investing in single line equity and fixed income securities, as well as our PB WM internally managed fund-of-fund strategies.

[17] Third-party fund managers are inclusive of funds which are onboarded to our platform from J.P. Morgan Asset Management.

Metrics and targets

Metrics and targets

We are developing our climate analytics capabilities including assessing datasets and tools to allow us to manage climate-related risks associated with our clients' investment portfolios, as well as to identify investment opportunities related to the transition to a low-carbon economy.

Climate metrics broadly fall into two categories:

- Historical metrics
  - Absolute GHG emissions
  - Absolute GHG emissions normalized by portfolio's market value
  - Portfolio's exposure to carbon intensive companies or economies
- Forward looking metrics
  - Stress tests that measure the impact of a transition to a low-carbon economy or physical impacts of climate change on a portfolio's holdings based on specific scenarios
  - An estimate of future emissions trajectory of portfolio companies and the associated modeled impact on temperature increase in the future

Despite improvements in companies' climate-related disclosures and the data available to financial institutions, several data quality and coverage issues remain. In this inaugural IPB Climate Report, we disclose carbon exposure metrics associated with our discretionary AUM. We also discuss the use cases for other forward-looking climate metrics.

Historical metrics

A number of metrics are needed to provide comprehensive insights into a portfolio's carbon exposure, as each metric can offer a unique perspective and address a distinct use case. Equally, each metric also has its own limitations.

Exhibit VIII on the next page provides a summary of the key carbon exposure metrics based on the current recommendations from the Partnership for Carbon Accounting Financials ("PCAF") and the TCFD.

EXHIBIT VIII: USE CASES AND SHORTCOMINGS OF DIFFERENT CARBON EXPOSURE METRICS

Metric	Description	Use case	Shortcomings
Total financed emissions (tonnes CO_2e)	Absolute GHG emissions associated with a portfolio	• Set baselines, assess, and track changes in portfolio emissions • Conduct portfolio decomposition and company attribution analysis based on ownership	• Less useful to compare portfolios as emissions data not normalized in this metric • Subject to changes in the underlying companies' market capitalization
Carbon footprint (tonnes CO_2e/USD million invested)	Total carbon emissions for a portfolio normalized by the market value of the portfolio	• Compare portfolios to one another and/or to a benchmark • Conduct portfolio decomposition and attribution analysis	• Does not consider differences in the size of companies (i.e. does not reflect companies' carbon efficiency) • Subject to changes in the underlying companies' market capitalization
Weighted average carbon intensity (WACI) (tonnes CO_2e/USD million revenue)	Portfolio's exposure to carbon-intensive companies	• Assess portfolio's exposure to carbon-intensive companies • Consider carbon efficiency of companies, reflecting differences in their size • Conduct portfolio decomposition and attribution analysis • Apply across asset classes, e.g. public listed and private equity, corporate bonds, since does not rely on equity ownership approach	• Sensitive to short-term fluctuations in product pricing driving changes in revenues • May favor companies with higher pricing levels relative to peers
Weighted average carbon intensity of sovereign debt issuers (tonnes CO_2e/USD million nominal GDP)	Portfolio's exposure to carbon-intensive economies	• Assess portfolio's exposure to carbon-intensive economies	• Nominal GDP in the denominator is less useful to compare the real sizes of economies being sensitive to exchange rates[18]

As a start, we have developed a framework to identify and assess potential climate and environmental risks using Total Carbon footprint at a portfolio level. (See the Risk Management – Managing climate risks in discretionary strategies section of this report for more information). This metric allows us to compare portfolios to each other and their benchmarks and is a useful tool to identify outliers and implement a broader climate product strategy.

