J.P.Morgan

Asia Pacific Equity Research
17 January 2023

ESG First Principles

Global and Asia Insight: A comprehensive guide to ESG strategies, regulations and data

- **Asia to see further growth in ESG investing supported by secular trends and a regulatory push.** Global ESG AUM reached $2.9tn as of the end of 2021. APAC ESG AUM grew more than 5x between 2016 and 2021 to $121bn, the fastest growing region in the world. ESG funds currently have a 2% market share in APAC. Asset devaluation has driven a 24% drop in global ESG AUM in 2022, yet inflows remained positive. Climate remains the ESG theme attracting the most investment.
- **One acronym, many applications: ESG as a megatrend, alpha driver, and risk framework.** ESG is a framework to (i) capture factors that are not always directly included in traditional financial accounting but can still affect an investment's value, and/or (ii) align investments with sustainability or ethical preferences. The "mainstreaming" of the market drives more focus on the first purpose, while many still more intuitively associate "ESG investing" with the second, prompting debate about what should qualify as a "true" ESG investment philosophy. In Asia, thematic ESG funds represent the lion's share of the market, but penetration of ESG integration and transparency is increasing, aligning the region more closely with global ESG investing philosophies.
- **"Pro"/ "Anti" ESG is not a clean break:** In this note we also explore the several areas of overlap in the Venn diagram of "ESG" and "non-ESG" mandates; many "ESG" considerations (e.g. Governance) are by no means exclusive to ESG mandates, and many investors may choose to invest in an "ESG theme" (e.g. Energy transition) given its specific growth profile, rather than its ESG credentials per se. While return remains top priority for investors in Asia, we expect ESG factors to become more financially material for companies and sustainability credentials could eventually be reflected in financial performance.
- **Alphabet soup: the data and ratings challenge, and a path to convergence.** Lack of high-quality and comparable ESG data remains a challenge to enable widespread adoption of ESG investing and respond to increasingly complex ESG regulations. Sustainability reporting standards by the IFRS foundation could pave the way towards global standardization, while Japan will become the first country to introduce regulations targeted at ESG data providers. We also detail the methodologies of the larger ratings providers in this note.
- **The "ESG Bubble" debate highlights the scope for ESG investing to evolve further, in our view.** By definition, ESG frameworks that limit their scope to factors that are currently financially material will miss those that are soon going to become financially material and may have a smaller investable universe of "good" ESG candidates. The reliance on backward-looking disclosures and ratings can be particularly limiting at a time when many companies are investing and adapting at speed to become improved versions of themselves, and/or increase their exposure to high-growth areas linked to sustainability. In Asia, "double materiality" remains a nuanced methodology due to a lack of disclosure, but a more forward-looking approach in our view could largely improve diversification and reduce ESG investment concentration in certain environmental-friendly industries.

The full list of authors and contributors is available at the end of this report.

Asia Pacific ESG Research

Hannah L Lee AC
(852) 2800-8886
hannah.l.lee@jpmorgan.com
J.P. Morgan Securities (Asia Pacific) Limited/ J.P. Morgan Broking (Hong Kong) Limited

Paul Xu, CFA, CPA AC
(86-21) 6106 6152
paul.xu@jpmorgan.com
SAC Registration Number: S1730522080001
J.P. Morgan Securities (China) Company Limited

Co Head of Global ESG Reserach & Global Head of Index Research

Gloria Kim
(1-212) 834-4153
gloria.m.kim@jpmorgan.com
J.P. Morgan Securities LLC

Co Head of Global ESG Research & Head of EMEA Equity Research

Sophie L Warrick
(44-20) 7134-1423
sophie.l.warrick@jpmorgan.com
J.P. Morgan Securities plc

Head of ESG Research Methodology & Integration

Virginia Martin Heriz
(44-20) 7134-5197
virginia.martinheriz@jpmorgan.com
J.P. Morgan Securities plc

ESG & Sustainability Research

Jean-Xavier Hecker
(33-1) 4015 4472
jean-xavier.hecker@jpmorgan.com
J.P. Morgan Securities plc

Noemie de la Gorce, CFA
(44 20) 7134-4229
noemie.delagorce@jpmorgan.com
J.P. Morgan Securities plc

Lydia Harvey
(44-20) 3493-1626
lydia.harvey@jpmorgan.com
J.P. Morgan Securities plc

Khuram Chaudhry
(44-20) 7134-6297
khuram.chaudhry@jpmorgan.com
J.P. Morgan Securities plc

See page 106 for analyst certification and important disclosures, including non-US analyst disclosures.

