2023

Climate Report

JPMorgan Chase & Co.

Notes

A NOTE ON OUR BUSINESS

JPMorgan Chase & Co. provides financial services for individuals, industries and geographies – regardless of political, social or religious viewpoints. We deal in facts and don't change our policies, procedures or progress based on who's asking. Our ambition is to work with shareholders, clients, customers and communities around the world to fulfill banking's essential purpose of helping people, businesses of all sizes and vital institutions – like schools, hospitals and governments – achieve their goals.

We make independent business decisions for the Firm.

We make business decisions to advance the long-term interests of our Firm and its shareholders, including serving our clients, supporting our employees and helping our communities. We work with a broad array of organizations that advance those interests, even if we don't support every position taken. Firm decisions are always made independently and based on business principles.

We don't "boycott."

We support clients around the globe and in every state in the U.S., across industries, religions and political affiliation. We proudly serve more than 80 million households in the U.S, more than 5.7 million small businesses and hundreds of thousands of companies in critical economic sectors. We do not make decisions based on viewpoints or political or social agendas.

We manage risk.

Managing risk is critical to the long-term success of our business and required by our regulators. We make risk-based assessments, including legal, credit, market, reputational and regulatory, to drive decisions and advance the interests of our constituencies.

We want to compete.

Our ability to compete, in both established and new markets, is critical to the long-term success of our business. We decide where and how we choose to compete by assessing risk and opportunity, not to further political or social agendas.

We believe in free enterprise.

Markets and economies of all sizes benefit when free and fair enterprise thrives – creating innovation, competition and maximizing value for shareholders, clients, customers and communities. Government intervention of free market principles, for political reasons in the short-term, sets a dangerous precedent that's hard to reverse.

We value engagement.

We believe the best answers reside in engagement and discourse. When policymakers seek input to tackle challenges, we want to help. We know that our success requires working closely with government on sound public policy that grows the economy and lifts up communities. Throughout our history, we have engaged with officials from all parties to address the world's most pressing needs, and we look forward to continuing to do so.

A NOTE ON OUR TARGETS

We consistently set targets to play our part in creating a sustainable future using our own independent assessment of what we determine is reasonable and achievable, and will serve the best interest of our business and serving our clients. While we pursue these targets, we note that they are subject to other prerequisites and critical considerations, both within and outside our control. These include the necessity of technological advancements, the evolution of consumer behavior and demand, the need for thoughtful climate polices, the potential impact of legal and regulatory obligations and the challenge of balancing short-term targets with the need to facilitate an orderly transition and energy security.

DISCLAIMERS

The information provided in this report reflects JPMorgan Chase's approach to ESG as at the date of this report and is subject to change without notice. We do not undertake to update any of such information in this report. Any references to "sustainable investing", "sustainable investments", "ESG" or similar terms in this report are intended as references to the internally defined criteria of the Firm or our businesses only, as applicable, and not to any jurisdiction-specific regulatory definition.

Our approach to inclusion of disclosures in this report is informed by the TCFD recommendations and is different from disclosures included in mandatory regulatory reporting, including under Securities and Exchange Commission ("SEC") regulations. While this report describes events, including potential future events, that may be significant, any significance does not necessarily equate to the level of materiality of disclosures required under U.S. federal securities laws. This report is not intended to, nor can it be relied on, to create legal relations, rights or obligations.

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements relate to, among other things, our goals, targets, aspirations and objectives, and are based on the current beliefs and expectations of JPMorgan Chase's management and are subject to significant risks and uncertainties, many of which are beyond JPMorgan Chase's control. Expected results or actions may differ from the anticipated goals, approaches and targets set forth in the forward-looking statements. In addition, our ability to measure many of our goals and targets is dependent on data that, in some instances, is measured, tracked and provided by our clients, other stakeholders, and third-party data providers; our ability to measure progress toward our goals and targets is subject to the quality and availability of such data, as discussed in this report. Factors that could cause JPMorgan Chase's actual results to differ materially from those described in the forward-looking statements include the necessity of technological advancements, the evolution of consumer behavior, the need for thoughtful climate polices, the potential impact of legal and regulatory obligations, and the challenge of balancing our short-term targets with the need to facilitate an orderly transition and energy security. Additional factors can be found in JPMorgan Chase's Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K filed with the SEC. Those reports are available on JPMorgan Chase's website (https://jpmorganchaseco.gcs-web.com/ir/sec-other-filings/overview) and on the Securities and Exchange Commission's website (https://www.sec.gov/). JPMorgan Chase does not undertake to update any forward-looking statements.

This report does not include all applicable terms or issues and is not intended as an offer or solicitation for the purchase or sale of any financial instrument or as an official confirmation of any transaction or a recommendation for any investment product or strategy. Any and all transactions (including potential transactions) presented herein are for illustration purposes only. This material does not and should not be deemed to constitute an advertisement or marketing of the Firm's products and/or services or an advertisement to the public.

No reports, documents or websites that are cited or referred to in this document shall be deemed to form part of this report. Information contained in this report has been obtained from sources, including those publicly available, believed to be reliable, but no representation or warranty is made by JPMorgan Chase as to the quality, completeness, accuracy, fitness for a particular purpose or non-infringement of such information. Sources of third-party information referred to herein retain all rights with respect to such data and use of such data by JPMorgan Chase herein shall not be deemed to grant a license to any third party. The use of any third-party trademarks or brand names is for informational purposes only and does not imply an endorsement by JPMorgan Chase or that such trademark owner has authorized JPMorgan Chase to promote its products or services.

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Introduction

Message from Our Chairman & CEO

At JPMorgan Chase, we work to power economies around the world and champion opportunity in good and difficult times. A key challenge is meeting governments and companies' net-zero emissions goals by 2050 while also meeting the global need for secure, reliable and affordable energy. As I have said before, these objectives are not mutually exclusive. We can — and must — do both.

As a global financial institution, we have an important role to play: providing our clients with the advice and capital they need to advance their decarbonization strategies and drawing on our expertise to help address broader challenges in the low-carbon transition. We believe that a successful transition generates economic growth, preserves energy security and affordability, and mitigates the worst impacts of climate change. In order to successfully achieve that transition, a massive ramp up — to the tune of $4 trillion dollars of annual investment — will be needed, bringing with it the potential to generate a wave of growth and opportunity the world hasn't seen since the First Industrial Revolution.

From where we stand today, there are numerous barriers to deeper decarbonization across the global economy. While capital allocation and investments are crucial, these tools alone cannot overcome the challenges. To develop and scale climate solutions, the world needs thoughtful, well-implemented public policy that incentivizes low-carbon investments; research and development to support swift technological advancements; financially viable clean energy investments; resilient supply chains; and a strong, skilled workforce.

We cannot, however, get there without unprecedented action from governments, states, regulators, policymakers, thought leaders and all corners of the private sector.

This Climate Report provides a platform to communicate our progress toward our climate targets. In pursuing the global goal of a transition to a low-carbon economy, we always operate independently and use our own judgment based on the best interest of the Firm and serving our clients and will continue to do so. Since our 2022 report, we have expanded our efforts and focus, including:

- Establishing two new sectoral targets for Shipping and Aluminum;
- Updating and adapting our emissions intensity reduction targets to align with the International Energy Agency (IEA) Net Zero Emissions by 2050 Scenario; and
- Calculating absolute financed emissions for eight sectors of our financing portfolio.

In addition, we have expanded the focus of our "Oil & Gas End Use" target, which is now the "Energy Mix" target. This update shows — among other things — how our financing correlates with the emissions performance of the energy supply sector. We expect this updated target will not only reflect market actions that are needed to support the transition from fossil fuels to low- or zero-carbon alternatives but will also provide a more holistic representation of decarbonization efforts.

As we continue to navigate the complex challenges posed by climate change, the world must work together. We will continue to play our role, supporting today's energy needs and helping our clients through their decarbonization journeys — all while creating long-term shareholder value.

Jamie Dimon
Chairman & CEO, JPMorgan Chase & Co.

TCFD Index

This table identifies where to find information related to each of the recommended disclosures from TCFD, both in this report and in our other publicly available documents.

RECOMMENDED DISCLOSURE	CLIMATE REPORT REFERENCES	OTHER SOURCE REFERENCES
GOVERNANCE		
Board's oversight of climate-related risks and opportunities	**Governance** a. Board Oversight (pages 5)	10K 2022 Form 10-K (pages 81-84) PS 2023 Proxy Statement (pages 10-12; 25; 28-29) www Audit Committee www Corporate Governance & Nominating Committee www Public Responsibility Committee www Risk Committee
Management's role in assessing and managing climate-related risks and opportunities	**Governance** a. Senior Management (pages 5)	10K 2022 Form 10-K (page 141) www Center for Carbon Transition
STRATEGY		
Climate-related risks and opportunities the organization has identified over the short, medium and long term	**Risk Management** a. Identifying and Integrating Climate-Related Risks (pages 17-18; 20-22) b. Scenario Analysis (page 19) c. Time Horizons (page 19)	10K 2022 Form 10-K (pages 28-29; 81-84) www Carbon Compass℠
Impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	**Strategy** a. Scaling Green Solutions (pages 7-9) b. Balancing Environmental, Social and Economic Needs (pages 10-12) c. Minimizing Our Operational Impact (pages 13) **Risk Management** a. Identifying and Integrating Climate-Related Risks (pages 17-18; 20-22) b. Scenario Analysis (page 19) c. Time Horizons (page 19) **Metrics & Targets** (pages 23-32)	PS 2023 Proxy Statement (page 4) www Carbon Compass℠ www Center for Carbon Transition www Sustainability
Resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	**Strategy** a. Balancing Environmental, Social and Economic Needs (pages 10-12) **Risk Management** a. Scenario Analysis (page 19) b. Time Horizons (page 19)	

RECOMMENDED DISCLOSURE	CLIMATE REPORT REFERENCES	OTHER SOURCE REFERENCES
RISK MANAGEMENT		
Organization's processes for identifying and assessing climate-related risks	**Risk Management** (pages 16-22)	10K 2022 Form 10-K (pages 81-84; 141)
Organization's processes for managing climate-related risks	**Risk Management** (pages 16-22)	10K 2022 Form 10-K (pages 81-84; 141) www Carbon Compass℠
How processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	**Risk Management** (pages 16-22)	10K 2022 Form 10-K (pages 81-84; 141)
METRICS AND TARGETS		
Metrics used to assess climate-related risks and opportunities in line with its strategy and risk management process	**Metrics & Targets** (pages 23-32)	PS 2023 Proxy Statement (pages 4; 57) www Carbon Compass℠ www Sustainability
Scope 1, Scope 2, and Scope 3 greenhouse gas ("GHG") emissions	**Metrics & Targets** (pages 24-32)	www Carbon Compass℠ www Sustainability
Targets used by the organization to manage climate-related risks and opportunities and performance against targets	**Strategy** a. Scaling Green Solutions (page 7) b. Balancing Environmental, Social and Economic Needs (pages 10-12) c. Minimizing Our Operational Impact (page 13) **Metrics & Targets** (pages 23-32)	PS 2023 Proxy Statement (pages 4; 57) www Carbon Compass℠ www Sustainability

About This Report

This Climate Report is informed by the recommendations of the Task Force on Climate-related Financial Disclosures ("TCFD"), including the supplemental guidance for the financial sector and the supplemental guidance on Metrics, Targets, and Transition Plans[1].

As informed by TCFD's recommendations, this report provides details on:

- How our corporate governance practices address climate-related risks, opportunities and targets;
- How our business is responding to climate risks and opportunities, including our evolving strategies and programs to support the transition to a low-carbon economy and our plans and actions to meet our strategic business objectives to align our lending and underwriting activities with the goal of net zero emissions by 2050;
- How we identify, assess and manage climate risks within our risk management framework; and
- How we are measuring our performance and making progress toward our climate targets, including for our operational emissions and key sectors of our financing portfolio.

JPMorgan Chase also publishes climate-related information annually through multiple channels, including our Environmental, Social and Governance ("ESG") report, regulatory filings and press releases, and shares climate-related information with stakeholders through direct conversations.

All data in this report is as of December 31, 2022, unless otherwise noted.

[1] Implementing the Recommendations of the Task Force on Climate-Related Financial Disclosures. Task Force on Climate-Related Financial Disclosures. October 2021.

Company at a Glance

JPMorgan Chase & Co. ("JPMorgan Chase", the "Firm" or "we") is a financial services company based in the United States of America ("U.S."), with U.S. branches in 48 states and Washington D.C., 293,723 employees in 63 countries worldwide and $3.7 trillion in assets as of December 31, 2022. The Firm is a leader in investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing and asset management. Under the J.P. Morgan and Chase brands, the Firm serves millions of customers, predominantly in the U.S., and many of the world's most prominent corporate, institutional and government clients globally.

JPMorgan Chase's activities are organized, for management reporting purposes, into four major reportable business segments, as well as a Corporate segment. The Firm's consumer business is the Consumer & Community Banking ("CCB") segment. The Firm's wholesale business segments are the Corporate & Investment Bank ("CIB"), Commercial Banking ("CB"), and Asset & Wealth Management ("AWM"). The business segments are referred to as "lines of business" ("LOBs"). For further information, refer to Business Segment Results on pages 61-80 of our Form 10-K for the year ended December 31, 2022.

Climate Action to Date

2004

- Established **Office of Environmental Affairs**

2005

- Adopted an **Environmental and Social Risk Governance Policy**

2007

- Published first **GHG inventory**
- Set first target to reduce Scope 1 and 2 (market-based) GHG emissions and began offsetting **employee business travel emissions**

2014

- Representatives of the Firm were among the co-authors of the **Green Bond Principles**

2015

- Issued first annual **ESG report**

2016

- Executed first **Virtual Power Purchase Agreement** to source renewable energy for our operations

2017

- Set target to source renewable energy for **100% of global power needs by 2020**
- Announced target to facilitate **$200 billion in clean financing through 2025**
- Representatives of the Firm became members of **TCFD**

2019

- Published first **TCFD-aligned climate disclosure** report

2020

- Set and achieved a target to finance and facilitate $200 billion to support **climate action and sustainable development** in 2020
- Announced our intention to set **emissions intensity reduction targets** for key sectors of our financing portfolio
- Created a dedicated **Climate Risk team**
- Established the **Center for Carbon Transition**
- Launched a **Sustainable Solutions team** of investment bankers to provide sustainability-related corporate finance advice to CIB clients
- Issued inaugural **$1 billion green bond**
- Became a founding member of the **Climate Leadership Council**
- Met goals to source renewable energy to meet **100% of global power needs** annually and achieve operational carbon neutrality[2]

2021

- Announced a 10-year, $2.5 trillion Sustainable Development Target, including **$1 trillion to support climate action and other green initiatives**
- Published **J.P. Morgan's Carbon Compass℠ methodology** and emissions intensity reduction targets for **Oil & Gas**, **Electric Power**, and **Automotive Manufacturing**
- Launched **Carbon Assessment Framework** for balance sheet transactions with clients covered by J.P. Morgan's emissions intensity reduction targets (in-scope clients)
- Set **additional operational sustainability targets**, including to reduce Scope 1 and 2 (location-based) GHG emissions by 40% by 2030, over 2017 baseline
- Established the **CB Green Economy Team**
- Issued **$1.25 billion green bond** and published first **green bond report**
- Joined **Net-Zero Banking Alliance**

2022

- Launched **Carbon Assessment Framework** for capital markets transactions with in-scope clients
- Set net zero aligned targets for three additional sectors: **Iron & Steel**, **Cement** and **Aviation**
- Met our goal to maintain **carbon neutral operations** for the third year in a row[2]
- Began process of implementing an internal price on **carbon** for our own operations
- Became a member of the **TNFD Forum**

2023 TO DATE

- Set net zero aligned targets for two additional sectors – **Shipping** and **Aluminum** (See page 26)
- **Updated our initial sector targets** to align with net zero by 2050: We updated our Oil & Gas Operational (Scope 1), Electric Power, and Auto Manufacturing emissions intensity reduction targets to align with the International Energy Agency Net Zero Emissions by 2050 Scenario ("IEA NZE")
- Modified our **Oil & Gas End Use (Scope 3) emissions intensity reduction target**: Now called **Energy Mix,** the target encompasses a broader view of energy supply that better captures the system-wide substitution from oil and natural gas to low-carbon fuels and zero-carbon electricity generation contemplated under the IEA NZE scenario. As with our other targets, the Energy Mix target aligns to IEA NZE scenario (See page 25)
- Inaugural absolute financed emissions disclosure: Published **absolute financed emissions** for eight sectors of our financing portfolio (See pages 29–30)
- Reported progress toward our **net-zero targets as of December 31, 2022**: We plan to continue to measure and report annually on our progress (See page 27)
- Continued development and expansion of **Carbon Assessment Framework ("CAF")**: We continue to use CAF to assess how each new in-scope transaction may affect progress toward our emissions intensity reduction targets (See pages 11–12)

[2] Operational carbon neutrality achieved, in part, using contractual instruments, including applicable Energy Attribute Certificates and carbon credits.