Forward-looking metrics

In addition to carbon exposure metrics, we have started exploring use cases for forward-looking climate metrics based on scenario analysis, to develop an understanding of the potential impact of climate change on investment portfolios. We use scenarios developed by the Network for Greening the Financial System (NGFS), a coalition of central banks and financial supervisors. These scenarios are designed to help investors understand the potential impact of different climate futures on their investment portfolios through metrics such as Climate Value-at-Risk (Climate VaR). They can also help to benchmark a portfolio to a specific temperature outcome to understand its alignment for example, to the business-as-usual or a net-zero scenario, and the impact on climate change for example, through the Implied Temperature Rise (ITR) analysis.

However, we note that the application of these metrics to portfolio construction or risk management in an investment context is still an evolving space. These metrics are complex and the underlying data as well as the methodologies are continuing to evolve. As a result, there tends to be a considerable variation in values across different data providers, and consequently differences in their appropriate interpretation and use case.

In view of this, we do not disclose Climate VaR and ITR metrics in this inaugural IPB Climate Report. Currently, we only use these metrics for regulatory reporting requirements, such as those required by the U.K.'s Financial Conduct Authority's Environmental, Social and Governance Sourcebook regarding

[18] PPP-adjusted GDP would be a better measure for the denominator, based on the most recent recommendations by PCAF (PCAF, The Global GHG Accounting and Reporting Standard Part A: Financed Emissions, 2022).

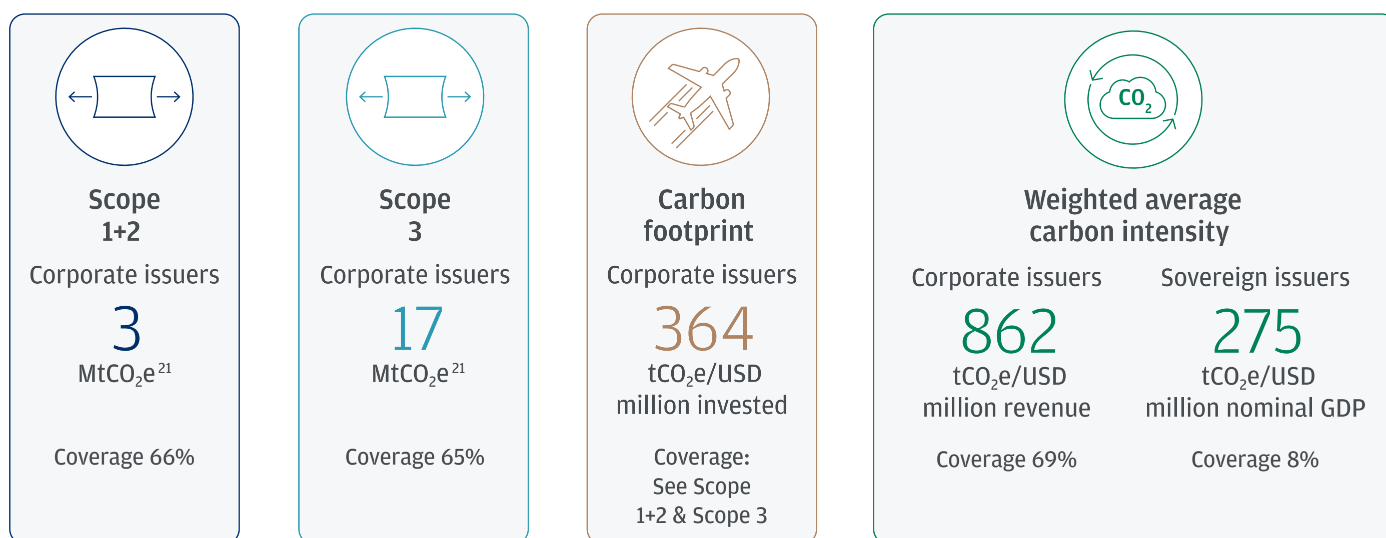
disclosures of climate-related financial information consistent with TCFD Recommendations and Recommended Disclosures. To this end, we have gone through the process of onboarding Climate VaR and ITR data provided by MSCI at the fund and individual issuer and/or security level. We will continue monitoring the evolving landscape of climate scenario analysis methodologies, and evaluating which approaches may be most appropriate to inform our clients, meet regulatory reporting requirements and possibly over time, also our investment decisions.