J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table of Contents

Introduction 3
What is ESG? The "Value vs. Values" Debate 4
Why Do Investors Care? 8
ESG to Align Investments With Values 8
ESG to Generate Alpha 10
Value Meets Values: ESG to Manage Risks 18
Implications for the Materiality Debate 21
The Growth of ESG – Flows & AUM Trends 26
Tracking Flows: Deciphering "ESG AUM" 26
Overview of Global ESG Flows 28
Focus on the Sustainable Debt Market 33
Where Next? 34
From Integration to Impact: Shades of ESG Investing 36
Overview 36
Integration 37
Screening 38
Thematic and Impact Investing 42
Investment Stewardship 44
Portfolio Tilting 47
Case Study: "Managed Phaseout" In Highly Exposed Sectors 47
Alphabet Soup: Data, Ratings & Indices 51
Corporate Reporting 51
Third-Party Vendors 55
Ratings 57
Indices 64
J.P. Morgan ESG Index Suite 66
ESG in Sovereign Debt: Challenges and Opportunities 71
Policy and Regulation: Navigating the "ESG Mania" 74
Global Overview 74
EU: Attempting to Pioneer in Unchartered Territories 79
US: New Regulatory Attempts but Adoption Remains Uncertain 85
UK, Australia, and Canada 87
Asia: The Disclosure Push 87
Perspectives from Emerging Markets (ex. ASIA) 91
Conclusion: Will There Ever Be Convergence of ESG Regulations? 92
Glossary 93
J.P. Morgan Global ESG Research 99
Meet our Teams 99
Our Content 101

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Introduction

ESG investing has gained fairly continuous momentum since the rise in the global sustainability movement in the 1970s, but particularly since 2018, with market growth peaking to 40% y/y in 2021. According to Morningstar, sustainable investing (on their definition of Sustainable Funds) reached US$2.9tn at the end of 2021, while the far broader universe of funds that consider ESG in their investment process could be closer to US$35tn, according to the Global Sustainable Investment Alliance. As companies have come under regulatory or reputational scrutiny for their environmental, social and governance practices, investors have increasingly incorporated those considerations into their financial analysis and investment strategies. The Global Financial Crisis in 2008, Paris Agreement in 2015 and COVID-19 pandemic further accelerated this trend.

Europe continues to play a leading role in the rise of ESG investing. A unique combination of regulations and rising demand from asset owners have prompted an increase in asset managers to launch "ESG funds" in the region over the past decade. While the true extent of adoption is a matter of intense debate, our view is that the ESG market is likely to continue expanding globally in the medium term, given both the proliferation of ESG regulations outside Europe and the growing portion of asset managers with a global ESG mandate, in addition to the likely growth opportunities from existing or new companies geared to key multi-year ESG themes such as Energy Transition or a more Conscious Consumer, which depending on valuation may appeal irrespective of an investor's ESG mandate.

The ESG market has experienced rapid growth and profound changes over the past decade. "ESG mainstreaming" has been one of the most striking trends, leading a growing number of investors to integrate ESG more explicitly within their financial analysis (accelerated indeed by certain ESG considerations also becoming more financially material, e.g. supply chain traceability). As the market attracted new investors, it further diversified in terms of investment strategies, data needs and regulations. While this has spurred unparalleled levels of innovation, it has also increased the complexity of the ESG market for clients.

ESG investing has more recently faced unprecedented levels of criticism, including calls for greater transparency from companies, investors and data vendors. The debate on the merits of ESG itself has also intensified. It is notable that many visualize the two sides of this debate as simply "Cost of Living vs Action on Climate Change", despite ESG encompassing a far broader set of considerations, many of which have been a core part of "non-ESG" investment frameworks for some time (e.g. Governance), and sustainable development striving to deliver on both sides (e.g. through a "Fair Transition" framework). Ultimately, most such debates stem from varying interpretations and a lack of clarity on the purpose of ESG within an investment mandate, in our view. While we expect that various ESG investment philosophies will continue to co-exist, clear disclosures from fund managers on the role of ESG in their investment process will be key to ensure trust in the market.

J.P. Morgan's ESG Primer provides balanced expert insights on the ESG market, outlining the fundamental drivers behind ESG investing, key investment objectives and strategies, as well as the current data and regulatory landscapes, and how to consider what may come next. We plan to update this publication periodically to reflect future developments in a fast-evolving market.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

What is ESG? The "Value vs. Values" Debate

What is ESG and what purpose should it serve? This first chapter attempts to address those two questions, highlighting the complexity of ESG that explains most of the challenges (and criticisms) faced by the industry today. We conclude that there are varying interpretations on the purpose of ESG, resulting in investors responding differently to the "value vs values" debate depending on their investment objectives, time horizon, ethical or sustainability preferences, and exposure to systemic risks, among others.

ESG emerged partly as a response to the limitations of traditional financial analysis but the picture has since evolved

The term ESG was created to capture a spectrum of factors that, while not necessarily currently directly impactful for financial accounting and thus not captured in traditional financial analysis, could still affect an entity's value over a short or long-term period. As a result, ESG factors are commonly referred to as "non-financial" or "extrafinancial" factors, despite an increasing number of examples of "ESG" factors having a financial impact (higher wage costs or employee benefits, fines or taxation, or indeed positive top line impact from sustainability-linked product/solution demand). Because its primary purpose is to address the limitations of traditional financial analysis and accounting, ESG has been – and will likely remain - a broad concept, which will continue to evolve as new limitations emerge.