Governance

Firmwide Climate-Related Governance

Our corporate governance practices help us serve the interests of our stakeholders, including shareholders, customers, clients, employees and communities. The Firm believes that our continued success rests on adherence to our Business Principles, which focus on how we strengthen, safeguard and grow our company over time. These principles apply consistently across LOBs and geographies where we operate. We assess our governance structures, processes and controls, as appropriate, as we continue to advance our understanding of climate-related matters.

The illustration on page 6 outlines how environmental sustainability and climate-related matters are overseen by the Board of Directors ("the Board") and senior management, and are managed within the Firm's LOBs.

Board Oversight

The Board is responsible for oversight of the business and affairs of the Firm on behalf of shareholders. Oversight of ESG matters, including those related to environmental sustainability and climate, is an important part of the Board's work. In 2022, some of the topics discussed during Board and Committee meetings included climate risk, climate and ESG disclosure, and laws and regulations regarding access to financial services.

In addition, the five standing committees: Public Responsibility Committee, Compensation & Management Development Committee, Risk Committee, Audit Committee and Corporate Governance & Nominating Committee, operate pursuant to written charters and oversee ESG-related matters within their scope of responsibility. These charters can be accessed on our website. Our annual Proxy Statement includes additional information about the membership and responsibilities of each committee.

Climate- and ESG-related matters continue to be considered as part of our director education program. In 2022, directors participated in programs on a number of subjects, including sustainability updates, the Firm's climate risk management framework and ESG-related disclosure.

Senior Management

Our management structure is designed to encourage leadership that is consistent with our corporate standards. With respect to climate-related matters, senior management's responsibilities include: consideration of climate-related risks in the Firm's strategy and operations, as well as the implementation of strategic climate-related business initiatives.

Our Firm's most senior management body is the Operating Committee ("OC"), which is composed of our Chief Executive Officer ("CEO"), Chief Risk Officer ("CRO"), Chief Financial Officer ("CFO"), General Counsel, CEOs of each of the LOBs and other senior executives. The OC and Board of Directors receive updates from the CRO, the Global Head of Sustainability, the Global Head of the Corporate Advisory and Sustainable Solutions ("CASS"), LOB CEOs and other senior leaders on climate-related initiatives, as appropriate. For more information on CASS, see page 9 in the Strategy section of the report.

Utilizing the Firm's emerging expertise on environmental topics, various climate related initiatives across LOBs are periodically managed through business reviews to encourage ongoing transition efforts. The Firmwide Environmental Committee ("FEC") – established in 2022 – reviews progress on environmental and climate initiatives and targets. Co-chaired by the CRO and the Global Head of Sustainability, the FEC's membership includes senior leaders from the LOBs, and the firmwide Climate Risk Executive, among others. The Co-chairs of the FEC are responsible for escalating information to the Board of Directors, as appropriate.

Organizational Illustration

BOARD OF DIRECTORS

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

Public Responsibility Committee

Oversees and reviews the Firm's positions and practices on public responsibility matters, including sustainability

Corporate Governance & Nominating Committee

Exercises general oversight with respect to the governance of the Board of Directors. It also reviews shareholder proposals and proposed responses, including those relating to environmental sustainability

Audit Committee

Assists the Board in its oversight of management's responsibility to assure that there is an effective system of controls reasonably designed to maintain compliance with the corporation's ethical standards, policies, plans and procedures, and with laws and regulations. As part of this oversight, the Audit Committee considers ESG-and climate-related matters

RELEVANT OPERATING COMMITTEE MEMBERS

Responsible for developing and implementing corporate strategy and managing operations, including ESG and climate-related matters

FIRMWIDE ENVIRONMENTAL COMMITTEE

Provides oversight and decision-making on the Firm's strategy, standards and practices related to environmental — including climate — initiatives and targets, and escalates information to the Board, as appropriate

FIRMWIDE SENIOR SUSTAINABILITY LEADERS

Responsible for strategy and execution on ESG and climate-related matters

- Climate Risk Executive
- Global Head of Sustainability
- Chief Administrative Officer
- Head of ESG Investor Relations
- Global Head of Corporate Advisory & Sustainable Solutions
- Head of Green Economy Banking
- Head of Global Markets Sustainability Center
- Head of Consumer Banking Practices
- AM Head of Sustainable Investing
- PB Head of Sustainable Investing

BUSINESS AND FUNCTIONAL TEAMS

e.g., Asset Management Sustainable Investing, Center for Carbon Transition, Climate Risk, Green Economy Banking and Operational Sustainability

Strategy

Our Environmental Sustainability Strategy

JPMorgan Chase helps our clients navigate the challenges and realize the economic opportunities of the transition to a low-carbon economy. We believe supporting our clients, through advice and capital, to accelerate their low-carbon transition objectives creates positive environmental benefits and generates long-term financial returns for our shareholders.

These efforts are guided by the three pillars of our environmental sustainability strategy – scaling green solutions; balancing environmental, social and economic needs; and minimizing our operational impact – all of which is underpinned by our ongoing focus on accountability, transparency and engagement, which helps us continue to evolve and remain responsive to stakeholders.

Our Environmental Sustainability Strategy

1

SCALING GREEN SOLUTIONS

Focusing our efforts to meet client needs and on scaling solutions the world will need for long-term environmental sustainability

2

BALANCING ENVIRONMENTAL, SOCIAL AND ECONOMIC NEEDS

Supporting global efforts toward net zero GHG emissions by 2050 while balancing energy access, reliability, security and affordability

3

MINIMIZING OUR OPERATIONAL IMPACT

Minimizing the environmental impact of our own operations, including in our buildings, branches and data centers

ACCOUNTABILITY, TRANSPARENCY AND ENGAGEMENT

Reporting regularly and engaging with a diverse set of stakeholders to identify and advance best practices and new opportunities

1 Scaling Green Solutions

To meet energy demand and global long-term climate and sustainability goals, the world will need to develop and deploy a host of new technologies, business models and other solutions. As a global financial institution, we have an important role to play by providing financing and strategic advice to clients and by helping investors put their capital to work.

Mobilizing Capital for Climate Action

Developing solutions sufficient to meet the climate challenge will require significant capital, including capital to deploy and scale decarbonization and clean energy solutions to meet the world's growing energy needs.

Our $1 trillion toward Green objective, part of our broader ten-year $2.5 trillion Sustainable Development Target, aims to accelerate deployment of solutions for cleaner sources of energy and facilitate the transition to a low-carbon economy. Page 23 in the Metrics & Targets section provides details of our progress toward our $1 trillion Green objective.

To learn more on our $2.5 trillion Sustainable Development Target, including the activities it is designed to support and amplify across our business, see page 6 of our 2022 ESG Report.

Sustainable Aviation Fuels

We are focused on helping our clients overcome challenges they face to decarbonize, including by directing our efforts and capital to help scale solutions that we believe play a significant role in driving decarbonization. An example of this is our work in the Aviation sector, a carbon-intensive sector of our financing portfolio, where we are helping advance the development of Sustainable Aviation Fuel ("SAF"). SAF is an alternative fuel that has the potential to achieve up to 80% life cycle emissions reductions compared to fossil-jet fuel, and represents one of the most important levers for decarbonization of the Aviation sector in the near-to-medium term.

JPMorgan Chase is a founding member of the Sustainable Aviation Buyers Alliance ("SABA"), an initiative spearheaded by Rocky Mountain Institute ("RMI") and Environmental Defense Fund ("EDF"). SABA's mission is to accelerate the path to climate neutral air transport by driving investment in high-quality SAF, catalyzing new SAF production and technological innovation, and supporting member engagement in policymaking. To date, the Firm has also purchased 2,200 SAF certificates in support of these objectives.

The Firm is also an investor in the United Airlines Venture Sustainable Flight Fund, which is a first-of-its-kind investment vehicle designed to support early-stage companies focused on decarbonizing air travel by accelerating the research, production and technologies associated with SAF.

See page 12 for additional levers that we believe help advance decarbonization of key sectors in our financing portfolio.

Supporting Effective Carbon Markets

Carbon markets can play an important role in both reducing and/or neutralizing operational GHG emissions and accelerating the overall transition to a low-carbon economy. At JPMorgan Chase, we believe we can play a part in helping support a more robust and effective voluntary carbon market.

JPMorgan Chase participates in the voluntary carbon market in a variety of ways, including providing strategic advice to support clients' transition efforts, enhancing liquidity through credit trading, connecting buyers and sellers, deploying capital to promote decarbonization solutions, and purchasing credits as part of our efforts to manage our own operational emissions.

To help speed and scale the growth and development of carbon dioxide removal ("CDR") technologies, in 2023, the Firm signed long-term agreements to purchase over $200 million in high-quality[3], durable[4] CDR. The CDR from these agreements are intended to remove and store approximately 800,000 metric tons of carbon dioxide equivalent ("t CO_2e") from the atmosphere and to enable the Firm to match every ton of its unabated direct operational emissions with durable carbon removal by 2030, further accelerating JPMorgan Chase's operational sustainability efforts.

Our Carbon Market Principles outline our perspective on the role that the voluntary carbon market plays, current market challenges, and how JPMorgan Chase is working to support and enhance a more effective voluntary carbon market. It also presents a set of core principles that we reference when evaluating carbon credits to support the Firm's operational sustainability targets and engaging with clients on carbon credit-related transactions.

Providing Climate-Related Solutions to Clients and Investors

Our global and diversified franchise allows us to offer climate-conscious financial options to clients who want them. This includes a growing range of climate- and sustainability-related products and services through our Consumer Banking and Wealth Management businesses, including the J.P. Morgan Global Private Bank. We aim to give individuals and families the tools they need to meet their goals.

ASSET MANAGEMENT SUSTAINABLE INVESTING

The Global Sustainable Investing team at J.P. Morgan Asset Management ("JPMAM") provides cross-asset research and insights on thematic ESG issues, including climate risk; works with clients to build and implement sustainable investing solutions; and helps lead JPMAM investment stewardship activities, including proxy voting and investee company engagement.

At JPMAM, we endeavor to help clients enhance long-term value to their portfolios by considering financially material climate risks and opportunities as part of the investment process and actively engaging with our investee companies, as appropriate. As such, we continue to enhance our climate-related insights to help assess the material implications of climate change within our client portfolios. This includes our efforts in enhancing our climate-related data sets, research capabilities and training.

Where aligned with our clients' specific investment objectives, we also strive to address climate risks and opportunities through meaningful carbon emissions reductions in client portfolios, including by reducing exposure to the largest carbon-emitting companies or sectors and investing in companies that are on a path to reduce carbon emissions. To learn more about these efforts see the JPMAM 2023 Global TCFD Report.

GLOBAL PRIVATE BANK SUSTAINABLE INVESTING

At J.P. Morgan Global Private Bank, we continue to expand our products, reporting, and thought leadership around climate-related risks and opportunities.

In the product suite, we provide high-net-worth clients with access to sustainable investment strategies across equities, fixed income, alternatives, and multi-asset portfolios. In 2023, we launched an impact investing vehicle that invests in climate solutions opportunities across venture capital, growth equity, and private equity. Going forward, we aim to expand our available strategies to include investment funds focused on decarbonization, energy efficiency, resource conservation, and emissions management.

We also offer modern, client-friendly sustainability reporting for certain investment strategies. These reports are built through OpenInvest, a values-based investing financial technology company that we acquired in 2021.

To demonstrate thought leadership, we continue to speak at high-profile venues, participate in initiatives focused on contributing to the growth of sustainable investing markets, and author white papers that address the investment risks and opportunities presented by climate change. These efforts are aimed to help keep our clients up-to-date on the latest sustainability- and climate-related trends.

Supporting Our Clients

We continue to broaden our efforts to support the climate- and sustainability-related banking needs of clients, from early stage and small companies through to multinationals and other large corporations. We deploy our capital and expertise to assist clients working to transition their business model and operations to reduce emissions. As we expand our capabilities across our LOBs, we aim to provide clients with increasingly diverse and innovative solutions, while helping to grow the market for green and sustainable financing.

GREEN ECONOMY BANKING

As the need for climate solutions grows so does the number of companies focused on providing them, with each requiring a unique combination of financing and advice to achieve its business objectives. Our CB Green Economy Banking team is called upon to provide subject matter expertise, banking solutions, and specialized credit underwriting to companies primarily focused on sustainable technologies, products and services. The Green Economy Banking team focuses on three coverage areas – renewable energy, sustainable finance and Climate Tech – with bankers assigned to provide specific sub-industry coverage within each of these areas. The Green Economy banking team serves companies across North America and the Europe, Middle East, and Africa region.

CASE STUDY Plantible: Helping shape the future of food

JPMorgan Chase is providing financing to support the growth of Plantible, a biology company founded in 2018 that specializes in producing Rubi Protein™. Rubi Protein™ is a nutrient-dense protein that naturally occurs in leafy greens and is intended to be used as a replacement for animal-based proteins. Plantible has strived to build a robust, scalable and sustainable supply chain that uses less water, requires less land, and emits fewer greenhouse gases than the production of conventional meat and dairy alternatives such as soybeans and peas. JPMorgan Chase has provided financial services, including two multi-million dollar venture debt facilities as well as treasury services, to Plantible. Plantible recently opened a commercial-scale facility in Eldorado, Texas that is anticipated to support job creation in the green economy and increase Plantible's production capacity.

[3] To learn more on the criteria we prioritize when evaluating the quality and credibility of carbon credits, please refer to Carbon Market Principles paper.

[4] Durable refers to amount of time for which CO_2 can be stored in a stable and safe manner. In this context, durable is defined as 1,000+ years of anticipated CO_2 storage.

CORPORATE ADVISORY AND SUSTAINABLE SOLUTIONS

JPMorgan Chase is committed to helping our clients achieve their long-term strategic goals through the delivery of holistic advice, capital markets solutions, and targeted capital deployment. To best coordinate these efforts, in 2022, the Corporate Advisory and Sustainable Solutions ("CASS") team was formed. The CASS team is composed of the Corporate Finance Advisory team, the Center for Carbon Transition ("CCT"), the Infrastructure Finance Advisory team and the Sustainable Solutions teams. The CASS team partners with coverage and product groups across the CIB and CB, as well as the Corporate Sustainability team to drive global cross-product coordination and allocate dedicated green capital of the Firm.

CENTER FOR CARBON TRANSITION

The CCT provides clients globally with low-carbon transition focused advice and expertise, and works with industry coverage and product teams within the CIB and CB on a wide variety of strategic sustainability focused transactions. The team is also responsible for supporting our banking teams in identifying green business opportunities to meet client demands and amplifying our green economy coverage.

The combined expertise of the CCT and other banking teams helps provide tailored insights and solutions to clients who seek this advice as they adapt and grow their businesses. This includes providing strategic advice on clients' long-term decarbonization plans and working with industry and product teams to structure unique financing solutions in public and private capital markets to help clients drive progress toward their goals.

The CCT also works to develop and implement the Firm's strategy to align, over time, its financing portfolio with net zero emissions by 2050 and oversees the implementation of our Carbon Assessment Framework ("CAF"), which helps us monitor our progress toward our net zero aligned targets. For more information on our targets and the CAF, see pages 10–12 in Strategy and pages 24–28 in Metrics & Targets.

SUSTAINABLE SOLUTIONS

Our Sustainable Solutions team is a specialist group of investment bankers who provide sustainability-related advice and transaction support to advance sustainability solutions for our clients and to provide clients access to sustainability-focused capital across equity, debt and private markets. In Europe, the Middle East and Africa, Sustainable Solutions also coordinates JPMorgan Chase's investment banking coverage of clients in emerging green economy sectors. The group works with other investment banking teams across the CIB to identify and execute on ESG-related advisory and product opportunities.

GREEN, SOCIAL, SUSTAINABILITY AND SUSTAINABILITY-LINKED BONDS

Through our business, JPMorgan Chase is a leading underwriter of green, social, sustainability and sustainability-linked bonds, many of which our clients intend to use to support their climate-related activities. During 2022, the Firm's broker-dealer subsidiaries underwrote over $38.3[5] billion in green, social, sustainability and sustainability-linked bond debt, including approximately $16.6 billion in green bonds.

CASE STUDY CEMEX: Building a Greener Future

In March 2023, JPMorgan Chase acted as sole green structuring agent for a $1 billion green subordinated notes with no fixed-maturity issuance by Cemex, one of the world's largest construction materials companies[6] headquartered in Monterrey, Mexico. This issuance is the first-ever green bond issuance from a major construction materials company and one of the largest by a Latin American corporate.

An equal amount to the net proceeds are expected to be allocated to finance or refinance, in whole or in part, one or more new or existing eligible capital, operating, and research and development expenditures that align with Cemex's "Future in Action" program, which aims to reduce direct CO_2 emissions by 47% by 2030[7] and achieve net zero operations by 2050. Eligible expenditures relate to prevention and control; renewable energy; energy efficiency; clean transportation; sustainable water and wastewater management; and eco-efficient and/or circular economy adapted products, production technologies and processes.

JPMorgan Chase is supporting its clients in high carbon intensity industries, like Cemex, advance their decarbonization goals via innovative financing structures in the international debt capital markets.