As we continue to develop our climate analytics capabilities and the industry standards and data quality evolve, we expect to continue to explore potential use cases for various climate metrics.

GHG emissions of our assets under management

Below, we report the metrics described in the table in Exhibit VIII. The data is based on our discretionary AUM holdings as of 31st December 2023. MSCI data coverage is typically across listed equities, corporate bonds, and sovereign debt, other asset classes are currently not covered due to data limitations and methodology challenges. AUM include clients' Investment Management accounts across the IPB. Emissions data comes from the MSCI dataset as of 31st December 2023. This includes absolute Scope 1, 2 and 3 emissions and revenue-based emission intensities for individual companies, and GDP-based emission intensities for individual sovereign debt issuers.

EXHIBIT IX. THE CARBON EXPOSURE METRICS FOR OUR IPB ASSETS UNDER MANAGEMENT[19] IN 2023[20]



A CO_2 equivalent (CO_2e) is a unit of measurement that is used to standardize the warming effect of different green house gases (over 100 years) in comparison to CO_2.
Coverage above indicates percentage of AUM for which MSCI has emissions data (reported and/or estimated) available across each reported metric.
Please see Appendix for more information on how these carbon exposure metrics have been calculated.

[19] Assets under management constitute our Investments services across Discretionary/Investment Management business where we conduct Portfolio Management activity, also known as our Entrust business.

[20] Rebasing: note that the calculations consider data coverage (reported and estimated) and are rebased to 100%, where coverage is less than 100%, to reflect a full portfolio view. This in effect assumes that the value for the metrics for securities or assets for which no data is available, is on average the same as that for which data is available, thus the numbers disclosed in this report are representative of the entire IPB portfolio.

[21] Mt is reflective of megatonne (mass, one million metric tonnes).

Emissions data coverage and limitations

Our current focus is on disclosing carbon metrics across listed equity, corporate bonds and sovereign debt. These are either held directly as single line stocks or bonds in client accounts as part of Separately Managed Accounts ("SMAs"), or exposure is gained indirectly in client accounts through investments in third-party managed funds. We use MSCI as the main data provider for this purpose.

MSCI provides emissions data for over 10,000[22] companies. MSCI collects emissions data as reported by companies from a variety of sources, such as Annual Reports, Corporate Social Responsibility Reports, company websites, CDP (formerly Carbon Disclosure Project) and Government databases[23]. However, the majority of companies do not currently report their emissions data[24]. For such cases, or where emissions reported do not align with the GHG Protocol or do not cover all geographies and operations, MSCI uses proprietary methodologies to estimate Scope 1, Scope 2, upstream Scope 3, and downstream Scope 3 carbon emissions.[25]

MSCI also provides emissions data for sovereign bond issuers. The data is collected from sources such as the United Nations, World Bank, and Central Intelligence Agency, and is updated annually.

Emissions data beyond listed equities, corporate bonds and sovereign debt is limited, due to still developing methodologies, the lack of disclosures (e.g. private equity funds, securitized bonds) and challenges associated with data collection (e.g. hedge funds). We expect to continue tracking the developments in methodologies, and data coverage and quality and, as this becomes more feasible, may consider extending our reporting to additional asset classes in the future.

Our Sustainability commitments

At the IPB, we believe that we have an important role to play in helping to address some of the most pressing environmental and social challenges of our time. We also acknowledge that climate risk is one of the defining challenges of our generation.

Our operational sustainability, including Scope 1 and 2 emissions, is managed at the J.P. Morgan Chase level. The Firm's strategy for energy and carbon footprint management is guided by its carbon-related operational targets, including reducing Scope 1 and Scope 2 greenhouse gas emissions by 40% by 2030, versus a 2017 baseline and sourcing renewable for 100% of its global power needs. For more details on JPMorgan Chase's firmwide operational sustainability targets, please refer to annual ESG reports on our website.