A unique term aimed to capture multiple facets of an entity

Environmental, social and governance factors form the cornerstone of ESG analysis as we know it today. As discussed above, their common denominator is that they are difficult to analyze using traditional financial analysis. However, they capture different (and sometimes contradictory) facets of an entity: environmental factors stem from a firm's impacts and dependencies on natural capital, while social factors capture its impacts and dependencies on human capital.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

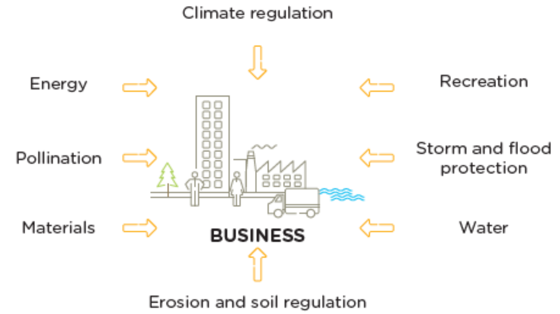
Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 1: Examples of impacts on natural capital

Source: Natural Capital Protocol (link).

Figure 2: Examples of dependencies on natural capital



Source: Natural Capital Protocol (link).

Figure 3: Examples of impacts on human capital

Source: Social & Human Capital Protocol (link).

Figure 4: Examples of dependencies on human capital

Source: Social & Human Capital Protocol (link).

Not all environmental and social factors are equally material to all entities (see the section on Materiality here), whereas governance factors are relevant across industries and regions. Governance factors refer to people, policies and processes that direct and control the company (link), which are partly defined by the firm's own practices, and by local regulation and business environment.

Figure 5: Typical governance factors

Source: J.P. Morgan, based on ISS (link) and the 2018 UK Corporate Code of Governance (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

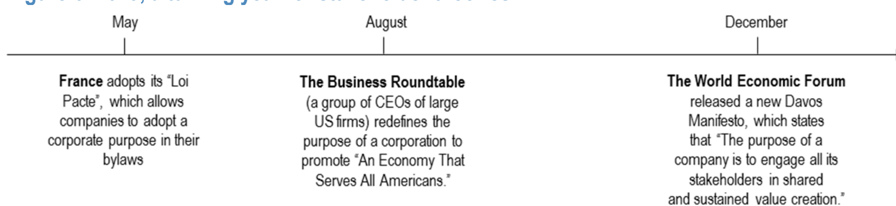
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

This aggregation of very different aspects of an entity explains many of the challenges faced by ESG analysis today: a singular ESG rating in absence of context and further analysis can be a blunt instrument, being an average of three different, partly unrelated, and sometimes conflicting analyses, which themselves have multiple verticals. The complexity of ESG analysis also stems from considering both non-financial and financial characteristics of investees, which may imply unique trade-offs and co-benefits.

ESG has also been used as a framework to align investments with ethical or sustainability preferences.

Environmental, social and governance themes form the basis of sustainability analysis, which aims to assess a company's sustainability credentials. As a result, some investors have also considered ESG as a framework to select entities that are in line with their clients' or own sustainability or ethical preferences, inspired partly by the values-based investing movement (described in more detail here). This evolution is particularly visible in the expansion of governance analysis, which increasingly capture companies' ability to create value for all stakeholders, as opposed to maximizing shareholder value alone (so-called "stakeholder theories"). This trend has also prompted a rebranding of ESG factors to "sustainable" factors.

Figure 6: 2019, a turning year for stakeholder theories



Source: J.P. Morgan.

More broadly, ESG has emerged as a transformative framework for the financial sector to contribute to sustainable development, which is defined as "*a development that meets the needs of the present generation without compromising the ability of future generation to meet their own needs*" (Brundtland Report, 1987). In our view, alignment with sustainable development is relatively easier to quantify when anchored in natural sciences (most of the "E" and some of the "S" factors such as those related to health and nutrition).

Overcoming the "value vs values" debate

In the next chapter, we discuss the varying interpretations on the purpose of ESG. ESG investors have historically used (or been perceived to use) ESG both as a tool to complement financial analysis and as a framework to align their investments with specific sustainability or ethical preferences. However, the "mainstreaming" of the market (as well as many ESG considerations driving financial impact) has led an increasing number of investors to focus on the first purpose, while the second is sometimes perceived as posing potential conflicts with their core fiduciary duty in some jurisdictions (see here). Many however, still intuitively associate "ESG investing" with the second, prompting debate about what should qualify as a "true" ESG investment philosophy for asset owners.

In our view, this "value vs. values" debate explains many of the recurring questions faced by the ESG industry, including whether "Integration" strategies can be considered as ESG investing, whether ESG should be renamed "sustainability", and whether "double materiality" should become the norm in ESG reporting. In this

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

context, we view positively the growing emergence of system investing, which attempts to overcome this debate by recognizing that incorporating *values* in today's investment decisions can contribute to preserve the *value* of investments over the long term (see here). Regardless of the investor's motivation for considering ESG, and the extent to which they do so, we consider that clear disclosures from fund managers on the role of ESG in their investment process will be key to ensure trust in the market.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Why Do Investors Care?

The rise in ESG investing results from a combination of push and pull factors, primarily rising demand from asset owners and regulation (covered in a separate chapter here). In this chapter, we outline the three main motivations for investors to consider ESG investing in no particular order: (i) aligning with sustainability and ethical preferences, (ii) enhancing risk-adjusted returns, and (iii) preserving long-term returns by managing ESG risks and regulations. Identifying clients' motivations has implications on the type of investment objectives and processes, which we discuss in more detail in the fourth chapter.