GLOBAL MARKETS SUSTAINABILITY CENTER

Within CIB Markets, the Global Markets Sustainability Center works with product teams to provide sustainability and climate solutions across asset classes to help clients, who seek to, realize their climate and sustainability strategies and transition their portfolios to a low-carbon economy. An example is Investable Indices that incorporate sustainability and climate considerations to help meet investors' specific requirements. These are tradable indices designed to help investors gain exposure to distinct risk and reward profiles, simplify the construction of alternative investments, tailor risk-hedging strategies with greater precision, enhance long-term returns and construct more resilient portfolios. Within equities, we have ESG benchmarks employing both long only and long/short strategies, and we continue to innovate across asset classes including a newly developed methodology that incorporates environmental considerations into a diversified commodity transition index.

[5] Source: Dealogic Sustainable Finance Report, Syndicated Bonds, Loans & Equity, Full Year 2022. Note that third-party estimates of Green, Social, Sustainability and Sustainability-linked ("GSSS") bond underwriting may not be the same as JPMorgan Chase-produced data for GSSS bond underwriting in our Sustainable Development Target.

[6] Based on annual installed cement production capacity.

[7] From a 1990 baseline.

2 Balancing Environmental, Social and Economic Needs

Achieving long-term inclusive and sustainable growth globally requires balancing environmental needs, societal advancement and economic stability. While the world needs to work swiftly toward environmental goals such as achieving net zero GHG emissions by 2050, it needs to do so in a way that supports the world's growing energy demand to power societal progress and fosters equitable energy access, reliability, security and affordability.

For us, recognizing the balance needed to achieve long-term sustainability informs our approach to environmental initiatives. Our initiatives are rooted in how we do business: this means serving our customers, clients and communities while running a healthy and vibrant company. Examples of this work include: using our capital and expertise to support clients in advancing their low-carbon transition goals, and in turn, advancing progress toward our own net zero aligned targets (see pages 10–12 and 24–28); deploying our philanthropic capital to support initiatives that help vulnerable communities globally advance their resilience to climate change; and evaluating and managing potential risks – such as E&S and climate risks – within our business (see pages 16–22).

Addressing Our Financed Emissions Through Our Net Zero Aligned Targets

A key aspect of our environmental sustainability strategy is how we engage with our clients who operate in carbon-intensive industries, with the goal of accelerating the low-carbon transition and encouraging near-term actions that will set a path for global net zero emissions by 2050.

In support of our strategy, we are aligning key sectors of our financing portfolio[8] with net zero emissions by 2050. To date, we have set net zero aligned targets for eight sectors – Oil & Gas, Electric Power, Auto Manufacturing, Iron & Steel, Cement, Aviation and new for this year, Shipping and Aluminum – and have published our Carbon Compass℠ methodology detailing our approach, including key sectoral considerations, decarbonization pathways, and data and metrics used. Our net zero aligned targets are currently constructed for 2030 as portfolio-level targets by sector, using an emissions intensity reduction metric. We set targets using our own independent assessment of what we determine is reasonable and achievable to serve the best interests of our business and serving our clients while remaining true to our principles.

In 2021, when we first established our emissions intensity reduction targets for the Oil & Gas, Electric Power and Auto Manufacturing sectors, we aligned them to the then available International Energy Agency Sustainable Development Scenario ("IEA SDS"), which is consistent with the goals of the Paris Agreement and generally accepted as aiming for achievement of net zero emissions by 2070. As climate science has advanced, this year we are updating our targets for the Oil & Gas, Electric Power, and Auto Manufacturing sectors to align them with the IEA Net Zero Emission by 2050 Scenario ("IEA NZE") – a scenario that has become a widely used benchmark in the financial sector for net zero alignment. While there are a variety of differences between the IEA SDS and IEA NZE scenarios, the shift in ambition from net zero by 2070 to net zero by 2050 is significant – reflecting our support for actions toward global achievement of net zero emissions by 2050.

In conjunction with updating our targets to the IEA NZE scenario, we have also expanded the boundary of our Oil & Gas End Use (Scope 3) target to include zero-carbon power generation from our Electric Power portfolio. Now called Energy Mix, our expanded target recognizes a singular focus on fossil fuels will not successfully achieve the necessary transition of the global energy system. Therefore, our targets should aim to reflect the reality that we also need to prioritize a significant build-out of clean energy sources. In addition, the build-out of zero-carbon power is taking place primarily in the Electric power sector.

Our Energy Mix target therefore builds on our previous Oil & Gas End Use emissions intensity reduction target, reflects our financing of zero-carbon power generation, and provides a clearer view on how our financing relates to the Scope 3 emissions performance of the broader energy system. We believe this revised target better reflects our strategy of supporting the rapid build-out of zero-carbon power, which we expect will help replace fossil fuels and reduce emissions without compromising energy security and affordability. Please see pages 24–25 in the Metrics & Targets chapter for additional information.

We are also setting new net zero aligned targets for the Shipping and Aluminum sectors. Building on the approach and foundation of our other targets, these new targets are also intended to align to the IEA NZE scenario.

We aim to continue expanding this work over time for additional carbon-intensive sectors in our financing portfolio, engaging with our clients on their decarbonization journeys, and aligning that work with global climate goals, science-based scenarios, and evolving best practices for the financial sector. Progress towards our targets is subject to market conditions, along with technological and public policy advancements.

Below, we summarize key elements of our approach and our strategy for driving progress toward our targets, while in the Metrics & Targets chapter (see pages 24–28) we provide details of our net zero aligned targets, baselines and performance to date, including our updated targets and new sector targets. We also include disclosure of our financed emissions on an absolute basis (i.e., absolute financed emissions) for selected sectors of our portfolio.

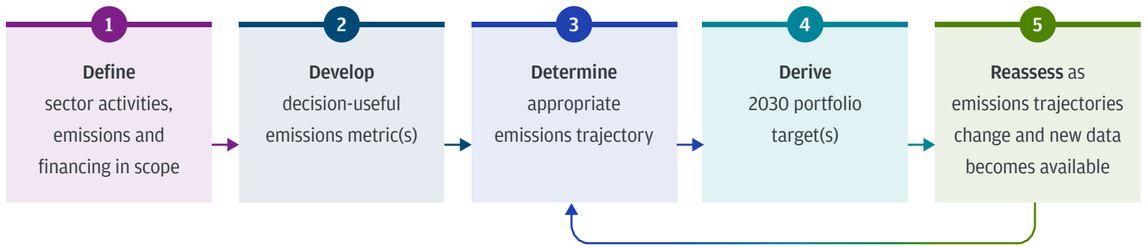
KEY ELEMENTS OF OUR APPROACH

Our Carbon Compass℠ methodology incorporates and expands upon several related approaches to define robust, decision-useful metrics and science-based targets on a sector-by-sector basis. The following key choices and considerations informed how we designed our approach:

- **Science-based.** Our targets build on the transition pathways outlined by the IEA NZE scenario. We also reference a wide range of public resources, including additional climate scenarios, decarbonization research and other frameworks for assessing alignment with global emission reduction goals.
- **Sector-specific.** Within each sector, we focus on specific activities with material emissions and credible pathways toward decarbonization, enabling us to gain more useful insight and better support our clients in developing and implementing their strategies.
- **Decision-useful.** For each sector, we define one or more core metrics that provide insights into companies' performance and progress toward decarbonization, and that are compatible with the benchmark trajectories we use to evaluate alignment to global emissions goals.
- **Robust and consistent data.** Each metric is designed to make use of consistent, well-reported and standardized data. Where data availability is limited, we continue to support improvements while defining processes for use of appropriate alternatives.

How We Design Our Methodology for Each Target

The framework below guides how we have sought to reasonably develop metrics and targets that are robust, decision-useful and tailored to each included sector.



[8] Our financing portfolio refers to 12-month average of our committed balance sheet lending and tax equity transactions, as well as 100% attribution of our share in facilitated capital markets transactions with in-scope clients.

OUR CARBON ASSESSMENT FRAMEWORK

To bring a climate lens to the way we make financing decisions, we have developed an assessment methodology, the Carbon Assessment Framework ("CAF"). Our CAF aims to provide a consistent, comprehensive, and data-driven approach to assess our client's emissions and decarbonization plans. We use the CAF to assess how new in-scope transactions may affect progress toward our net zero aligned targets. Within the framework, we assess two key scores for each client: a CAF quantitative score and a CAF qualitative score (collectively known as the CAF scores).

The quantitative score for each client is comprised of three pillars: (i) their historical emissions reductions; (ii) their current carbon intensity; and (iii) their projected carbon intensity based on their decarbonization targets. The qualitative score considers a variety of factors, including corporate structures for governance and oversight, which enable us to take a holistic view of how the client plans to advance their decarbonization goals.

The client-level CAF quantitative and qualitative scores are sourced from our Climate Risk infrastructure. Our Risk teams also use these client-level scores for internal risk analysis purposes, described further on page 20.

Key Aspects of Our Carbon Assessment Framework

QUANTITATIVE ASSESSMENT

Current Carbon Intensity	Client is scored relative to JPMorgan Chase's applicable portfolio
Forecasted Carbon Intensity	Client is scored relative to JPMorgan Chase's sector portfolio target, as applicable
Historical Carbon Intensity Reduction	Client is scored based on the 2-year change in its carbon intensity

CAF QUANTITATIVE SCORE (1-5)

QUALITATIVE ASSESSMENT

Holistic view of the client's plans and actions to achieve its decarbonization plans including:

- Client's Board oversight and corporate governance of climate-related matters
- Client's integration of climate risk and opportunities in corporate strategy
- Client's investments toward decarbonization

CAF QUALITATIVE SCORE (1–5)

HOW WE ARE USING CAF

As we continue to expand our sector-specific emissions intensity reduction targets, we are also focused on aligning our capabilities and efforts to make progress toward them. Our goal is to use our knowledge and expertise to support clients in navigating the low-carbon transition – helping them think through and act on their decarbonization plans – while also aiming to achieve emissions reductions across our financing portfolio.

Decision-making and Portfolio Management: We consider the CAF as one element of our decision-making for new in-scope transactions in our targeted sectors. The CAF process, and governance around the same, have been integrated into the various deal execution processes for each sector across credit and capital markets financing for all in-scope transactions. While all transactions are assessed on an individual basis with a holistic view of many factors, the CAF allows us to assess how each new transaction may affect progress toward our emissions intensity reduction targets. Accountability for progress toward the targets has been assigned to senior leaders with the relevant banking teams at a regional- and sector-specific level. This senior-level accountability – coupled with the CAF – is designed to serve as a monitoring mechanism to help senior management oversee progress toward achieving our sector-specific portfolio level targets.

Client Engagement: Assessing our clients' decarbonization plans through our CAF creates an opportunity for us to engage with our clients, understand their views, plans and constraints, as well as their capital needs. The CCT, together with other banking teams, works closely with clients to help advance clients' decarbonization initiatives.

We recognize that different factors – such as technology development and scalability – beyond our and our clients' control will pose difficulties in the low-carbon journey, and we continue to engage with our clients and support their decarbonization efforts. The table below gives a few examples of areas where we are engaging with our clients to provide additional support by delivering strategic advice, as well as providing capital and structured financing solutions to help them in achieving their decarbonization goals. We see these as levers that advance decarbonization of the different sectors where our clients operate and can contribute to our progress toward our emissions intensity reduction targets.

Examples of decarbonization levers across sectors

SECTOR	EXAMPLE OF DECARBONIZATION LEVER	
Oil and Gas	• Methane abatement projects (e.g., venting and flaring) • Use of alternative fuels and renewable energy in operations • Carbon capture, utilization, and storage ("CCUS") for operations and customers	• Producing alternative fuels (e.g., biofuels, synthetic fuel, etc.) • Producing hydrogen, especially green • Producing renewable energy
Electric Power	• Renewable energy (solar, onshore / offshore wind farms geothermal, etc.) • Nuclear	• Hydrogen, especially green • CCUS
Auto Manufacturing	• Battery electric vehicles • Plug-in hybrid electric vehicles	• Hydrogen fuel cell vehicles • Efficiency improvements in internal combustion engines
Iron & Steel	• Electric arc furnaces • Hydrogen for direct reduced iron production • Use of renewable electricity	• Scrap recycling and direct re-use (without re-melting) • CCUS • Extended lifetime of steel output
Cement	• CCUS • Decreasing clinker-to-cement ratio of sold cementitious products • Producing clinker replacements	• Use of alternative fuels (non-renewable waste, biomass, renewable waste) • Electrification of equipment
Aviation	• Sustainable Aviation Fuels - learn more about our work in advancing SAF development on page 7 • Alternative propulsion systems (electric, hydrogen) • Fleet replacement	• Engine efficiency improvements and retrofits • Load factor / demand management • Flight control and ground operations efficiency
Shipping	• Alternative fuels (biofuels, ammonia, hydrogen, methanol) • Fleet replacement • Electrification	• Engine efficiency improvements and retrofits • Load factor / demand management
Aluminum	• Use of renewable electricity • Electrification of refining	• Recycling of aluminum • Use of inert anodes

UPDATES TO OUR METHODOLOGY

Since launching CAF in 2021, we have broadened its scope to encompass smaller segments of the applicable portfolio and have refined its methodology with the aim of customizing the framework and generating a sector-specific assessment of a company's decarbonization plans. We believe CAF is a reasonably designed framework, and we aim to continue looking for improvement opportunities and to enhance and mature the CAF methodology over time. We plan to continue to expand the use of CAF assessments to encompass additional sectors and financing that we provide to in-scope clients of our Carbon Compass℠ methodology.

INTEGRATING CAF ACROSS OUR BUSINESS PROCESSES

We are dedicating resources to enable a technology-based integration of our CAF throughout our relevant business processes. For example, by embedding our CAF into our deal origination processes, we are better enabling our coverage and product deal teams to complete CAF assessments for in-scope transactions, and our risk teams to verify information feeding into the assessments, increasing their robustness and confidence. This integration has also better equipped our client coverage teams to identify areas where we can further strengthen our support to clients in implementing their decarbonization strategies.

3 Minimizing Our Operational Impact

A key component of our approach to sustainability is managing the environmental impact from our operations. Our reported environmental footprint primarily stems from the operation of our more than 6,000 corporate offices, bank branches and data centers around the world. Our strategy for minimizing this impact focuses on optimizing how we source and use energy, reducing direct and indirect GHG emissions, and enhancing resource management, including in how we design and operate our buildings, and through our supply chain. In support of these efforts, we've set a number of operational sustainability targets. To view our progress toward these targets, our operational GHG emissions data and renewable energy use see pages 31-32 in Metrics & Targets.

The Firm's Chief Administrative Office ("CAO") provides multiple global services that support the day-to-day operations of the Firm's businesses. The CAO includes the Operational Sustainability team, responsible for the Firm's operational carbon management strategy and for coordinating the implementation of operational sustainability efforts across the corporate functions; the Global Real Estate team, responsible for the deployment of onsite renewable energy, implementation of energy efficiency and water use minimization measures; and the Supplier Sustainability Team, responsible for providing oversight of the Firm's supply chain with respect to ESG matters.

Energy Optimization and GHG Emission Reduction

We are pursuing efforts to optimize energy use and reduce our GHG footprint across our global operations, guided by our targets, including reducing Scope 1 and Scope 2 emissions by 40% by 2030 vs. a 2017 baseline, sourcing renewable energy for 100% of our global power needs annually, satisfying at least 70% of our renewable energy goal with on-site generation and long-term renewable energy contracts by 2025, and maintaining carbon neutral operations annually[9]. With these goals in mind, our strategy focuses on the following:

IMPROVING EFFICIENCY AND ACCELERATING ELECTRIFICATION

Reducing energy use and using less carbon-intensive energy sources are our first priorities. We continue to undertake a variety of energy efficiency measures, including reducing the physical footprint and power consumption of our data centers and optimizing the use of heating and cooling in our buildings.

Another key energy and emissions reduction opportunity is electrification. To this end, we intend to design and build fully electrified retail branches, where feasible, and make greater use of electric transportation, including using vendors who offer electric vehicles and aiming to transition JPMorgan Chase's owned vehicle fleet[10] to electric by the end of 2025.

SOURCING RENEWABLES

Our second priority is to transition to zero-carbon energy sources, for which we are working to scale our use of renewable energy from both on-site solar installations and long-term energy procurement contracts. We are aiming to increase our commercial on-site solar program to over 90MW by end of 2025, and we have made on-site solar a feature of our new branches[11] with the goal of increasing total solar capacity of our retail locations to over 25MW by end of 2024.

To complement our on-site solar program, we continue to expand our use of long-term power purchase agreements and green power supply contracts across our global operations and have renewable energy agreements serving office locations in Europe and India.

PURCHASING ENERGY ATTRIBUTE CERTIFICATES ("EACS") AND CARBON CREDITS

Finally, to complement our emission reduction strategy, continue to meet our target to source renewable energy for 100% of our global power needs annually and address the remainder of our reported direct and indirect emissions, we purchase applicable EACs (e.g., Green-E certified Renewable Energy Certificates ("RECs"), International-RECs) and carbon credits[12].