Targets

As of 2023, we have not set emissions targets for our overall assets under management. We continue to evaluate appropriate metrics that reflect our efforts across the entirety of our business.

[22] As reported in MSCI, MSCI ESG Climate Change Metrics: Methodology and definitions, MSCI ESG Research LLC, October 2023.
[23] MSCI, Carbon Emissions Estimation: Methodology and definitions, MSCI ESG Research LLC, February 2024.
[24] While the IPB looks to data inputs that it believes to be reliable, the IPB cannot guarantee the accuracy, availability or completeness of its proprietary system or third-party data. Under certain of IPB's investment processes, data inputs may include information self-reported by companies and third-party providers that may be based on criteria that differ significantly from the criteria used by the IPB, which often include forward-looking statements of intent and are not necessarily fact-based or objectively measurable. In addition, the criteria used by third-party providers can differ significantly, and data can vary across providers and within the same industry for the same provider. Such data gaps could result in the incorrect, incomplete or inconsistent assessment of an ESG practice and/or related risks and opportunities.
[25] As defined by the Greenhouse Gas Protocol, Scope 1 emissions are direct emissions which occur from sources that are owned or controlled by companies, such as emissions from company-owned facilities. Scope 2 emissions are a company's indirect emissions, e.g. from purchased or acquired electricity, steam, heat and cooling. Scope 3 emissions refer to indirect emissions from the rest of a company's value chain, from either upstream or downstream activities. The Protocol distinguishes between 15 Scope 3 categories. Upstream Scope 3 emissions refer to indirect emissions related to purchased or acquired goods and services, downstream Scope 3 emissions refer to indirect carbon emissions related to sold goods and services.

APPENDIX: EQUATIONS FOR CARBON EXPOSURE METRICS

Metric	Description and equation
Total financed emissions (tonnes CO_2e)	Absolute GHG emissions associated with a portfolio $\sum_i \left(I_i \times Emissions_i \times \frac{Investment_i}{EVIC_i} \right)$
Carbon footprint (tonnes CO_2e/USD million invested)	Total carbon emissions for a portfolio normalized by the market value of the portfolio $\frac{\sum_i \left(I_i \times Emissions_i \times \frac{Investment_i}{EVIC_i} \right)}{\sum_i \left(I_i \times Investment_i \right)}$
Weighted average carbon intensity (WACI) (tonnes CO_2e/USD million revenue)	Portfolio's exposure to carbon-intensive companies $\sum_i \left(I_i \times \frac{Investment_i}{AUM} \times \frac{Emissions_i}{Revenues_i} \right)$
Weighted average carbon intensity of sovereign debt issuers (tonnes CO_2e/USD million nominal GDP)	Portfolio's exposure to carbon-intensive economies $= \sum_i \left(I_i \times \frac{Investment_i}{AUM} \times Fossil\ fuel\ sector\ factor_i \right)$

Where:

- *i* denotes a corporate issuer.
- *g* denotes a sovereign issuer.
- *I* is a scope marker for corporate (*i*) or sovereign (*g*) issuer, equal to 1 for assets and with available (reported or estimated) data (0 otherwise).
- *Emissions* are the greenhouse gas emissions of an issuer corporate (*i*) or sovereign (*g*), measured in tonnes of CO_2 equivalent.
- A CO_2 equivalent (CO_2e) is a unit of measure that is used to standardize the warming effect of different greenhouse gases (over 100 years) in comparison to CO_2.
- *Investment* is the total value invested in an issuer either corporate (*i*) or sovereign (*g*).
- *AUM* is the total size of the portfolio.
- *EVIC* refers to Enterprise Value including Cash which is the sum of the market capitalization of ordinary shares at fiscal year-end, the market capitalization of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests. No deductions of cash or cash equivalents are made to avoid the possibility of negative enterprise values.
- *Revenues* are the total revenues of a corporate issuer *i*, in million USD.
- *Fossil fuel sector factor* denotes whether a corporate issuer is active in fossil fuel sectors, taking the value of 1 if it is, and 0 otherwise.
- GDP_g is the nominal GDP of a sovereign issuer *g* in million USD.