ESG to Align Investments With Values

ESG investing has its origins in ethics

While ESG is a relatively recent phenomenon, values-based investing is not a new investment philosophy. Religious groups already selected investments that were aligned with their own ethical values as early as the 19th century. The rise in socio-political movements in the second half of the nineteenth century resulted in the launch of the Pax Fund in 1971 (the first publicly available mutual fund excluding investments involved in the Vietnam War), and the first widespread divestment campaign against the Apartheid regime in South Africa in the 1980s. While scattered, those movements used investments to express specific ethical values, avoid contributing to negative impacts, and help fostering positive impact.

Figure 7: Ethical values, including responsibility toward society and the environment, have historically fueled sustainable investing

Source: J.P. Morgan.

ESG investing was fueled by a growing focus on responsible business conduct

The rise in the global sustainability movement, combined with a series of high-profile events from the Exxon Valdez oil spill in 1989 to the Enron scandal in 2001, heightened scrutiny on companies' environmental, social and governance practices. This resulted in the development of international norms, which define a set of common principles that should be followed by companies globally. This in turn prompted the emergence of "corporate social responsibility" policies (later rebranded "sustainability" policies) and the creation in 2006 of the largest global coalition of ESG investors, the Principles for Responsible Investment (PRI).

"Responsible business conduct sets out an expectation that all businesses (…) avoid and address negative impacts of their operations, while contributing to sustainable development in the countries where they operate."

OECD

Figure 8: The emergence of international norms has accelerated the development of "responsibility" policy from corporates and investors

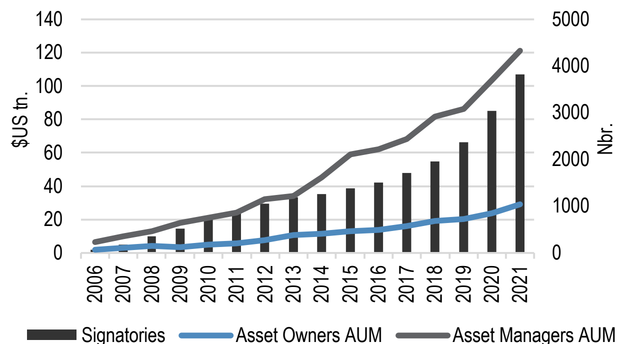
Source: J.P. Morgan. UN: United Nations; OECD: Organization for Economic Co-operation and Development; ISO: International Organization for Standardization; ILO: International Labor Organization.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 9: Founded in 2006, the PRI is now the largest coalition of ESG investors globally



Source: J.P. Morgan based on the PRI (link).

Table 1: ESG PRI's members must follow six core principles

1	2	3
We will incorporate ESG issues into investment analysis and decision-making processes.	We will be active owners and incorporate ESG issues into our ownership policies and practices.	We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4	**5**	**6**
We will promote acceptance and implementation of the Principles within the investment industry.	We will work together to enhance our effectiveness in implementing the Principles	We will each report on our activities and progress towards implementing the Principles.

Source: J.P. Morgan based on the PRI (link).

The legacies of values-based investing to ESG - Part One: International norms

For many investors, compliance with international guidelines on responsible business conduct has become a pre-requisite for including companies in ESG funds: Based on Morningstar data, 54% of sustainable global funds representing 64% of sustainable global AUM included such norms-based screening into their investment process (as of Sept. 2022). This screening typically relies on the assessment of companies' involvement in "controversies", which are breaches of the principles and behaviors established by international norms. As we discuss later, this has notably resulted in the inclusion of controversy analysis in most ESG ratings (see here).

The legacies of values-based investing to ESG - Part Two: The Sustainable Development Goals

"The financing of SDGs is estimated to $2.5 trillion per year by 2030."

United Nations

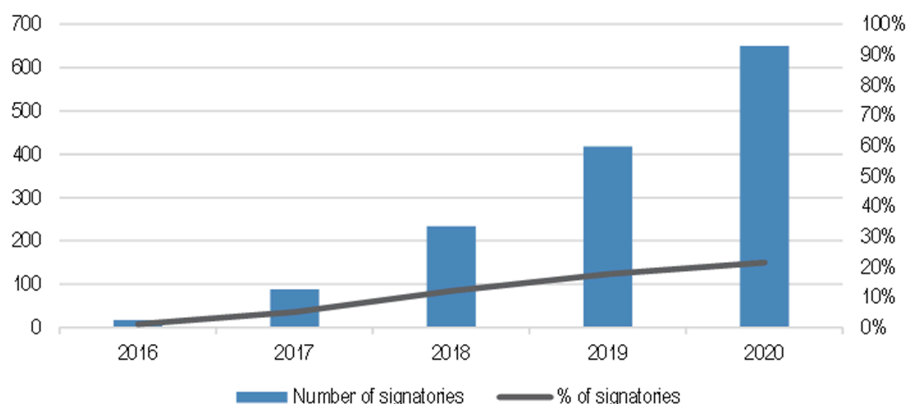
Values-based investing also introduced the idea that investments can be selected to contribute positively to sustainable development, which is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (link). In 2015, the United Nations defined 17 Sustainable Development Goals (SDGs) (link). Today, the SDGs is one of the main frameworks used by ESG investors to report on the impact of their investments, as shown by the increasing number of PRI signatories incorporating SDGs in their investment policies. We expect this trend to continue given the potential financial opportunity for investors, with the UN estimating the financing gap to achieve the SDGs to be about US$2.5tn per year by 2030.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 10: A growing percentage of signatories mention SDGs in reporting to the PRI, 2016-2020