In addition to the above efforts, we are exploring and committing capital toward net zero and sustainable design for our branches, smart building management, and other strategies to enhance environmental sustainability of our operations and real estate portfolio. For more information, see pages 18-23 of our ESG report.

[9] Operational carbon neutrality achieved, in part, using contractual instruments, including applicable Energy Attribute Certificates and carbon credits.

[10] Company use vehicles owned or leased by JPMorgan Chase for use for corporate activities, excluding specialty vehicles and cars that form part of an employee's compensation and benefit package.

[11] On-site solar is a standard feature of our branches provided local regulations and circumstances allow.

[12] Carbon credits and the market for them are evolving rapidly. Although we endeavor to source high-quality carbon credits verified by independent third parties, the ability to use carbon credits to fully and permanently "offset" emissions or achieve carbon "neutrality" relies on certain assumptions and is subject to debate among experts. For more information on our purchase of carbon credits, please see page 8 in Strategy Chapter and page 21 of our 2022 ESG Report.

Accountability, Transparency and Engagement

While we are proud of the steps our Firm has taken to respond to climate-related risks and opportunities in our business, we know that we have more work to do and that we will continue to learn, including from the feedback we receive from stakeholders. Our strategy is supported and strengthened by our ongoing efforts to enhance accountability, transparency and engagement.

Accountability

We strive to leverage the Firm's robust management structures to foster sound management and a culture of accountability on ESG matters. This includes defining oversight and management of climate-related initiatives within and across our LOBs to monitor their progress as part of regular business reviews. We aim for transparency and accountability by reporting progress against key financing and operational targets annually including processes and controls for data disclosure and verification.

Public Reporting

We recognize stakeholders' interest in timely information concerning our climate-related strategies and activities. We plan to continue to provide information through a number of channels including our Annual Report and Proxy Statement, ESG and Climate reporting, regulatory filings, website, press releases, direct conversations with stakeholders, and various other reports and presentations.

We intend to continue to leverage market-leading and investor-focused climate reporting initiatives to inform the development of our climate-related disclosures. We are also closely monitoring regulatory developments related to mandatory climate reporting requirements in several jurisdictions around the world.

Stakeholder Engagement

Our key stakeholders include customers and clients, shareholders, employees, communities, regulators and policymakers, research analysts and suppliers. We engage with stakeholders throughout the year to obtain insight into their needs and perspectives, as well as to gather feedback on our strategy and performance, including as they relate to climate change.

Strengthening Our Sustainability Initiatives Through Employee Engagement

We encourage our employees to think about how they can live more sustainably. For example, through our Global Sustainability Series events, we give employees an opportunity to participate in insightful and inspiring discussions showcasing the Firm's sustainability leaders and experts from around the globe.

Our GoGreen program, a global network of employee-led volunteer teams, works to foster a community of informed, engaged and inspired employees who contribute to our sustainability culture. The mission of the GoGreen teams is to increase employee awareness of sustainability initiatives at JPMorgan Chase, including our sustainability targets, and what the Firm is doing to meet them, as well as offer employees opportunities to learn about and engage in sustainable activities at work, at home and in their communities. During the first half of 2023, GoGreen team events and activities included:

- Offering hands-on events in support of UN World Water Day where employees learned about water access challenges in developing nations.
- Hosting local biodiversity themed events around the globe in celebration of UN World Earth Day.
- Collaborating with local community organizations to host beach and riverbank clean-ups, tree planting, litter clearing and invasive species removal.
- Staging sustainability fairs to provide employees with opportunities to discover locally made sustainable products and services.
- Sponsoring learning sessions with sustainability experts on topics such as composting and gardening at home, recycling and waste management, and JPMorgan Chase's corporate beekeeping program to provide safe pollinator habitats for honeybees.
- Participating alongside the Firm and millions of others around the globe in World Earth Hour, going dark for one hour in our homes and within more than 30 JPMorgan Chase buildings to show our support for climate action.

Educating Our Workforce On Climate

We are enhancing our ability to support our clients in navigating their low-carbon transition journeys, achieving their climate goals and executing on value creation strategies. We provide our banking teams across LOBs with climate-related resources covering a wide range of topics, including climate-related regulatory updates; key technologies, financing options and investment opportunities of the climate transition; and sector-specific decarbonization pathways.

Realizing Environmental Benefits through Engagement with Our Suppliers

We recognize that the environmental impact of our operations extends to our suppliers' practices. As such, we aim to work with suppliers who are working to improve their environmental sustainability. As an example, the Firm recently collaborated with a transportation supplier in Mumbai, India to upgrade commuter buses shuttling roughly 14,000 employees to and from the Firm's campuses. The upgraded buses have onboard diagnostic devices that monitor emissions and identify malfunctioning components that could cause problems and affect the vehicle's emission performance. These upgrades are expected to lead to an estimated 34% reduction in the upgraded buses' annual GHG emissions compared to 2022.

To further our efforts, in 2023, we also established new Supplier Environmental Sustainability Guidelines, which are designed to educate our suppliers as to how they can integrate positive environmental practices within their own organizations and to set the foundation for further incorporating environmental considerations into our procurement process.

Policy and Industry Engagement

JPMorgan Chase believes that responsible corporate citizenship demands a healthy and informed democracy through civic and community involvement. Our business is subject to extensive laws and regulations, and changes to such laws can significantly affect how we operate, our revenues and the costs we incur. Because of the impact public policy can have on our businesses, employees, communities and customers, we engage with policymakers holding a range of views, on a range of issues – including banking, financial services, cybersecurity, workforce development, small business, tax, trade, and inclusive economic growth, among others – to advance and protect the long-term interests of the Firm.

We recognize the need for thoughtful public policy on climate- and energy-related matters. It can help accelerate the Firm's progress on sustainability-related business objectives and contribute to sustainable economic growth. It is among the prerequisites we view as essential to make the achievement of our and others' climate targets feasible. We therefore engage with external stakeholders and trade associations on policies that we believe can help make net zero goals achievable, including by mobilizing capital for green technology and solutions, and supporting clients as they navigate the low-carbon transition.

Examples of our recent climate-related public policy and industry engagements include:

- Supporting Rocky Mountain Institute with a grant for their Accelerating Clean Regional Economies initiative, which convenes business, policy, economic development, workforce, and NGO stakeholders to prioritize and advance local clean technology industries (for example, battery and electric vehicle manufacturing in the Great Lakes region).
- Convening over 30 individuals from community development financial institutions, NGOs, and philanthropies to discuss the implementation of the Inflation Reduction Act ("IRA") Greenhouse Gas Reduction Fund – particularly how its capital can best support underserved communities and the best ways to support applicants seeking funds.

The Firm belongs to a number of trade associations that advocate on major public policy issues of importance to the Firm and the communities we serve. The Firm's participation in these associations comes with the understanding that we may not always align with all their positions or those of its other members. We make independent decisions as a Firm, and we may provide appropriate feedback on the efforts by these associations. A list of the Firm's principal trade associations is disclosed in our Political Engagement Report.

Similarly, the Firm may engage with industry initiatives to help address complex global challenges, including climate change, where we are aligned with the initiatives' goals and can continue to exercise our own business judgment based on the best interest of the Firm and serving our clients. We also participate in a variety of initiatives focused on advancing sustainability. Three examples are:

- We made a $2.5 million grant to the EFI Foundation to support their work on the Energy Futures Finance Forum ("EF3"). The initiative, launched at an event hosted by the Bipartisan Policy Center in February 2023, is led by former Secretary of Energy Ernie Moniz. EF3 engages across stakeholder groups to recommend policies intended to increase deployment of key decarbonization technologies. Its initial framing report focused on the need to increase clean energy project financial viability to attract the necessary private capital to fund de-carbonization efforts at commercial scale. A subsequent report applied this framework to carbon capture and storage ("CCS"), and offered policy recommendations such as enhancing federal government support of first-of-a-kind projects on CCS and supporting infrastructure like pipelines; disclosing performance data for taxpayer supported projects; and fostering community engagement as CCS projects develop. The EF3 Advisory Board includes members of JPMorgan Chase, the investor community, and civil society.
- We contribute to public discourse by voicing our views on certain developments in climate policy. In February 2023, two JPMorgan Chase senior leaders published an op-ed in Fortune describing the Firm's approach toward recent laws passed in the U.S. that support climate and clean energy investment, including the IRA and the Bipartisan Infrastructure Law. These federal investments aim to help to reinvigorate do-mestic manufacturing, build resilient supply chains, create jobs, and cut energy costs – all while making progress on the climate challenge.
- We are increasing our engagements with oil and gas companies, technology innovators, non-governmental organizations and multi-stake-holder initiatives to support methane emissions reductions and improved methane emissions data quality. Through our engagements, we encourage adoption of technologies to monitor and measure emissions to improve accuracy and transparency of data, and to foster near-term emission mitigation. Our work with a range of stakeholders supports mobilization of capital for methane emission reduction.

Risk Management

Our Climate Risk Framework

Climate risk is the risk associated with the impacts of climate change on the Firm's clients, customers, operations and business strategy. Climate change is viewed as a driver of risk that may impact existing types of risks (credit & investment, market, operational and strategic) managed by the Firm. Climate risk is categorized into physical risk and transition risk.

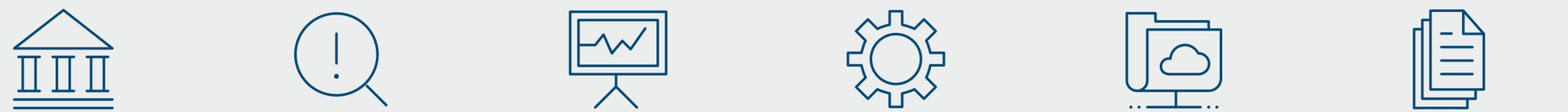
Physical risk refers to economic costs and financial loss associated with a changing climate. Acute physical risk drivers include increased frequency or severity of climate and weather events, such as floods, wildfires and tropical storms. Chronic physical risk drivers include more gradual shifts in the climate, such as sea level rise, persistent changes in precipitation levels and increase in average ambient temperatures. 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.

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.

Our climate risk framework sets forth the capabilities JPMorgan Chase uses to identify, assess and manage the impacts of physical and transition risk drivers on each of our four risk types. This framework is comprised of six core firmwide risk capabilities central to enabling assessment, quantification and management of the climate risks that may manifest across our diverse global footprint. In this chapter, we discuss Risk Governance, Risk Identification, Scenario Analysis, and Risk Measurement capabilities of this framework. Data Management capabilities are described throughout the chapter, while our Reporting and Disclosures capabilities provide senior leadership with periodic, aggregated reporting on physical and transition risks across our existing risk types and contribute to external disclosures and regulatory filings.

JPMorgan Chase continues to invest in talent and improve our data and technology resources to support the management of climate, environmental and social risks.

The Firm's Climate Risk Framework



Risk Governance

The Climate Risk Management function is responsible for establishing the Firmwide framework and strategy for managing climate risk, and engages across the Firm to help integrate climate risk considerations into existing risk management frameworks, as appropriate. Climate Risk is led by the Firmwide Risk Executive for Climate Risk, who is overseen by the CRO.

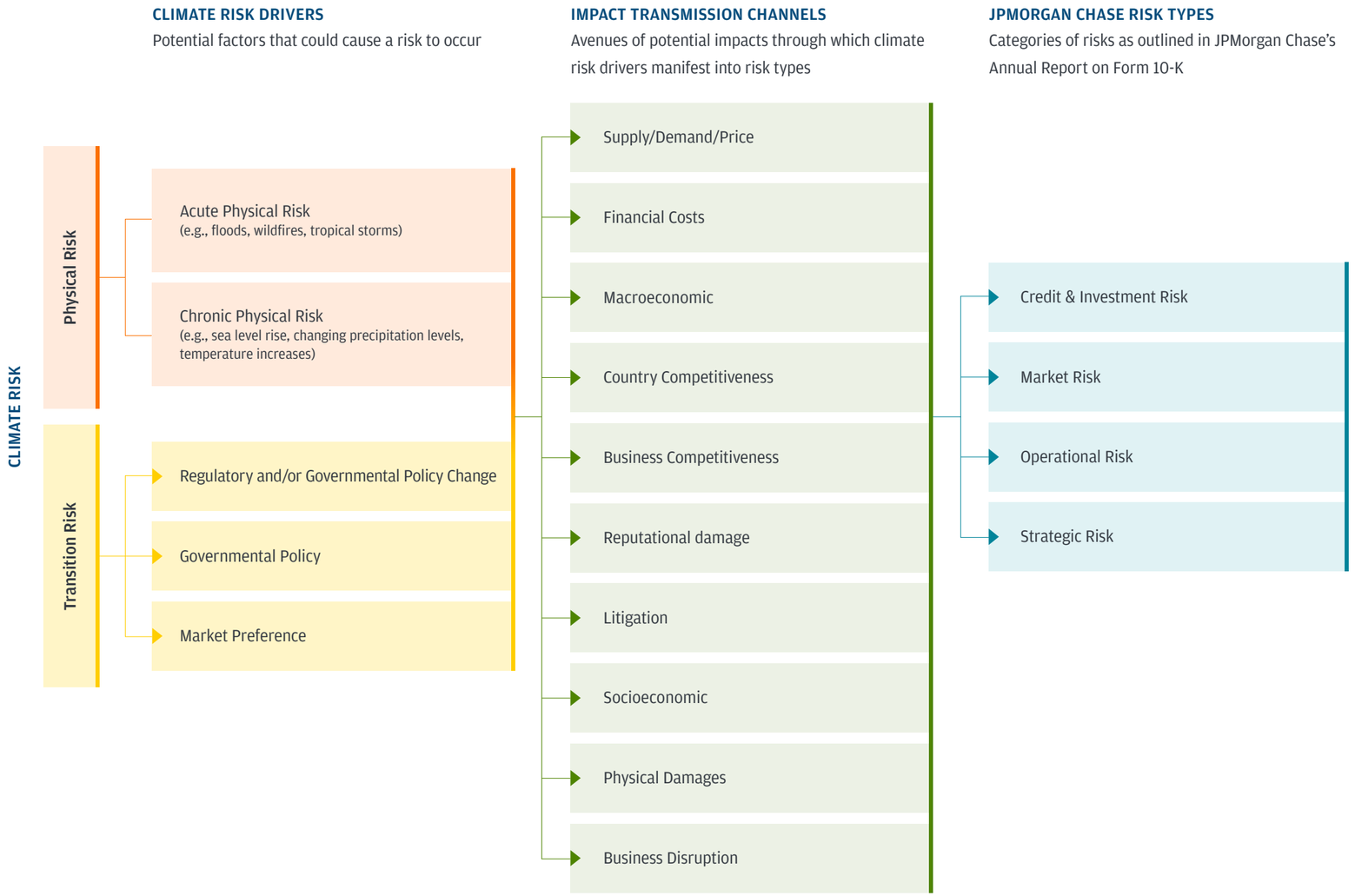
The Firm's approach to managing climate risk is consistent with the Firm's risk governance structure. The LOBs and Corporate are responsible for integrating climate risk management into existing governance frameworks, or creating new frameworks, as appropriate. The LOBs, Corporate and Climate Risk Management are responsible for providing management and the Board Committee, as appropriate, with information on significant climate risks and climate-related initiatives.

The Firm also has an Environmental and Social ("E&S") Risk function that establishes the Firm's policies, standards, and processes for certain E&S risks that outline the consistent approach for identification, escalation and management of transactions and activities that may present an increase in such risks. For more information on the Firm's overall approach to managing E&S risks, see page 56 in our 2022 ESG Report.

Risk Identification

At JPMorgan Chase, LOBs 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. We believe that this practice helps support a risk aware business culture and an effective risk management process. We have integrated climate into the firmwide risk identification framework as a driver of existing credit & investment, market, operational and strategic risk types. Supporting this framework is a classification system, illustrated below, that describes how climate risk drivers could translate into potential impacts to our clients and our operations. We continue to enhance the capture of climate risks in the Firm's risk inventory.

Translating Climate Risk Drivers into Potential Risks to the Firm[13]



[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.

Physical and Transition Risk

Physical and transition risk can manifest in a variety of ways. The infographic below provides examples of different types of physical and transition risks and how they could materialize as direct impacts or indirect impacts across the four major risk types we manage.

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. In some cases, the “first-order” impacts may build over time and trigger the “second-order” impacts — for example, repeated business disruption following severe weather events may lead to higher insurance costs in the local area — although this is not necessarily the case.