DISCLAIMERS

ESG/Sustainable Investing Risk
Sustainable investing ("SI") and investment approaches that incorporate environmental, social and governance ("ESG") considerations or sustainable investing may include additional risks. ESG or sustainable investing strategies (together, "ESG Strategies"), including separately managed accounts("SMAs"), mutual funds and exchange traded funds("ETFs"), can limit the types and number of investment opportunities and, as a result, could underperform other strategies that do not have an ESG or sustainable focus. Certain strategies focusing on a particular theme or sector can be more concentrated in particular industries or sectors that share common characteristics and are often subject to similar business risks and regulatory burdens. Because investing on the basis of ESG / sustainability criteria can involve qualitative and subjective analysis, there can be no assurance that the methodology utilized by, or determinations made by, J.P. Morgan, or an investment manager or investment adviser selected by J.P. Morgan, will align with the beliefs or values of our client. Additionally, other investment managers and investment advisers, including our affiliates, can have a different approach to ESG or sustainable investing and can offer ESG Strategies that differ from the ESG Strategies offered at J.P. Morgan with respect to the same theme or topic. When evaluating investments, an investment manager or investment adviser is dependent upon information and data that might be incomplete, inaccurate, or unavailable, which could cause the manager/adviser to incorrectly assess an investment's ESG or sustainable attributes. In making investment decisions, J.P. Morgan uses data and information, including but not limited to, industry classifications, industry grouping, ratings, scores, and issuer screening provided by third-party data providers or by a J.P. Morgan affiliated service provider. J.P. Morgan does not review, guarantee, or validate any third-party data, ratings, screenings, or processes. Such data and information will not have been validated by J.P. Morgan and can therefore be incomplete or erroneous. ESG and sustainable investing are not uniformly defined concepts and scores or ratings may vary across data providers that use similar or different screens based on their process for evaluating ESG characteristics. Investments identified by J.P. Morgan as demonstrating positive ESG characteristics might not be the same investments identified by other investment managers in the market that use similar ESG screens or methodologies. In addition, investments identified as demonstrating positive ESG characteristics at a particular point in time might not exhibit positive or favorable ESG characteristics across all relevant metrics or methodologies or on an ongoing basis. ESG or sustainable investing practices differ by asset class, country, region, and industry and are constantly evolving. As a result, a company's ESG or sustainability-related practices and J.P. Morgan's assessment of such practices could change over time.

The ESG or sustainable solutions offered by J.P. Morgan meet our internally developed criteria for inclusion in the ESG Strategies available to our clients which, where applicable, take into account ESG or sustainable investing regulations. As part of the due diligence process, J.P. Morgan's Manager Solutions team applies an ESG eligibility framework that establishes minimum criteria for determining the universe of ESG Strategies offered to our clients. The evolving nature of sustainable finance regulations and the development of jurisdiction-specific legislation setting out the regulatory criteria for a "sustainable" investment or "ESG" investment mean that there is likely to be a difference in the regulatory meaning of such terms. This is already the case in the European Union where, for example, under the Sustainable Finance Disclosure Regulation (EU) (2019/2088) ("SFDR") certain criteria must be satisfied in order for an investment to be classified as a "sustainable investment". Unless otherwise specified and where permitted by applicable law, any references to "sustainable investing" or "ESG" in this material are intended as references to our internally developed criteria only and not to any jurisdiction-specific regulatory definition.

MSCI
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Estimates, forecasts, comparisons
For illustrative purposes only. Estimates, forecasts and comparisons are as of the dates stated in the material.

Alternative assets
Investing in alternative assets involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are generally not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which can magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.

Real Estate/Hedge Funds/Other Private Investments
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