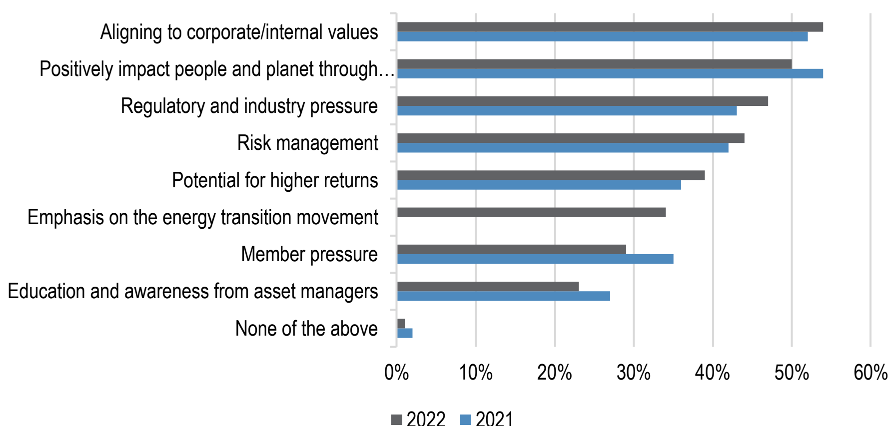
Source: J.P. Morgan based on the PRI (link).

Values and impact remain major drivers of ESG investing

Aligning with values and positive impact remain the dominant drivers of ESG investing, according to Schroder's annual survey of 770 global institutional investors, which we consider as one of the most comprehensive ESG surveys available. Those results seem to confirm the influence of values-based investing on current ESG practices and the persistence of impact as the ultimate objective, although risk management and regulatory/industry pressure have also gained prominence.

Figure 11: Alignment to corporate/internal values and positive impact remain the dominant drivers of sustainable investment

What is driving your sustainability investment focus?



Source: J.P. Morgan based on Schroders (link). % Multiple answers allowed. The option "Emphasis on the energy transition movement" was not included in previous years.

ESG to Generate Alpha

Mainstreaming sustainability by looking for ESG Alpha

While ESG investing started as a value structure, its unprecedented growth since 2016 has also been partly driven by investors considering ESG as a tool to generate alpha. The link between ESG and financial performance has been the subject of multiple studies (although this exercise remains inherently difficult because the

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

materiality of ESG factors can be hard to quantify, and the definitions of ESG vary between investors), most pointing to a positive to neutral correlation. J.P. Morgan Quantitative Analysts conducted similar Research, concluding that stable ESG scores combined with momentum and fast-moving data could generate "ESG Alpha" (see here). Beyond alpha, the success of ESG funds has also come from strong client demand, which is evidenced by their higher net flows and stronger organic growth since 2016 compared to their non-ESG counterparts. This trend also prompted fears of an "ESG bubble", which we discuss in more detail here.

ESG factors can be financially meaningful and even dominant in the investment case

There have been numerous instances where ESG factors significantly weigh on the financial performance of financial instruments. Environmental factors (in particular climate change) have been increasingly material, with tangible examples of "transition" costs and opportunities materializing across high-impact sectors: in the cement industry, J.P. Morgan Analysts have estimated to several billions the cost of carbon price in Europe (link), while in the Steel sector analysts expect early decarbonization movers to win market share in niche end-markets through a combination of positive mix effect, high barriers to entry and accrued "green premia" (link). More disruptions are also expected from physical climate risks, as highlighted last summer in our cross-sector risk assessment of low river Rhine water levels (link).

While climate risks have been under particular scrutiny, governance has long been considered as a material source of idiosyncratic risks and opportunities. For example, the financial sector has faced several high-profile governance controversies over recent years, due to weaknesses in internal control and incentive structure among others (E.g. the mis-selling of Payment Protection Insurance by UK banks, resulting in a cumulated ~£40bn redress since 2011). Conversely, improvements in governance can also result in improved profitability and investment sentiment: For example, the decision by Axis Bank's CEO Amitabh Chaudhry to disaggregate the credit risk function into a separate reporting line straight into the CEO to avoid undue influences by businesses (among others) directly resulted in lower loan losses and ROE improvement, which in turn contributed to a rerating in the multiples, reflecting not just the higher profitability but also improved investor sentiment (link).

Social factors can be equally material: Companies excelling in human capital management are likely to experience lower turnover, which can in turn translate into lower frictional costs due to retraining, and improved productivity due to better employee morale, with a positive impact on the bottom line and, ultimately, on a company's share price. According to Glassdoor, an equally weighted portfolio with the winners of each year's "Best Places to Work" award among large US corporates would have outperformed the S&P 500 nine years out of eleven between 2009 and 2019 (link). Financial inclusion is another area where an ESG driver can have a tangible positive effect on the bottom line; commercial microfinance can be highly profitable while helping underserved communities to access loans, build a credit track-record and avoid "loan sharks" whose rates can be several times higher.