Examples of Potential Climate Risk Impacts

RISK TYPE	PHYSICAL RISK		TRANSITION RISK	
	FIRST ORDER	SECOND ORDER	FIRST ORDER	SECOND ORDER
CREDIT AND INVESTMENT RISK Risk associated with the default or change in credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments, including consumer credit risk, wholesale credit risk and investment portfolio risk	Increasing frequency and severity of weather events leads to customer and/or client property damage and an increased likelihood of default	Over time, the higher amount of direct damage resulting from severe weather events leads to increased insurance costs, diminishing consumers’ ability to pay	A shift in consumer preference away from certain carbon-intensive products leads to reduced profitability for clients slow to adapt to a low-carbon economy	A sustained low-profitability environment in local economies reliant on carbon intensive industries leads to lower local economic output, higher unemployment, and increased customer and client default risk
MARKET RISK Risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term	Heat and drought causes variability in agriculture output, or severe weather disrupts commodity supply chains, leading to price volatility	Increasing frequency and severity of weather events in a high physical risk region leads to a systemic change in the types of commodities produced in those regions	Increasing consumer demand for electric vehicles (“EVs”) negatively impacts the equity value of slow-to-transition automotive manufacturers	Sustained EV demand combined with ongoing constraints in the EV supply chain leads to long-term price appreciation and volatility for certain commodities
OPERATIONAL RISK Risk of an adverse outcome resulting from inadequate or failed internal processes or systems; human factors; or external events impacting the Firm’s processes or systems. Operational risk includes compliance, conduct, legal, and estimations and model risk	A severe weather event — such as a flood or tropical cyclone — causes damage to JPMorgan Chase building with temporary business disruption and repair costs	Increasingly frequent and destructive weather events in high physical risk regions leads to migration of businesses and residents away from these regions, creating hiring and employee retention challenges for local JPMorgan Chase offices	JPMorgan Chase's implementation of new climate-related models, reporting against climate related targets, and the emergence of various climate-related regulatory expectations globally leads to increased operational risk	Fast evolving and ambiguous regulatory and legal landscape on climate topics could lead to more regulatory scrutiny and litigation being brought against the financial sector, leading to increased legal and compliance costs
STRATEGIC RISK Risk to earnings, capital, liquidity or reputation associated with poorly designed or failed business plans or inadequate response to changes in the operating environment	The Firm continues to invest in properties that are increasingly susceptible to physical damages from severe weather events, leading to reduced profitability for the Firm	High physical risk in regions where JPMorgan Chase has made strategic investments (e.g., offices, branches, data centers) causes the Firm to abandon/ restructure location strategies in these regions	The Firm fails to attract green business opportunities as society shifts towards a low-carbon economy	The Firm experiences reputational damage from the real or perceived failure to meet climate-related targets

Scenario Analysis

To assess the range of potential climate-driven paths and outcomes, we apply an array of scenarios to our internal risk processes. We use internationally recognized scenarios from the Network for Greening the Financial System ("NGFS") and the Intergovernmental Panel on Climate Change ("IPCC") to inform our measurement of the potential financial and economic impacts to the Firm from the manifestation of climate risks.

The NGFS and IPCC scenarios represent widely accepted plausible pathways for society's future GHG emissions and consider the complex interactions between global socioeconomic systems and natural Earth systems over time. The average global temperature in 2022 was approximately 1.15°C above pre-industrial levels (1850–1900).[14] We define this as the "current state" of the climate, with assessments of future physical and transition risk based on further warming above this state.

Physical Risk Scenario Analysis

The Firm applies IPCC-derived physical risk parameters to assess the potential impacts of the increasing frequency and severity of severe weather events on our business operations, credit exposures, and collateral locations. Consistent with the transition risk approach, we utilize both a "baseline" physical risk scenario and a "severe" physical risk scenario to inform the range of outcomes.

BASELINE SCENARIO

The IPCC Representative Concentration Pathway ("RCP") 4.5 scenario represents an intermediate, middle-of-the-road scenario where social, economic and technological trends do not shift markedly from historical patterns. Global and national institutions work toward but make slow progress in achieving sustainable development goals; overall, the intensity resource and energy use declines. The scenario assumes that global mean temperature reaches 2.7°C warming above pre-industrial levels by 2100.

SEVERE SCENARIO

The IPCC RCP 8.5 scenario represents the worst-case, highest emissions scenario. The scenario assumes that global mean temperature reaches 4.4°C warming above pre-industrial levels by 2100 due to the continued exploitation of abundant fossil fuel resources and a continued rise in resource- and energy-intensive activities around the world. Under this scenario, there is no transition to a low-carbon economy and GHG emissions continue to rise throughout the 21st century.

Transition Risk Scenario Analysis

The Firm applies macroeconomic and industry-specific variables (e.g., Oil & Gas demand, steel production, etc.) from NGFS scenarios to help assess potential transition risk impacts to the Firm. In order to quantify and understand the range of these impacts, we are using a "baseline" transition risk scenario and a "severe" transition risk scenario from the NGFS.

BASELINE SCENARIO

The NGFS Current Policies ("CP") scenario represents a low-transition risk scenario that captures the current state of global climate policy. The scenario assumes that no future emissions reduction policies are implemented by governments, leading to high physical risks.[15] In this scenario, 3°C or more of warming could occur by 2100.[16]

SEVERE SCENARIO

The NGFS Divergent Net Zero ("DNZE") scenario represents the most severe transition risk scenario. The scenario assumes that global net zero is reached by 2050 through higher carbon prices with a rapid phase-out of fossil fuels, despite divergence in policies introduced by governments across the world. The scenario assumes that global warming is successfully limited to 1.5°C by 2100, which limits physical risk impacts.

Time Horizons

The pace and cumulative effects of climate change are important factors in considering the potential financial and economic implications. We therefore analyze these scenarios over multiple periods.

Short-term: Less than 5 years; aligned with the Firm's loss and capital adequacy assessments.

Medium-term: 5–10 years; aligned with the Firm's credit risk assessments.

Long-term: More than 10 years; aligned with the Firm's strategic risk assessments.

[14] World Meteorological Organization

[15] NGFS Scenario Portal

[16] Temperature increases are relative to global mean temperatures at pre-industrial levels (1850–1900).

Risk Management by Risk Type

We are using our resources to better understand how physical and transition risks may manifest and their potential impacts on the existing risk types the Firm manages.

Credit & Investment Risk

Credit & investment risk is the risk associated with the default or change in the credit profile of a client, counterparty or customer; or loss of principal or a reduction in expected returns on investments including consumer credit risk, wholesale credit risk, and investment portfolio risk. We leverage our risk identification and scenario analysis to measure the potential adverse impacts the baseline and severe climate risk scenarios may have on our credit portfolios, both today and into the future. We are analyzing the direct impacts of physical and transition risk – considering property damage and financial loss due to severe weather events or the potential reduction in profitability of a client, counterparty or customer as a result of a societal transition from a high-carbon to a lower carbon-intensive footprint. We are also considering indirect and longer-term risk drivers, including the potential for reduced availability or increased cost of insurance for clients of JPMorgan Chase in a given geography, adoption of new technologies and shifts in consumer preferences.

CONSUMER CREDIT RISK

As of December 31, 2022, the Firm had $1.4 trillion of consumer credit exposure, including residential real estate, auto loans and credit cards. The Firm uses catastrophe models to estimate the potential impact of hypothetical severe weather events on its real estate portfolios. For example, retained residential real estate loans, predominantly in the U.S., made up $238 billion of the total consumer credit portfolio. Today, climate risks for this portfolio are substantially mitigated through geographic diversification of the properties, the prevalence of hazard insurance, and the effective average life of the underlying loans, among other factors. As a result, financial losses due to severe weather events have not been material to the Firm. As we examine the potential for future impacts, we may consider outcomes in which these mitigants are weakened – for example, if insurance becomes less prevalent.

The cumulative effect of physical climate risk may impact our residential real estate portfolio in several ways, including the following:

- Greater physical damages: increased likelihood or severity of severe weather events may increase consumer credit losses.
- Higher insurance premiums: higher insurance premiums may increase living expenses and financial burden for consumers.
- Reduced coverage or availability of insurance: insurers may further limit types of damage they cover or withdraw coverage from specific geographies.
- House price impacts: cumulative effect of climate-driven events may adversely impact house prices and local economies in certain geographies, potentially disproportionately impacting lower-income households and communities.

Additionally, we continue to examine how the transition to a low-carbon economy may create financial burden on consumers from potentially higher energy prices, pass-through of carbon taxes on goods and services, or result in declines in the value of other assets (e.g., gas-burning vehicles), which could impact consumers' ability to repay credit obligations and may result in additional credit losses to the Firm.

WHOLESALE CREDIT RISK

As of December 31, 2022, the Firm had $1.2 trillion of wholesale credit exposure. In its wholesale businesses, the Firm is exposed to credit risk primarily through its underwriting, lending, market-making, and hedging activities with and for clients and counterparties, as well as through various operating services (such as cash management and clearing activities), securities financing activities and cash placed with banks.

The Firm has built a stress framework to estimate potential impacts from a range of climate transition pathways on client financials and credit ratings. For clients operating in carbon-intensive sectors (e.g., Oil & Gas, Automotive Manufacturing, Power Generation, Steel and Cement Manufacturing), the Firm estimates the potential impact of a climate transition scenario on their credit rating by projecting detailed cashflows within the context of a transition scenario (see Scenario Analysis on page 19). This estimation takes into account the client-level CAF quantitative and qualitative scores, which, as described on pages 11–12, assesses a client's historical emissions reductions, current and forecasted carbon intensity, as well as actions taken to advance their decarbonization.

Financial impacts from the transition to a low-carbon economy could manifest in a variety of ways, including weaker demand for carbon-intensive products, resulting in lower revenue, or higher operating costs for carbon-emitting companies, if a carbon tax is implemented. Additionally, companies may need to increase their capital expenditures through investments that improve resilience to the low-carbon transition (e.g., power companies investing in renewables).

To assess the impact of climate transition risk on sectors with relatively lower carbon intensity, the Firm conducts a separate client-specific internal stress analysis[17]. The potential effect on a client's credit rating is estimated by stressing client financials consistent with industry projected performance in the transition scenario, and factoring in the additional costs incurred due to a carbon tax on the company's emissions.

The Firm has also developed risk management capabilities including catastrophe modelling to estimate the potential impact of severe weather events exacerbated by climate change on its Commercial Real Estate portfolio. Damages from hurricanes and floods could cause potential physical damage to the underlying properties, leading to expenses for repairs and disruptions in revenue, as well as changes in overall property values thus impacting the credit quality of the portfolio.

[17] Climate transition stress analysis for clients in lower carbon intensity sectors is used for internal climate analysis and not used in client decisioning.

Heatmap of Credit Exposures (as of December 31, 2022)

Below is a heatmap of credit exposures using a five-point color scale to indicate carbon intensity of our own lending portfolio – to the extent that data is available – and sector-level physical risk. The carbon intensity data shown below is one of several inputs to our transition risk framework. The physical risk categorizations are based on an internal methodology that assesses sector-specific characteristics that may lead to physical risk vulnerabilities, such as reliance on outdoor labor, reliance on climate-vulnerable resources, and high geographical concentrations.

Key: Very Low | Low | Moderate | High | Very High | Not analyzed

Sector	Total Credit Exposure (USD million)	Carbon Intensity	Physical Risk
COMMERCIAL & INDUSTRIAL	487,064		
Consumer & Retail	120,555		
Retail	34,199		
Business & Consumer Services	31,640		
Food & Beverage	32,442		
Consumer Hard Goods	14,052		
Leisure	8,222		
Technology, Media & Telecommunications	72,286		
Industrials	72,483		
Machinery & Equipment	33,575		
Construction & Building Materials	16,014		
Agriculture, Forest Products & Textiles	14,720		
Aerospace & Defense	8,174		
Healthcare	62,613		
Oil & Gas	38,668		
Exploration & Production ("E&P") and Oilfield Services	22,395		
Other Oil & Gas	16,273		
Automotive	33,287		
Auto Dealers	16,374		
Auto Manufacturing	16,913		
Utilities	36,218		
Electric	13,460		
Gas	9,090		
Integrated & Other Utilities	13,668		
Chemicals/Plastics	20,030		
Chemicals	14,166		
Plastic & Rubber	5,864		

Sector	Total Credit Exposure (USD million)	Carbon Intensity	Physical Risk
Metals/Mining	15,915		
Steel	4,055		
Aluminum	1,125		
Coal	327		
Other Metals & Mining	10,408		
Transportation	15,009		
FINANCIAL INSTITUTIONS	181,545		
Asset Managers	95,656		
Banks & Finance Cos	51,816		
Insurance	21,045		
Financial Markets Infrastructure	4,962		
Securities Firms	8,066		
REAL ESTATE	170,857		
Multifamily	99,571		
Office	14,942		
Industrial	15,929		
Retail	10,200		
Lodging	3,385		
Other Income Producing Properties	12,852		
Services and Non Income Producing	13,978		
GOVERNMENT & AGENCIES	52,942		
OTHER INDUSTRIES	254,122		
Individuals and Individual Entities	130,815		
Other	123,307		
TOTAL	1,146,530		
of which: exposure to high-intensity sectors	399,356		

Note: Data in the above table is as of December 31, 2022. The carbon intensity heatmap color is based on the average sector total carbon intensity (Scope 1+2+3) in tCO_2e/USD million, weighted by exposure to each counterparty in the sector. The physical risk color is based on internal methodology assessing characteristics of each industry that could lead to physical risk vulnerability. Grey cells indicate sectors and sub-sectors we have not yet scored and/or sectors with insufficient data. Total credit exposure includes retained loans, lending-related commitments and derivative receivables. Our classification of sectors as high-intensity may change over time for various reasons including, for example, as the quality and reliability of emissions data is enhanced in certain sectors and as more companies directly report Scope 3 emissions, thereby displacing the need for reliance on certain data aggregation services that provide Scope 3 emissions estimations.

Market Risk

Market risk is the risk associated with the effect of changes in market factors, such as interest and foreign exchange rates, equity and commodity prices, credit spreads or implied volatilities, on the value of assets and liabilities held for both the short and long term. Climate risk drivers may lead to sharp volatility or persistent changes in the prices of commodities and financial assets; for example, companies in carbon intensive industry sectors without credible transition plans may have assets which are viewed as stranded, resulting in materially depressed equity prices. The Firm has established a stress framework to quantify the impact of the transition risk stress scenarios to vulnerable asset classes. We have also analyzed a series of physical drivers to estimate the potential impacts of various acute and chronic physical risk events to markets exposures.

Country Risk

The Firm, through its LOBs and Corporate, may be exposed to country risk resulting from financial, economic, political or other significant developments, which adversely affect the value of the Firm's exposures related to a particular country or set of countries. The negative implications from climate change may impact a country's economic, fiscal, monetary or political frameworks in numerous ways, in turn, adversely affecting its sovereign credit ratings. Climate risk considerations are incorporated, as appropriate, into existing sovereign ratings and risk management processes. In addition, the Firm has developed a score to help explore the potential sensitivity of sovereign ratings to climate risks beyond the standard rating horizon or under specific stress scenarios.

Operational Risk

Operational risk is the risk of an adverse outcome resulting from inadequate or failed internal processes or systems, human factors or external events impacting the Firm's processes or systems. We have integrated climate risk drivers into our operational risk framework and associated firmwide resiliency processes. Increasingly volatile and severe weather events, including more severe storms, flooding, heat and related impacts, such as drought and wildfires, have the potential to impact the likelihood and severity of a variety of existing operational risks.

Potential climate driven impacts are evaluated through ongoing assessments of operational risks to employees and customers, the Firm's facilities, property and service providers, and the Firm's business activities. Evaluations are documented and may also contribute to the firmwide risk identification framework, which centrally captures risks across all risk types. As an example, the Firm uses these risks to develop business disruption threat scenarios that inform business resiliency planning, testing and simulation exercises. This, in turn, allows the Firm to assess the adequacy of its resiliency capabilities and identify vulnerabilities and opportunities for enhancement. These activities, along with other factors, help enable the Firm to manage and mitigate climate-driven impacts.

Strategic Risk

Strategic risk is the risk to earnings, capital, liquidity or reputation associated with poorly designed or failed business plans or inadequate response to changes in the operating environment. In response to climate change, and in support of our clients transitioning to a lower-carbon economy, the Firm may make changes to its business strategy, product offerings and risk profile.

REPUTATION RISK

Reputation risk is the risk that an action or inaction may negatively impact perception of the Firm's integrity and reduce confidence in the Firm's competence by various constituents, including clients, counterparties, customers, investors, regulators, employees, communities or the broader public. Reputational risk assessment is designed to take into account the commercial consequences of actions or inactions that may impact clients, customers, employees, capital providers and other stakeholders. In many cases we recognize that a position we take will be favored by some and disapproved of by others, and where all positions including neutrality can be controversial.

Climate- and environmental-related business strategies and activities are under increasing scrutiny. Companies are also facing reputational risk from the real or perceived lack of progress made toward climate-related targets, as well as in how they provide transparency around climate-related matters. The Firm may face reputation risk relating to its climate risk framework and environmental sustainability strategy.

LIQUIDITY RISK

Liquidity risk is the risk that the Firm will be unable to meet its contractual and contingent financial obligations as they arise or that it does not have the appropriate amount, composition and tenor of funding and liquidity to support its assets and liabilities. The Firm's liquidity could be impaired by factors such as market-wide illiquidity or disruption, unanticipated outflows of cash or collateral and lack of market or customer confidence in JPMorgan Chase or financial institutions in general.

The Firm has expanded its liquidity stress framework to model the impact of a transition risk stress scenario using the NGFS Divergent Net Zero scenario.