The financial importance of ESG drivers is not restricted to the corporate sphere, with several examples of ESG factors driving the performance in Sovereign debt and even currencies. In October 2019, widespread frustration at social inequalities in Chile triggered nationwide street protests and riots that culminated in a process of constitutional reform. Between October 18th, when the protests escalated, and

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

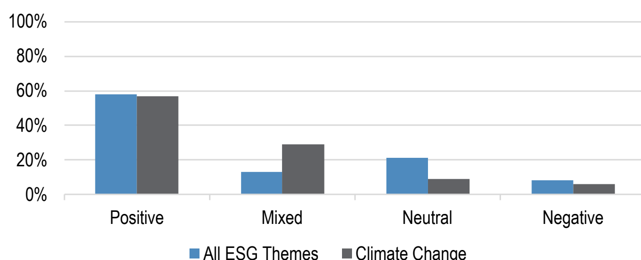
November 30th, the Chilean peso underperformed Emerging Market currencies by roughly 10%, as investors grew nervous about the scale of the damages to infrastructure and their impact on the county's growth. Indeed, by December 2019, "the social and political crisis had already proved more onerous than the 2010 natural disaster" (link).

Academic research suggests a positive link between ESG and financial performance

Assessing the link between ESG and financial performance is inherently difficult because the materiality of ESG factors is often hard to quantify. It also varies based on the universe of ESG funds considered. A recent meta-analysis from the NYU Stern Center for Sustainable Business and Rockefeller Asset Management found a positive and/or neutral correlation between ESG and financial performance of both companies and investors in most of the 1,000 research papers published between 2015 and 2020 (link). Interestingly, positive financial performance was more marked over a longer time horizon and during economic downturns.

Figure 12: Most studies found a positive or neutral correlation between the ESG and financial performance of corporates…

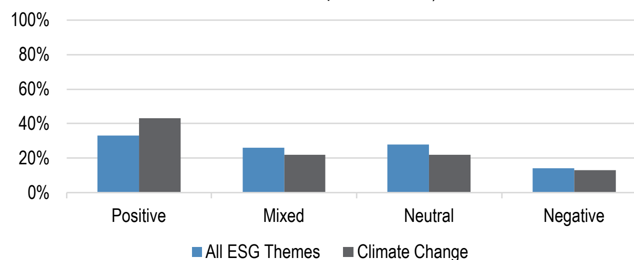
Breakdown of studies by conclusion (positive, mixed, neutral or negative correlation between ESG and financial performance), in %



Source: J.P. Morgan, based on NYU (link). Mixed means that the same study found a positive, neutral or negative results.

Figure 13: … and investors' portfolios, more pronounced for those adopting a low-carbon strategy

Breakdown of studies by conclusion (positive, mixed, neutral or negative correlation between ESG and financial performance), in %



Source: J.P. Morgan, based on NYU (link).

This finding is consistent with one of the most quoted meta-analysis conducted over 2,000+ empirical studies in 2015, which showed a negative correlation between ESG and financial performance in 10% of cases only (link). This study also found that governance-related aspects had the highest proportion of both positive and negative correlations, with the environmental pillar offering the most favorable relation overall (measured by the share of positive findings minus the share of negative ones). In our view, these results may partly reflect (i) the difficulty of isolating the effect of governance factors, as a company's environmental and social credentials may be partly linked to elements of its governance such as risk management, incentives structure, and innovation strategy (link), and (ii) the stronger disagreement on the assessment of companies' governance and social performance (discussed in detail in the section on ESG Ratings here). There is also substantial academic research highlighting linkages between good performance along the governance and social pillars and lower cost of Sovereign debt (here and here).

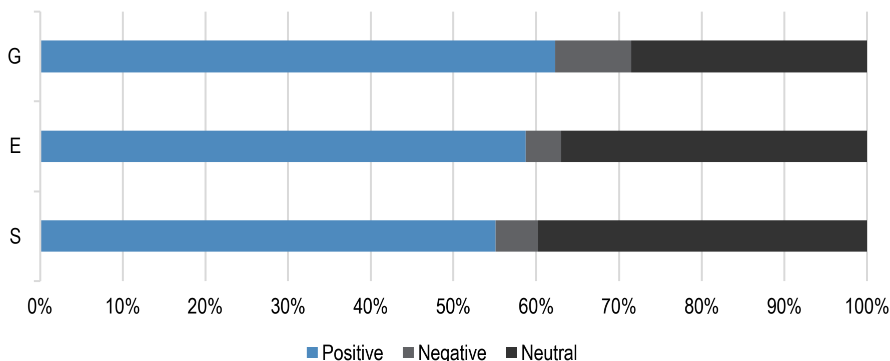
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 14: Study found a higher proportion of studies evidencing a favorable relation between environmental and financial performance

Breakdown of studies between positive, neutral and negative findings



Source: J.P. Morgan based on the Journal of Sustainable Finance and Investment (link) n=664 studies. Favorable relation measured as share of studies with positive findings minus the share of studies with negative findings.