Metrics & Targets

Measuring Our Progress

We intend to measure and report our progress over time on climate-related matters, both to provide information to our stakeholders and to inform how we manage and implement our environmental sustainability strategy. In this section, we provide details of the metrics and targets we are currently using in conjunction with each of the three pillars of our environmental sustainability strategy.

1

SCALING GREEN SOLUTIONS

Including progress toward our goal of financing and facilitating $1 trillion to support climate action, clean energy, and sustainable resource management by the end of 2030.

2

BALANCING ENVIRONMENTAL, SOCIAL AND ECONOMIC NEEDS

Including working to align our lending and underwriting decisions with our net zero aligned targets in key carbon-intensive sectors (i.e., our Scope 3 financed and facilitated emissions) and disclosing absolute financed emissions for key sectors of our financing portfolio.

3

MINIMIZING OUR OPERATIONAL IMPACT

Including our Scope 1, Scope 2 and Scope 3 business-related travel GHG emissions and performance against our climate-related operational targets.

Scaling Green Solutions

$1 Trillion for Green

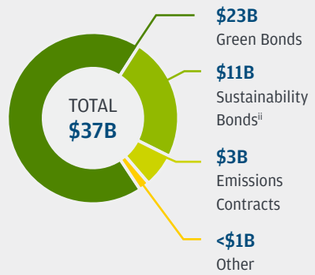
Our ten-year $2.5 trillion Sustainable Development Target, which we set in 2021, aims to advance long-term solutions that address climate change and contribute to sustainable development. As part of this target, we aim to finance and facilitate $1 trillion to support climate action and sustainable resource management. In 2022, our Firm financed and facilitated approximately $70 billion in support of our $1 trillion green objective, primarily through green bond underwriting and renewable and clean energy financing. The table below demonstrates both the depth and breadth of these efforts. We do not expect our progress toward our target to be linear year-to-year, but we plan to publish details of our approach and periodically report on our progress.

To learn more about our $2.5 trillion Sustainable Development Target, including the activities it is designed to support and amplify across our business, see page 6 of our 2022 ESG Report.

Cumulative Green Progress by Eligibility Criteria

	2021 $ billions	2022 $ billions	Total $ billions
Sustainable Transportation	$22	$2	$24
Renewable and Clean Energy[i]	$15	$20	$35
Water Management	$6	$2	$8
Circular Economy and Waste Management	$0	$1	$1
Green Buildings	$2	$4	$6
Clean Technology	$0	$4	$4
Multiple Criteria[i]	$61	$37	$98
Green Total	**$106**	**$70**	**$176**

2022 PROGRESS IN MULTIPLE CRITERIA



Note: Totals may not sum due to rounding.

i. In 2021, "Mixed Use" was reported at $60 billion, and "Renewable Energy & Energy Efficiency" at $14 billion, due to rounding. These figures have since been updated to $61 billion and $15 billion, respectively, and renamed to "Multiple Criteria" and "Renewable and Clean Energy" for clarity purposes and due to refinement of our eligibility criteria per our methodology.

ii. When tracking transactions that support multiple objectives, such as Sustainability Bonds, we count the value of the transaction one time, for one objective, in the following order (as applicable): Green, Development Finance, Community Development. See Our Approach to Our Sustainable Development Target for additional information.

To learn more about our criteria for determining what business activity is eligible to count toward our Sustainable Development Target, and how we account for the value of transactions, see Our Approach to Our Sustainable Development Target.

Balancing Environmental, Social and Economic Needs

Our Net Zero Aligned Targets

To date, we have set net zero aligned targets for eight sectors — Oil & Gas, Electric Power, Auto Manufacturing, Iron & Steel, Cement, Aviation, and — new for 2023 — Shipping and Aluminum. Our net zero aligned targets are currently constructed for 2030 as portfolio-level targets by sector, using an emissions intensity reduction metric.

Below we provide updates to our targets, an updated approach to address Oil & Gas Scope 3 emissions, details of our new targets for Shipping and Aluminum, and performance to date toward our existing targets. In this report, we also disclose our financed emissions on an absolute basis (i.e., absolute financed emissions) for the eight sectors above, and discuss how we are managing data challenges we face in constructing baselines and monitoring progress toward our targets.

UPDATING OUR TARGETS

We aim for our climate strategy to be science-based, reliant on data-driven insights, and designed to adapt as data quality and availability progress. In 2021, we set 2030 interim emissions intensity reduction targets for three sectors — Oil & Gas, Electric Power and Auto Manufacturing. As the first large U.S. bank to do so, we aligned these targets with the then available IEA SDS scenario. Since the publication of the IEA NZE scenario, which aims to limit temperature rise to 1.5 degrees Celsius and achieve net zero emissions by 2050, we have aimed to align all new targets — Iron & Steel, Cement and Aviation in 2022, as well as Shipping and Aluminum for 2023 — with this scenario. To maintain this consistent approach across all of our targets, we are now updating our targets for the Oil & Gas, Electric Power and Auto Manufacturing sectors to align to the more ambitious IEA NZE scenario. Details on updates for each of the targets are provided in the following sections.

OIL & GAS OPERATIONAL

We have increased our Oil & Gas Operational target from 35% to 45% to align with the IEA NZE scenario. While the overall emissions reduction framework and decarbonization levers remain unchanged, we aim to continue our engagement with our clients on key impact areas such as fugitive and vented methane emissions and CO_2 from flaring.

ELECTRIC POWER

In updating our Electric Power target to align with the IEA NZE scenario, we have also revised our target to take into account our financing activities to companies in countries outside of the Organization for Economic Co-operation and Development ("OECD"). Projections for the OECD region assume more stringent (i.e., lower) carbon intensities than those for non-OECD countries, reflecting the expectation that OECD countries will transition more aggressively in the near term. Considering that the current distribution of companies in our Electric Power portfolio has a smaller share of non-OECD representation than the world overall, we have calibrated our target to take into account the split of clients in our portfolio between OECD and non-OECD member countries.

AUTO MANUFACTURING

When we first derived our portfolio baseline and 2030 target, we relied on scenarios and inputs that used the New European Driving Cycle ("NEDC") testing procedure for measuring fuel economy and CO_2 emissions. Since then, a new global standard — Worldwide Harmonized Light Vehicle Test Procedure ("WLTP") — that more closely simulates real-world driving conditions to estimate emissions was adopted. We have adjusted our target from NEDC test cycle to WLTP and aligned with the IEA NZE scenario; this has changed our emissions intensity reduction target from 92.3 g CO_2/km to 86.1 g CO_2/km.

We recognize that progress toward our targets is contingent on changes in energy demand and the real economy, as well as many other factors that will impact the speed of the transition. We will continue to review and reassess our targets as the global transition progresses.

Our Carbon Compass℠ methodology provides additional details on our approach, including key sectoral considerations, decarbonization pathways and data and metrics used for our targets.

ENERGY MIX (SCOPE 3 EMISSIONS)

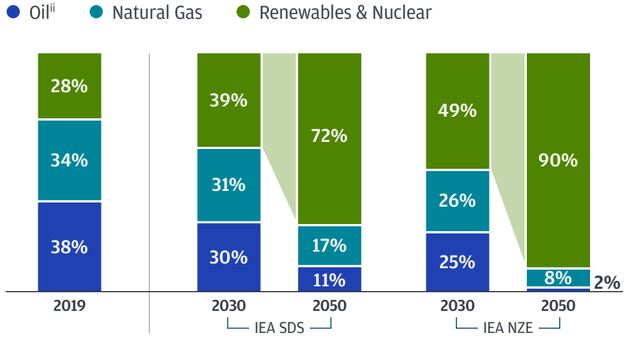
In conjunction with updating our Oil & Gas End Use (Scope 3) target to align with the IEA NZE scenario, we have also expanded its boundary to adopt a more comprehensive view of the global energy system – including the various factors that contribute to the achievement of Scope 3 net zero emissions for the global energy sector – and reflect the trends we have seen in the Oil & Gas industry's decarbonization goals. The IEA NZE scenario pathways reflect more reliance on electrification, and in, turn zero-carbon power, than the IEA SDS scenario to which our original target was aligned. Although the Oil & Gas End Use (Scope 3) IEA SDS-aligned target was challenging, it was potentially feasible with a narrow boundary focused on the decarbonization efforts of the Oil & Gas sector alone. While the Oil & Gas sector is leading in biofuels and CCUS investments, the build-out of zero-carbon power is taking place primarily in the Electric Power sector. Therefore, with the change to the IEA NZE scenario, we are expanding the scope of our Oil & Gas End Use (Scope 3) target – now called Energy Mix – to include zero carbon power generation activity from our Electric Power portfolio and better capture how our financing is helping to facilitate the substitution of fossil fuels with zero- and low-carbon alternatives.

While we have expanded our target to include zero-carbon power generation activity from our Electric Power portfolio, we have also increased the ambition of our target. Our IEA SDS aligned target for Oil & Gas End Use was to achieve a 15% reduction by 2030 from our 2019 baseline. Aligning this target with the IEA NZE scenario would require an increase to a 29% reduction. The expansion to Energy Mix, which includes all zero-carbon power generation in our target's boundary, implies a global carbon intensity of 29.5 g CO_2/MJ (or a 33% reduction between 2019 and 2030) under the IEA NZE scenario. Given that our 2019 baseline exceeded the 2019 global level, we are setting an adjusted target of a 36% reduction by 2030 from our 2019 baseline to align with a carbon intensity of 29.5 g CO_2/MJ required under the IEA NZE scenario.

We believe this updated target better captures the shift in fuel mix of the global energy complex, and balances the trade-offs between fossil-fuel based and zero- or low-carbon energy sources to achieve net zero emissions by 2050. Our approach allows further engagement with our Oil & Gas clients on their Scope 3 decarbonization plans, while also accelerating our financing of zero-carbon power generation, and enables us to balance energy transition needs and energy security concerns.

We will maintain a separate Oil & Gas Operational (Scope 1 & 2) net zero aligned target that focuses on key operational decarbonization actions that we believe are the most relevant for emission reduction in the Oil & Gas sector, such as mitigating methane emissions and minimizing flaring. We will also maintain our Electric Power target that focuses specifically on the decarbonization of electric grids. Due to the integrated nature of our Energy Mix target, and its partial overlap with our existing Electric Power target, we will include our financing of zero-carbon power generation activities in both targets' calculations, which we believe is consistent with the IEA NZE scenario's treatment of global power generation.

Global Energy Supply (excluding Coal[i]) by Source in the IEA NZE and SDS Scenarios



Source: IEA World Energy Outlook

Note: 2019 data, and 2030 and 2050 IEA SDS Scenario projections are sourced from World Energy Outlook 2021 (Table A.1a: World energy supply and Table A.1c: World energy supply, respectively) published in October 2021. 2030 and 2050 IEA NZE Scenario projections are sourced from World Energy Outlook 2022 (Table A.1c: World energy supply) published in October 2022.

i. Coal is excluded above to reflect that coal is not included in the Firm's IEA NZE-aligned Energy Mix target.

ii. Excludes non-energy use oil.

Progress toward our portfolio-weighted average Energy Mix carbon intensity target is dependent on three factors:

1. **INCREASE FINANCING OF ZERO-CARBON POWER GENERATION**
   Solar, Wind, Hydro, Biomass, Nuclear, Geothermal

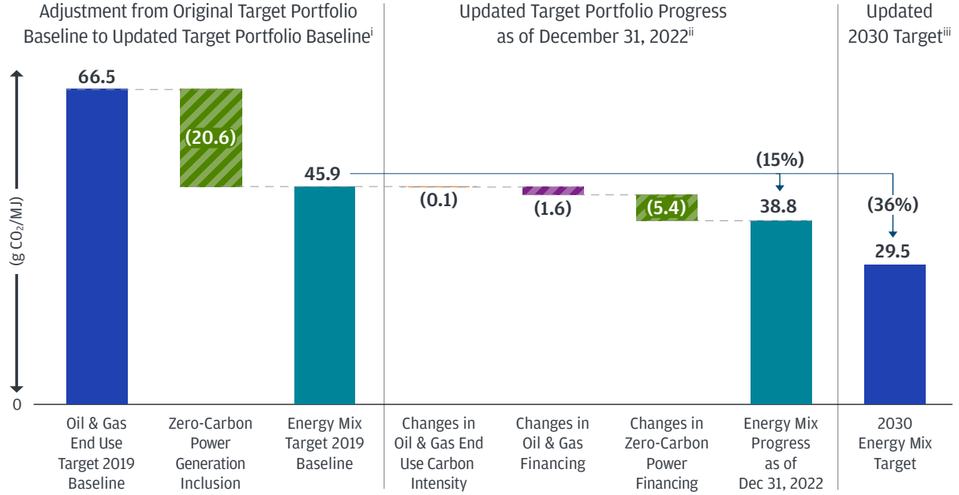
2. **REDUCTION IN OIL & GAS SECTOR SCOPE 3 INTENSITY**
   Shift from oil to natural gas, biofuels, hydrogen, zero-carbon power; implementation of CCUS

3. **DECREASE IN OIL & GAS SECTOR FINANCING**

Energy Mix Target Summary

Activity Focus	Production and refining of oil and natural gas for end use combustion Production of low-carbon fuels Zero-carbon power generation by Oil & Gas companies NEW Zero-carbon power generation by Electric Power companies
Scope	Scope 3 CO_2 emissions from end use of energy products
Metric	g CO_2 / MJ
Scenario	IEA NZE with adjustments to exclude coal and non-energy uses of oil
2030 Target	29.5 g CO_2 / MJ

Breakdown of our Oil & Gas End Use Target Update



i. Adjustment from Original Target Portfolio Baseline to Revised Target Portfolio Baseline: Expansion of target boundary to include 2019 zero-carbon power generation intensity resulted in a revised 2019 baseline of 45.9 g CO_2/MJ.

ii. Portfolio Carbon Intensity Progress as of December 31, 2022 (from Revised Baseline): As of December 31, 2022, a decrease in Oil & Gas End Use intensity, combined with a decrease in our exposure to the Oil & Gas sector and an increase in our exposure to zero-carbon power generation, resulted in a 15% reduction from the revised 2019 baseline.

iii. Revised IEA NZE-aligned Target: Aligning our Oil & Gas End Use target to IEA NZE scenario, coupled with the expansion of the target boundary to include zero-carbon power generation, resulted in a revised Energy Mix net zero aligned carbon intensity target of 29.5 g CO_2/MJ, representing a 36% reduction from our revised 2019 baseline of 45.9 g CO_2/MJ.

NEW SECTOR TARGETS

We continue to advance our efforts to set emissions intensity reduction targets for additional carbon-intensive sectors in our financing portfolio. In this report, we are releasing details of the initial baselines and net zero aligned targets we have set for two new sectors: Shipping and Aluminum. We have chosen to prioritize these sectors given their contribution to total global emissions, and the technical and economic maturity of their available decarbonization pathways.

Our work reflects our dedication to engage with and support our clients as they navigate the low-carbon transition and our resolve to help address global needs, such as climate change and energy security.

Metrics, Baselines and Targets – Shipping and Aluminum[18, 19]

SECTOR	DETAILS			BASELINE		2030 TARGETS
	Scope(s) Included	Scenarios Used	Unit of Measurement	Baseline Year[i]	Portfolio Baseline	
Shipping	Scope 1 (tank-to-wake)	IEA NZE	g CO_2e / t-nm	2021	12.5	**8.4** -33% from baseline
Aluminum	Scopes 1 and 2	IEA NZE	t CO_2e / t aluminum	2021	8.7	**6.5** -25% from baseline

i. Baseline year corresponds to the last year with available data.

The following highlights key aspects of the methodology for each of the newly included sectors:

SHIPPING

Our target for the Shipping sector focuses on the intensity of Scope 1 tank-to-wake ("TTW") CO_2 emissions associated with the combustion of fuels by international maritime freight transportation vessels. By focusing on Scope 1 emissions from fuel combustion, we account for both operational efficiency improvements and fuel switching initiatives that are central to the sector's decarbonization strategy.

ALUMINUM

Our target for the Aluminum sector focuses on the intensity of Scope 1 and 2 GHG emissions from key emission-intensive activities associated with both primary and secondary aluminum production. By including both Scope 1 and 2 emissions, we are able to capture the full range of decarbonization levers available for refining (e.g., process electrification, switch to low-carbon fuels such as hydrogen) and smelting (e.g., sourcing renewable power, use of inert anodes) activities.

For more information on the methodology behind setting our new net zero aligned targets, please see our 2023 Carbon Compass℠ methodology.

PROGRESS TOWARD OUR EXISTING TARGETS

The below table summarizes our progress toward our net zero aligned targets as of December 31, 2022. More detail on our progress in each of these sectors is provided below. We expect that progress in our portfolios will benefit from our continued engagement with clients, as well as from the maturity of our CAF in assessing new in-scope transactions over time. To learn more about how we are working to guide our financing portfolios toward net zero emissions by 2050, please see pages 11–12 in the Strategy section.

We believe the actions we are taking today will position us well to drive progress toward our targets in the years ahead — understanding that such progress will not be linear and knowing it will take time to implement effective solutions while also continuing to promote energy security and meet important economic and societal needs around the world. Global policy action that drives the adoption of clean energy, promotes the development of clean technology supply chains and attracts private sector investment, coupled with market behavioral changes are key enablers of our progress. We remain focused on responding to this challenge over the long term, continuing to support our clients through their decarbonization journey, and seeking opportunities to create long-term value for our shareholders.

18 Our net zero aligned targets are currently constructed for 2030 as portfolio-level targets by sector, using an emissions intensity reduction metric.

19 Our targets are based on available data and scenario projections as of September 2023. Future updates to the IEA NZE scenario and/or other inputs — for example, changes in global emissions, available technologies or economic conditions — may result in changes to the projected emissions trajectories, and we may therefore change our targets for these sectors. We may also make additional revisions of our baselines for one or more of the included sectors in response to improved visibility, quality or availability of data. We intend to monitor these changes and assess the need to revise our baselines and targets as appropriate.

Progress on Net Zero Aligned Targets[20, 21]

SECTOR	DETAILS			BASELINE		2030 TARGETS	PROGRESS	
	Scope(s) Included	Scenarios Used	Unit of Measurement	Baseline Year	Portfolio Baseline		Portfolio as of December 31, 2022	% Change from Portfolio Baseline
Energy Mix (updated target)	Scope 3 (end use)	IEA NZE	g CO_2 / MJ	2019	45.9	**29.5** -36% from baseline	38.8	(15)%
Oil & Gas Operational	Scopes 1 and 2	IEA NZE	g CO_2e / MJ	2019	4.9 (revised[i])	**-45%** from baseline (revised)	4.8	(1)%
Electric Power	Scope 1	IEA NZE	kg CO_2 / MWh	2019	342.6 (revised[ii])	**105.3** -69% from baseline (revised)	283.5	(17)%
Auto Manufacturing	Scopes 1, 2 and 3 (tank-to-wheel)	IEA NZE	g CO_2e / km	2019	164.8 (revised[iii])	**86.1** -48% from baseline (revised)	139.1	(16)%
Iron & Steel	Scopes 1 and 2	IEA NZE	t CO_2e / t crude steel	2020	1.412 (revised[iv])	**0.981** -30% from baseline (revised)	1.300	(8)%
Cement	Scopes 1 and 2	IEA NZE	kg CO_2e / t cementitious product	2020	639.3 (revised[v])	**460** -28% from baseline	634.4	(1)%
Aviation	Scope 1 (tank-to-wake)	IEA NZE	g CO_2 / RTK	2021	972.6	**625** -36% from baseline	940.1	(3)%

i. Revised 2019 portfolio baseline for Oil & Gas Operational to 4.9 g CO_2e / MJ from previously disclosed 5.4 g CO_2e / MJ.
ii. Revised 2019 portfolio baseline for Electric Power to 342.6 kgCO_2 / MWh from previously disclosed 375.6 kgCO_2 / MWh.
iii. Revised 2019 portfolio baseline for Auto Manufacturing to 164.8 gCO_2e / km from previously disclosed 157.8 g CO_2e / km.
iv. Revised 2020 portfolio baseline for Iron & Steel to 1.412 t CO_2e / t crude steel from previously disclosed 1.454 t CO_2e / t crude steel.
v. Revised 2020 portfolio baseline for Cement to 639.3 kg CO_2e / t cementitious product from previously disclosed 647.8 kg CO_2e / t cementitious product.

ENERGY MIX (SCOPE 3 EMISSIONS)

For our expanded Energy Mix target, we have revised our 2019 baseline to reflect the broader activity boundary and additional exposure. As of December 31, 2022, we have driven a significant amount of progress (approximately 15% reduction from baseline) toward our Energy Mix target. This change is largely attributable to our increased financing of zero-carbon power generation coupled with a reduction in our exposure to the Oil & Gas sector, despite oil and natural gas demand staying largely unchanged between 2021 and 2022. The reduction in exposure to the Oil & Gas sector is primarily a function of the industry's external financing needs – especially from debt and equity capital markets – reducing amid a strong commodity price environment that prevailed over 2021 and 2022. Similar to our approach before the expansion of our metric, we have sustained our efforts to engage with our Oil & Gas clients to help them design pathways to reduce the carbon intensity of their product mix. As of December 31, 2022, our portfolio's Oil & Gas End Use carbon intensity metric would have been relatively flat, mirroring the trend seen across the global Oil & Gas sector during the same period. Our expectation remains that, over time, our Oil & Gas clients will tilt their energy mix to favor natural gas – which has a lower relative carbon intensity – over oil and invest in low-carbon fuels and other decarbonization technologies at scale. We also expect for non-combustible products to become a larger share of end use and to increase our financing of zero-carbon power generation across the energy complex and support the global energy transition.

We provide additional information on the reconciliation from our Oil & Gas End Use target baseline to Energy Mix target progress on page 25.

OIL & GAS OPERATIONAL

We have revised our Oil & Gas Operational 2019 baseline to reflect data quality improvements over 2022 – see page 30 for more details on the data challenges we have experienced and how we are working to address them. Against this revised 2019 baseline, our portfolio emission intensity decreased by approximately 1%. Over the two years ending December 31, 2022, clients in our portfolio showed significant emissions intensity improvements; however, the reduction in exposure to the sector – and resulting shift in weights of each client – offset much of the impact from these improvements on our overall portfolio-level carbon intensity. We expect the portfolio will continue to benefit in the coming years from our engagement with our clients on key areas of focus, such as methane and flaring.

[20] Our net zero aligned targets are currently constructed for 2030 as portfolio-level targets by sector, using an emissions intensity reduction metric.

[21] Our targets are based on data and scenario projections available as at September 2023. Future updates to the IEA NZE scenario and/or other inputs – for example, changes in global emissions, available technologies or economic conditions – may result in changes to the projected emissions trajectories, and we may therefore change our targets for these sectors. We monitor these changes, as well as improved visibility, quality or availability of data, and assess the need to revise our baselines and targets as appropriate. We revised baselines for the Oil & Gas Operational, Electric Power, Auto Manufacturing, Iron & Steel, and Cement sectors this year.

ELECTRIC POWER

We have revised our Electric Power 2019 baseline to reflect data quality improvements and client scoping changes for select clients. Despite the lower revised baseline value, our Electric Power portfolio emissions intensity has decreased by approximately 17%, compared to the revised baseline, over the two years ending December 31, 2022. This decrease was driven by a combination of our clients moving their generation mix to lower emissions sources and the Firm increasing financing to companies and projects with lower emissions intensity. The expansion of our Energy Mix target to encompass zero-carbon power generation will further align progress in our Electric Power portfolio with our broader goal of increasing our financing of low- and zero-carbon energy, including renewables.

AUTO MANUFACTURING

We have revised our Auto Manufacturing 2019 baseline to incorporate the change in data inputs from NEDC to the WLTP. While this change better reflects real-world emissions of passenger vehicles, it results in a higher Scope 3 carbon intensity for clients in our baseline. Compared to the revised 2019 baseline, our portfolio emissions intensity has decreased by approximately 16% as of December 31, 2022. This was driven mainly by banking new and emerging pure-play EV manufacturers and the growing portfolio of EV offerings by legacy auto manufacturers. The sector's overall effort to transition to an all-EV future, as well as the policy and market behavior changes that are catalyzing the shift are prerequisites and important considerations in allowing us to continue to make progress toward our portfolio-level emissions intensity reduction target.

IRON & STEEL

We have revised our Iron & Steel 2020 baseline to reflect data quality improvement. Compared to our revised 2020 baseline, our portfolio emissions intensity has decreased by approximately 8% as of December 31, 2022. The decrease is largely attributable to improvements in client carbon intensity, with the remainder attributable to our portfolio exposure shifting to lower intensity clients. We expect that the progress we are beginning to observe in clients' emissions intensity will continue in the near- to medium-term as under construction electric arc furnaces (EAFs) are made available and clients increasingly rely on low- and zero-carbon sources of energy for their operations. Additionally, as clients increasingly recycle scrap, we anticipate a reduction in the need for iron inputs and the emissions associated with producing it. We are continuing to engage with our clients on their decarbonization initiatives and will continue to provide advisory and financing solutions to support them in their decarbonization efforts.

CEMENT

We have also revised our 2020 baseline for our Cement portfolio to reflect data quality improvements. Compared to our revised 2020 baseline, our Cement portfolio emissions intensity has decreased by approximately 1% as of December 31, 2022. We remain optimistic on the sectors' ability to invest in decarbonization efforts, as several clients, representing over half of our portfolio exposure, are beginning to reduce their carbon intensity. Given the sector's reliance on carbon capture utilization and storage (CCUS) technology to drive decarbonization and its relatively nascent scale today, we expect medium- to long-term progress to be more significant than what we have seen so far.

AVIATION

Our Aviation portfolio's emissions intensity has decreased by approximately 3% as of December 31, 2022, compared to our 2021 baseline. Progress has been primarily driven by shifts in our portfolio weights toward clients with lower carbon intensity.

We expect further progress in our Aviation portfolio as clients in the sector purchase new aircrafts and operator load factors continue to increase as air travel returns to pre-pandemic levels. However, scaling the availability of SAF, accelerated build-out of the SAF value chain, and airlines successfully securing SAF offtake agreements will be key to material decarbonization of the sector.

Measuring Our Absolute Financed Emissions

Measuring and reporting our financed emissions on an absolute basis (i.e., absolute financed emissions) is a growing area of interest for many of our stakeholders. Absolute financed emissions can be a useful metric in understanding the impact of our emission reduction efforts. We have taken steps to quantify and disclose absolute financed emissions for sectors of our financing portfolio for which we have set net zero aligned targets.

In this section, we provide details of the absolute financed emissions associated with eight sectors of our financing portfolio, as well as our approach to calculating them. We recognize the methodologies that exist today to calculate absolute financed emissions are still in early stages, and we aim to monitor industry developments to inform our approach as data, methodologies and climate science continue to evolve.

OUR APPROACH TO CALCULATE OUR ABSOLUTE FINANCED EMISSIONS

Our methodology for calculating absolute financed emissions builds on international standards and guidance while also aiming to align with the principles and parameters underlying our sector-specific net zero aligned targets. We tailored our approach to focus on what we consider to be the most important sources of emissions for each sector, accounting for our financial exposure to each of our clients in those sectors and — to address one of the most significant challenges of measuring absolute financed emissions — minimizing distortion that may result from the effect of short-term market volatility on client valuations. We believe this approach calculates absolute financed emission figures that correlate with real-world emissions performance of clients in our applicable sector portfolios.

We calculate absolute financed emissions for a given sector portfolio as follows:

$$\text{Absolute Financed Emissions} = \sum\left(\frac{\text{Financing}}{\text{Company Value}} \times \text{Client Absolute Emissions}\right)$$

The table below summarizes the specific information we use for the three elements required for the calculation — financing, company value, and client absolute emissions — and how these are determined for different sectors, forms of financing and whether the client is a public or private company.

FINANCING	Lending & Tax Equity	12-mo monthly average committed financing
	Capital Markets	100% of Capital Markets activity on a 3-year rolling average basis
COMPANY VALUE	Public companies	3-year average enterprise value including cash (EVIC)
	Private companies	3-year average year-end Debt + Equity
CLIENT ABSOLUTE EMISSIONS	Energy Mix	Scope 3 CO_2 emissions from end use of energy products
	Oil & Gas Operational	Scope 1 and 2 CO_2e from production and refining of oil, natural gas, bioenergy and other energy products
	Electric Power	Scope 1 CO_2 from fuel combustion for power generation
	Auto Manufacturing	Scope 1 and 2 CO_2e from manufacturing Scope 3 end use tank-to-wheel CO_2e from fuel combustion
	Iron & Steel	Scope 1 and 2 CO_2e — including energy-related and process emissions — from production of primary and secondary crude steel
	Cement	Scope 1 and 2 CO_2e from cement manufacturing
	Aviation	Scope 1 tank-to-wake CO_2 from flights
	Aluminum	Scope 1 and 2 CO_2e from smelting (primary production) and recycling (secondary production)
	Shipping	Scope 1 tank-to-wake CO_2 from international shipping vessel operations

The following provides additional detail on our approach to determining each of the three elements used in our calculation:

- **Financing.** To determine the amount of financing JPMorgan Chase has provided to a client, we include all lending, tax equity and capital markets activity.
  - For lending and tax equity, we use the 12-month monthly average balance of committed financing. Using the 12-month monthly average enables us to capture the impact of short-term obligations, such as bridge loans, which frequently have terms of less than one year.
  - For capital markets activity — also known as facilitated emissions — we include 100% of our participation, on a three-year rolling average basis. We chose 100% of our participation as we believe it provides a more complete picture of our financing activity and how we are supporting our clients through direct lending and capital markets facilitation. We use a three-year rolling average to address the significant volatility often observed with capital markets transactions, driven in part by companies typically only going to the market for additional financing every few years.
- **Company Value.** For the value of public companies, we use enterprise value including cash ("EVIC"). We use a three-year rolling average of EVIC in order to control for potential distortion due to the effect of market volatility on company valuations. For the value of private companies, we use the sum of total company equity and debt as found on the company's balance sheet. We use a three-year rolling average of year-end equity and debt in order to control for potential short-term variation that could otherwise distort our calculation of absolute financed emissions.
- **Client Emissions.** We include client absolute emissions within the same scopes and boundaries as we have defined for each of our sector-specific net zero aligned targets and therefore rely on the same sources of client emissions data for each sector. Where our preferred form of data is unavailable for a given client, we estimate absolute emissions using a revenue-based emissions factor based on the median of sector clients for which data is available. For a small number of companies in our portfolio, EVIC or equity and debt may be unavailable. In these cases, we estimate absolute financed emissions using an asset-based emissions factor based on the median of sector clients for which data is available (see our Carbon Compass℠ methodology for more information).

When calculating absolute financed emissions for a sector portfolio, we assign a data quality score for each client depending on the data and method used to determine absolute emissions for that client, with 1 representing highest quality and 5 representing lowest quality. This is consistent with the data quality scoring methodology recommended by the Partnership for Carbon Accounting Financials ("PCAF"). We then calculate and report a weighted average data quality score for each sector based on the financing provided to each client relative to our total financing to the sector. Assigning data quality scores helps us to understand the accuracy of the data used to calculate our absolute financed emissions, and to consider strategies for improving data quality over time. Reporting data quality scores helps us increase transparency and accountability. Our objective is to use high quality data to achieve as accurate as possible absolute financed emission accounting.

We also calculate the economic emission intensity for each of the eight sectors of our financing portfolio, which can be useful for comparing different sector portfolio emissions by unit of lending or capital markets activity. We calculate economic emission intensities by dividing the absolute financed emissions by the economic value of the activity (lending or capital markets).

We aim to monitor evolving best practices on absolute financed emissions measurement to inform our methodology and plan to continue to report annually on this metric. While we believe that our approach is suitable for our calculated absolute financed emissions to correlate with real-world emissions performance, we also disclose a version of this metric aligned to PCAF within the appendix section of this report (see page 34).

For more information on our approach, see the "Absolute Financed Emissions" section in our Carbon Compass℠ methodology.

Absolute Financed Emissions as of December 31, 2022

SECTOR	SCOPE(S) INCLUDED	ABSOLUTE FINANCED EMISSIONS (million t CO_2e)		ECONOMIC INTENSITY (per US$1 million of lending/capital markets)		DATA QUALITY SCORES (1–5)
		For Committed Lending (Financed Emissions)	For Capital Markets (Facilitated Emissions)	For Committed Lending (Financed Emissions)	For Capital Markets (Facilitated Emissions)	
Energy Mix[i]	Scope 3 (end use)	128.3	51.2	2,907.8	2,496.7	3.1
Oil & Gas Operational	Scopes 1 and 2	6.8	3.4	265.5	278.9	3.1
Electric Power	Scope 1	25	9.2	752	569	3.1
Auto Manufacturing	Scopes 1, 2 and 3 (tank-to-wheel)	2.0	2.4	499.4	573.0	3.2
Iron & Steel	Scopes 1 and 2	2.9	1.3	1,481.4	1,522	1.5
Cement	Scopes 1 and 2	2.2	1.3	1,733.5	1,738.3	1.3
Aviation	Scope 1 (tank-to-wake)	0.9	1.2	488.5	437.9	3.0
Shipping	Scope 1 (tank-to-wake)	0.2	0.1	567.9	255.2	1.7
Aluminum	Scopes 1 and 2	0.5	0.8	773.8	2,023.1	3.1

i. Due to the integrated nature of our Energy Mix target, and its partial overlap with our existing Electric Power target, we will include our financing of zero-carbon power generation activities in both targets' calculations.

Data Challenges

Improving the quality, timeliness and availability of data is a key component to properly measure emissions and monitor progress over time. This section summarizes the key points on data considerations and challenges that we continue to face, as well as the steps we are taking to address them.