ESG equity funds performed better on average than non-ESG peers

Analysis by the European Securities and Market Authorities (ESMA) shows that ESG-labelled UCITS equity funds domiciled in Europe outperformed non-ESG funds by 0.057 percentage points on average between April 2019 and September 2021 (based on monthly gross performance). This results holds even after controlling for differences in sectoral exposures (link).

Table 2: ESG funds increased their exposures to healthcare, technology, and industrials between 2019 and 2021, which performed well over the period

Equity funds' change in sectoral exposures

	Change in mean exposure (%)		Return (%)
	ESG	Non-ESG	
Basic materials	-0.55	-0.16	24%
Communication	3.52	4.92	-8%
Consumer cyclical	-0.63	-0.65	36%
Consumer defensive	-2.29	-0.88	5%
Energy	-1.62	-1.26	-25%
Financials	-3.02	-1.51	52%
Healthcare	2.26	1.27	25%
Industrials	1.34	-0.04	40%
Real estate	-0.30	-1.42	-65%
Technology	1.58	-0.24	14%
Utilities	-0.31	-0.02	15%

Source: J.P. Morgan based on ESMA (link) and Morningstar. The right column represents the return of the MSCI Europe sectoral indices. Data calculated between April 2019 and September 2021.

Table 3: Even when controlling for differences in sectoral exposures, ESG funds still performed better than non-ESG funds

Regression analysis of EQ fund performance (dependent variable: monthly gross performance)

	Regression Analysis
ESG	**0.057**
Basic materials	0.009
Communication	0.009
Consumer cyclical	0.010
Consumer defensive	-0.006
Energy	0.017
Financials	0.014
Healthcare	0.006
Industrials	0.009
Technology	0.017
Utilities	-0.002
Intercept	*2.958*
Observations	*124,250*
R^2	*0.699*

Source: J.P. Morgan based on ESMA (link) and Morningstar. Significance levels: 0.01.

Additionally, ESMA's study shows that funds focusing on the S or G pillars strongly outperformed non-ESG funds. On the other hand, it found that the performance of E-focused funds was not statistically different from the performance of non-ESG funds.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 4: Social and Governance-focused funds outperform environmental funds

Regression analysis of EQ fund performance (dependent variable: monthly gross performance)

	Model with the ESG focus
Environmental	-0.0003
Social	0.257
Governance	0.141
Undefined	-1.061

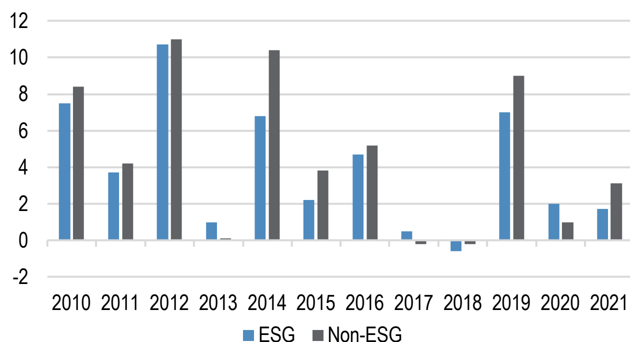
Source: J.P. Morgan based on ESMA (link) and Morningstar. Significance levels: 0.1 for G, 0.05 for S and the "undefined category". Based on monthly gross returns calculated between April 2019 and September 2021. The difference of performance between S or G funds on the one hand and E funds on the other hand was statistically significant at the 5 % confidence level.

ESG bond funds exhibited higher risk-adjusted returns over the past five years.

The European Fund and Asset Management Association found that ESG bond funds recorded slightly lower gross returns than their traditional counterparts on average between 2010 and 2021 (4.0% vs 4.7%, respectively), but higher risk-adjusted returns over the past 5 years.

Figure 15: ESG bond funds exhibited slightly lower gross returns than non-ESG funds in average between 2010 and 2021…

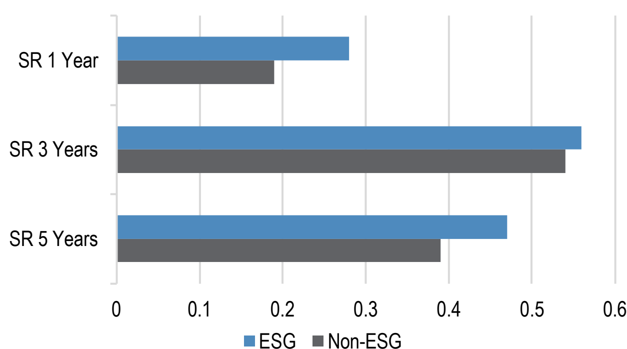
Yearly gross returns of UCITS bond funds (% of net assets)



Source: J.P. Morgan based on EFAMA (link) and Morningstar.

Figure 16:…But higher Sharpe Ratios over the past five years

Sharpe Ratio (SR) of UCITS bond funds



Source: J.P. Morgan based on EFAMA (link) and Morningstar.

J.P. Morgan quantitative analysis shows that introducing an ESG factor can improve risk-adjusted returns

In their analysis of the returns of the MSCI Europe and MSCI Europe ESG Index between 2010 and 2022, J.P. Morgan Quantitative analysts found that ESG scores provide good insight into selecting companies that will show positive long/short (L/S) returns.