MEASUREMENT VS. ESTIMATION

There are well-known challenges with the quality and reliability of emissions data in many sectors. This means we sometimes rely on estimated versus directly measured emissions data. For example, in the Oil & Gas sector, there are inconsistencies in the measurement, management and reporting of data across organizations, as well as the lack of reliable and standardized techniques for measurement in certain areas, such as methane emissions. As a result, reported methane emissions rely on estimation methods that are less accurate than direct measurement methods. We are working with industry partners and NGOs to help make direct measurement technologies the preferred method of tracking and reporting methane emissions. More generally, emerging best practices, including reporting to organizations that provide data aggregation services and soliciting assurance for reported GHG emissions data will help improve emission-related data quality and reliability.

DATA LAG

Another challenge we consistently face is with the timely availability of data inputs to calculate carbon intensity. In the Auto Manufacturing sector, for example, certain data from regulatory sources can experience significant delays – sometimes up to two to three years. In such cases, we seek to address gaps using a defined data waterfall approach that may include company-disclosed figures, provided they are verified and prepared in line with recommended protocols that we have identified. Failing that, we use proxy values. As climate- and sustainability-focused disclosure becomes more standardized, we expect lags – especially on company-reported data – to reduce gradually.

COMPARABLE METHODOLOGIES

While we seek to design and implement robust proxies that minimize the impact on our portfolio when preferred data becomes available, there are cases where this may not be achievable. For example, in our Electric Power portfolio, a small proportion of companies for which no data is available receive a default carbon intensity based on a relatively conservative proxy. Unless the company's North America Industry Classification System codes or project financing use of proceeds indicate it to be a zero-emitting power producer, in which case it is assigned a carbon intensity of zero, the company is assigned a fuel mix that is equal parts coal and natural gas. However, due to the large differences between the emissions intensities of the different fuel types, there could be significant differences between estimates and actual data. To mitigate this, we are continuing to work with our clients and other stakeholders to improve overall quality and availability of data. We expect to periodically review our data sourcing choices to assess whether better alternatives have become available.

LACK OF DATA ON EMERGING DECARBONIZATION TECHNOLOGIES

Emerging technologies such as hydrogen, biofuels, carbon capture, use and storage, and carbon credits – will play a key role in helping clients decarbonize. However, data availability in these areas remains a significant challenge. Innovative solutions continue to emerge – such as the use of blockchain to trace carbon credit ownership and retirement, mitigating concerns associated with the use of unverified public reports – but lack the scale today that is necessary to meaningfully impact our portfolio-level emissions intensity. We recognize that data in this space is evolving, and we expect to consider viable data solutions as they may become available.

Minimizing Our Operational Impact

We strive to minimize the environmental impact of our operations including measuring and reporting our Scope 1 and Scope 2 emissions, as well as our Scope 3 business-related travel emissions, and setting targets to improve our performance across several related dimensions. For more information on our Operational Sustainability targets, visit our website.

Operational GHG Emissions

JPMorgan Chase's reported 2022 operational GHG emissions were driven by two primary activities: powering our buildings (e.g., electricity, heating and cooling) and business travel. Scope 1 GHG emissions include those from building operations and company-owned aircraft and vehicles. Scope 2 emissions, from purchased electricity, are the largest driver of our building-related emissions and overall operational GHG footprint. The majority of our Scope 3 business travel-related emissions are from commercially operated air travel. A small portion of our business travel emissions are Scope 1 emissions from company-owned aircrafts and vehicles.

For the third consecutive year, we met our target to achieve and maintain carbon neutrality across our global operations annually[22], and we aim to continue reducing our operational GHG emissions. The table below summarizes our 2019–2022 emissions, including data that shows our progress toward our target to reduce Scope 1 and Scope 2 (location-based) emissions by 40% by 2030 from a 2017 baseline.

2019–2022 GHG Emissions Data[23]

	2022	2021	2020	2019	2017 (Baseline year)
GHG EMISSIONS ($mtCO_2e$)[i,ii]					
Scope 1 – Direct[iii]	88,553	84,911	81,944	102,423	93,031
Natural gas	56,420	58,820	55,080	68,428	60,422
Propane	23	57	228	300	234
Fuel oil	499	627	629	1,391	1,387
Jet fuel	10,353	6,228	4,013	8,558	9,160
Fugitive emissions	17,658	17,517	18,940	19,448	20,121
Diesel	2,544	1,031	2,568	2,881	1,655
Fleet	1,055	631	486	1,416	52
Scope 2 (Location) – Indirect	783,616	755,514	816,056	851,622	922,762
Purchased electricity	778,566	749,234	811,127	842,994	913,188
Purchased steam and chilled water	5,050	6,280	4,929	8,627	9,574
Total Scope 1 and Scope 2 (Location)[iv]	**872,169**	**840,425**	**898,000**	**954,045**	**1,015,794**
Progress toward 40% emission reduction target[v]	-14%	-17%	-12%	-6%	–
GHG emission intensity[vi]	6.8	6.9	7.5	8.2	10.1
Scope 2 (market) – indirect	5,050	6,280	4,929	711,595	793,746
Purchased electricity	–	–	–	702,968	784,172
Purchased steam and chilled water	5,050	6,280	4,929	8,627	9,574
Total Scope 1 and Scope 2 (market)	**93,603**	**91,191**	**86,873**	**814,018**	**886,777**
Scope 3 (Category 6 – business travel)[vii]	**156,845**	**38,336**	**36,169**	**181,004**	**187,020**
Verified carbon offset emissions reductions	250,448	129,527	123,042	189,327	175,155
Net emissions: Scope 1, 2 (market) and 3	**–**	**–**	**–**	**805,694**	**898,642**

Note: Totals may not sum due to rounding.

i. JPMorgan Chase utilizes an operational control approach to establish boundaries for our GHG inventory. This includes owned and leased facilities for which we control the energy usage.

ii. Scope 1, 2, and 3 emissions were verified for 2017–2022. Water consumption has been verified for 2018–2022. Other data has not been subject to external verification. Some sources of emissions have been analyzed and found to be deminimus as they account for less than 5% of emissions.

iii. Scope 1 emissions include emissions from corporate air travel and owned vehicle fleet.

iv. Emissions increase in 2022 is predominantly driven by continued improvements in data quality and availability.

v. Reduction over 2017 baseline.

vi. Includes Scope 1 and 2 (location-based) GHG emissions; $mtCO_2e$/millionUSD revenue.

vii. Scope 3 emissions include business travel (air, rail, car, and hotel stays for 2020, 2021, and 2022, air and rail travel in 2019, and only air travel in 2017 and 2018). Increase in Scope 3 business travel emissions in 2022 is predominantly driven by resumed travel post-COVID-19 pandemic.

[22] Operational carbon neutrality achieved, in part, using contractual instruments, including applicable Energy Attribute Certificates and carbon credits.

[23] Reported GHG Emissions are based on available data as of December 2022. Future improvements to data quality and availability or updates to emissions calculation methodologies may result in revisions to our baseline and historical emissions data.

Renewable Energy

With the majority of our reported operational emissions linked to purchased electricity, increasing our use of renewable energy is a central part of our strategy for reducing emissions. Since 2020, we have achieved our target of sourcing renewable energy for 100% of our global power needs annually, which we have accomplished through a combination of on-site solar installations at JPMorgan Chase commercial and retail locations and the purchase of renewable energy via both long-term power purchase agreements and applicable EACs.

The table below summarizes our renewable energy use obtained via either on-site generation or contractual instruments.

In recognition of the challenges and limitations associated with many available EACs, we are also working to increase the proportion of renewable energy we source via other methods, including on-site generation and long-term power purchase agreements. We have a target to increase this proportion to at least 70% by 2025.

Renewable Energy Use 2019–2022

	2022	2021	2020	2019
RENEWABLE POWER (MWh)				
Progress toward 70% long-term renewable target[i]	37%	23%	–	–
Electricity production (on-site solar)	41,390	26,125	13,929	4,569
Contractual instruments[ii]	2,084,734	2,060,483	2,166,728	380,901
Proportion of power use from renewable sources (production and instruments)	100%	100%	100%	18%

i. Progress reported for years following target creation in 2021.

ii. Contractual instruments include applicable Energy Attribute Certificates (“EACs”), Renewable Energy Credits (“RECs”) from long-term renewable energy procurement agreements, renewable energy guarantees of origin (“REGOs”) and renewable supply contracts.

Conclusion & Appendices

Looking Ahead

As a global financial institution, we can play an important role in helping to respond to the climate challenge and meeting the world's energy needs. We are supporting clients across sectors and building our own capabilities to help accelerate the transition to a low-carbon economy and drive revenue opportunities. Our environmental sustainability strategy is designed to provide the foundation for delivering on our climate goals. It informs our work and the actions we take to align our lending and underwriting decisions with our net zero aligned targets and progress toward our operational GHG emissions reduction target. Moving forward, we will plan to continue our efforts across the pillars of our environmental sustainability strategy, including:

- Expanding our Carbon Compass℠ methodology with emissions intensity reduction targets for additional carbon-intensive sectors in our portfolio.
- Deploying our capital in a responsible way and pursuing our target to align our lending and investment portfolios with net zero emissions by 2050.
- Scaling green solutions with the aim of contributing to global climate and sustainability goals, including pursuing our target to finance and facilitate $1 trillion to support climate action by the end of 2030.
- Minimizing our operational impact by continuing to advance innovative solutions to reduce our direct and indirect GHG emissions in our corporate offices, bank branches and data centers.

We anticipate that our progress will not be linear and will be subject to certain prerequisites, including market conditions, public policy and technological advancement. We will continue to periodically report on details of our approach and progress.

We seek to set high standards in our business activities and with our stakeholders. This includes our independent decision-making, remaining true to our principles and designing solutions that support the best interest of our business and support our clients. Our governance structures are designed to promote accountability, transparency and ethical behavior, consistent with our corporate standards and Business Principles; help us drive progress toward key targets; and support transparency on our work, including implementing processes and controls for data disclosure and verification. Moving forward, we will continue to evaluate whether further enhancement of these governance systems is warranted.

We plan to continue to adapt and enhance our environmental sustainability strategy, governance systems, approach to risk management, and transparency on our work and progress. We may enhance and adjust our efforts based on internal learnings, advances in market best practice and changing regulations.

Appendices

Absolute Financed Emissions: PCAF-aligned Metrics[24]

We recognize the benefit of comparable industry-specific methodologies for measurement and disclosure of absolute financed emissions, and although these are still evolving, we are disclosing below PCAF-aligned absolute financed emissions with the aim of providing stakeholders with additional information and to enhance transparency and comparability.

We provide disclosure on absolute financed emissions for eight sectors of our financing portfolio in the Metrics and Targets chapter (see pages 29–30). We have calculated these metrics using our own methodology (Carbon Compass℠ methodology), which we believe calculates absolute financed emission figures that correlate with real-world emissions performance of clients in our applicable sector portfolios. We plan to continue to monitor evolving best practices for the financial sector to inform our own approach and to provide information of interest to our stakeholders.

PCAF-aligned Absolute Financed Emissions[25]

SECTOR[i]	SCOPE(S) INCLUDED[ii]	ABSOLUTE FINANCED EMISSIONS (million t CO_2e)[iii, iv, v]	ECONOMIC INTENSITY (per US$1 million of lending)[vi]	DATA QUALITY SCORES (1–5)[vii]
Energy Mix	Scope 3 (end use)	35.6	3109.9	3.1
Oil and Gas Operational	Scopes 1 and 2	2.9	309.4	3.1
Electric Power	Scope 1	7.6	2005.8	3.2
Auto Manufacturing	Scopes 1, 2 and 3 (tank-to-wheel)	0.6	704.1	3.0
Iron & Steel	Scopes 1 and 2	0.7	1504.4	1.6
Cement	Scopes 1 and 2	1.1	1983.4	1.2
Aviation	Scope 1 (tank-to-wake)	0.1	400	3.0
Shipping	Scope 1 (tank-to-wake)	0.01	262.8	2.0
Aluminum	Scopes 1 and 2	0.1	745.5	3.4

i. The sectors included in this table align with the sectors covered by our Carbon Compass℠ methodology for our net zero aligned targets.

ii. The scopes included in this table align with the scopes included in our Carbon Compass℠ methodology and represent scopes for which appropriate emissions data is available.

iii. "Absolute financed emissions" is defined as the total GHG emissions of an asset class or portfolio. For public companies, it is calculated as outstanding exposure divided by enterprise value including cash ("EVIC") times company emissions. For private companies, it is calculated as outstanding exposure divided by total equity plus debt times company emissions. If equity value is negative, it is treated as zero. Per the PCAF standard, outstanding exposure represents the amount of the loan the borrower has drawn as of the year-end date.

iv. The absolute financed emissions in this table include wholesale credit (excluding overdrafts) to clients within the sectors listed. Capital markets activity and tax-oriented investments, which are included in our net zero aligned targets, are not included in the PCAF calculation at this time, as the PCAF has not released a methodology for these asset classes at the time of publication.

v. The absolute financed emissions in this table utilized the proxy methodology described in our Carbon Compass℠ methodology when emissions data is not readily available. These proxy calculations are derived based on in-scope clients with committed exposure for lending, as well as capital markets exposure.

vi. Economic intensity is calculated as absolute financed emissions in metric tons of carbon dioxide equivalents per million dollars loaned.

vii. Data quality scores range from 1 to 5, with 1 representing the highest quality data and 5 representing the lowest quality data. Data quality scores are assigned in accordance with the methodology recommended by PCAF as described in the Absolute Financed Emissions section within the Metrics & Targets section of this Climate Report.

[24] This section presents disclosure of absolute financed emissions intended to align with PCAF, with the exception of the deviations as footnoted throughout the table.

[25] The figures in the table only consider the in-scope clients per our Carbon Compass℠ methodology.

The table below summarizes main deviations of our Carbon Compass℠ methodology from PCAF's methodology, and states the reasons we believe these address the main shortcomings of PCAF's methodology.

		CARBON COMPASS℠ METHODOLOGY	PCAF METHODOLOGY	REASONS FOR DEVIATION
LENDING		12-mo monthly average committed financing	Year-end outstanding balance	Using 12-month monthly average enables us to capture the impact of short-term obligations, such as bridge loans, which frequently have terms of less than one year.
TAX EQUITY		12-mo monthly average outstanding balance	Not covered	As one of the top renewable energy tax equity investors in the U.S., we believe including tax equity best captures our financing impact.
CAPITAL MARKETS		100% of capital markets activity on a 3-year rolling average basis	Not covered	Including 100% of our share in capital markets activity allows us to provide a more complete picture of our financing activity and how we are supporting our clients through direct lending and capital markets facilitation.
CAPITAL STRUCTURE	Public Companies	3-year average EVIC	End-of-period EVIC	Using a three-year average of capital structure helps us reduce distortion due to the effect of volatility on company valuations
	Private Companies	3-year average Debt + Equity	End-of-period Debt + Equity	

List of Acronyms

AWM	Asset & Wealth Management
CAF	Carbon Assessment Framework
CAO	Chief Administrative Officer
CASS	Corporate Advisory and Sustainable Solutions
CB	Commercial Banking
CCB	Consumer & Community Banking
CCS	Carbon capture and storage
CCT	Center for Carbon Transition
CCUS	Carbon capture, utilization, and storage
CDR	Carbon dioxide removal
CEO	Chief Executive Officer
CIB	Corporate & Investment Bank
CO_2	Carbon dioxide
CRO	Chief Risk Officer
E&S	Environmental and Social
EACs	Energy Attribute Certificates
EF3	Energy Futures Finance Forum
ESG	Environmental, Social and Governance
EV	Electric vehicle
EVIC	Enterprise value including cash
FEC	Firmwide Environmental Committee
g CO_2	Grams of carbon dioxide
g CO_2e	Grams of carbon dioxide equivalent
GHG	Greenhouse gas
GSSS	Green, Social, Sustainability and Sustainability-linked
IEA	International Energy Agency
IEA NZE	International Energy Agency Net Zero Emissions by 2050 Scenario
IEA SDS	International Energy Agency Sustainable Development Scenario
IPCC	Intergovernmental Panel on Climate Change
IRA	Inflation Reduction Act
JPMAM	J.P. Morgan Asset Management
kg CO_2	Kilograms of carbon dioxide
km	Kilometer
LOBs	Lines of Business
MJ	Megajoule
mt	Metric ton
mt CO_2e	Metric ton of carbon dioxide equivalent
MW	Megawatt
MWh	Megawatt hour
NEDC	New European Driving Cycle
NGFS	Network for Greening the Financial System
NGO	Non-Governmental Organization
OC	Operating Committee
OECD	Organization for Economic Co-operation and Development
PCAF	Partnership for Carbon Accounting Financials
RCP	Representative Concentration Pathway
RECs	Renewable Energy Certificates
RTK	Revenue tonne-kilometers
SABA	Sustainable Aviation Buyers Alliance
SAF	Sustainable aviation fuel
t	Metric ton
t CO_2	Metric ton of carbon dioxide
t CO_2e	Metric ton of carbon dioxide equivalent
TCFD	Task Force on Climate-Related Financial Disclosures
TNFD	Task Force on Nature-Related Financial Disclosures
t-nm	Metric ton nautical mile
TTW	Tank-to-wake
U.S.	United States
WLTP	Harmonized Light Vehicle Test Procedure