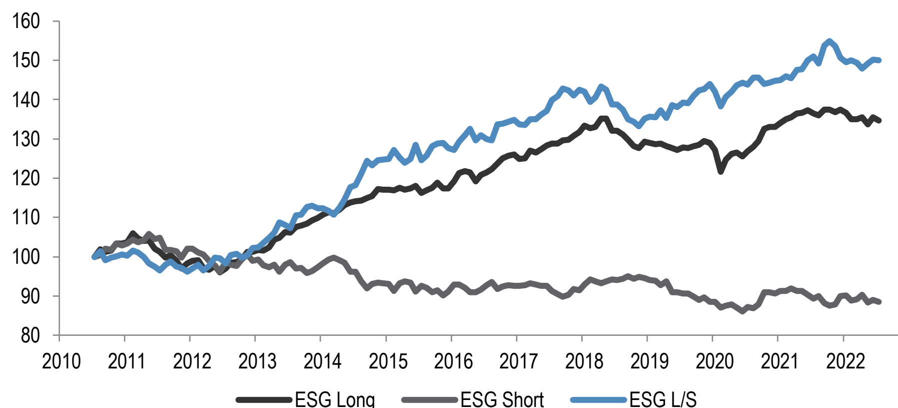
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 17: MSCI ESG scores provide good insight into selecting companies that will show positive long/short returns…

MSCI ESG Factor Strategies in MSCI Europe ESG Leaders Index



Source: J.P. Morgan Quantitative and Derivatives Strategy, MSCI.

Their analysis also showed that the ESG factor performs better in the broader universe rather than in the "ESG compliant" universe. The ESG factor showed very strong performance in the MSCI Europe Index with a solid Sharpe of 1.45 and manageable drawdowns at 5.6%, and lower performance in the MSCI Europe ESG universe. Conversely, the short leg excelled in the ESG compliant index, contributing to improve the overall L/S factor.

Table 5:… With reasonable Sharpe Ratios and lower drawdowns

ESG Factor Strategies Performance and Risk Metrics | MSCI Europe Indices

	MSCI Europe						MSCI Europe ESG					
	T-Stat	Ann.Ret	Ann.Vol	Sharpe	Hit-Rate	Max DD	T-Stat	Ann.Ret	Ann.Vol	Sharpe	Hit-Rate	Max DD
ESG Long	3.83	4.9%	3.4%	1.45	68.6%	-5.6%	2.70	3.8%	3.7%	1.01	70.9%	-11.6%
ESG Short	1.07	1.9%	5.2%	0.38	57.0%	-10.1%	-0.65	-1.1%	4.0%	-0.26	48.8%	-12.95
ESG L/S	1.52	2.7%	4.9%	0.55	52.3%	-6.1%	2.83	4.7%	4.5%	1.06	64.0%	-8.0%
MSCI Benchmark	*1.47*	*7.9%*	*16.3%*	*0.48*	*55.8%*	*-26.6%*	*1.58*	*8.5%*	*15.9%*	*0.53*	*58.1%*	*-25.0%*

Source: J.P. Morgan Quantitative and Derivatives Strategy, MSCI. Period: Aug'10 to Sept.'17.

J.P. Morgan quantitative analysts also found that the change in the ESG score (i.e., its Momentum) was a better guide to how the company's ESG profile may be changing compared to the level of the ESG score. Risk-adjusted returns were higher for stocks combining a high and rising ESG score (6%), vs high and falling (3.5%), low and rising (0.1%), and low and falling (-0.6%).

Table 6: Performance of each quadrant in MSCI ACWI (excess returns)

ESG Quadrant	Ann Ret	Ann Vol	Sharpe	Max DD	Hit Rate	# Months
High & Rising	6.0%	7.9%	75.0%	-8.4%	57.0%	107
High & Falling	3.5%	5.9%	60.0%	-7.9%	57.9%	107
Low & Rising	0.1%	7.1%	1.0	-22.5%	49.5%	107
Low & Falling	-0.6%	10.3%	-6.0%	-25.3%	50.5%	107

Source: J.P. Morgan Quantitative and Derivatives Strategy based on MSCI ESG. Period: Aug'10 to Sept.'17.

The final step of their analysis was combining an ESG factor with its Momentum. While Momentum had better returns than both stand-alone ESG and combined ESG/Momentum, the combination strategy has a third of the volatility and single digit drawdowns (compared to -38% for Momentum).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 7:... A combination of ESG & Momentum improves risk-adjusted returns

Stand-alone ESG, JPM Momentum, and ESG + Momentum 50:50. [Long only, Excess Returns]

ACWI Region	Returns	Volatility	Sharpe	Hit Rate	DD	T-Stat	Turnover	IC
ESG Scores (IAS)	0.5%	4.7%	0.10	51.3%	-9.0%	0.38	75%	0.7%
Composite Momentum	6.0%	14.6%	0.41	54.7%	-38.5%	1.47	650%	3.0%
ESG + Momentum	3.5%	4.9%	0.70	57.3%	-8.9%	2.24	480%	1.8%

Source: J.P. Morgan Quantitative and Derivatives Strategy. Period: Aug'10 to Sept.'17.

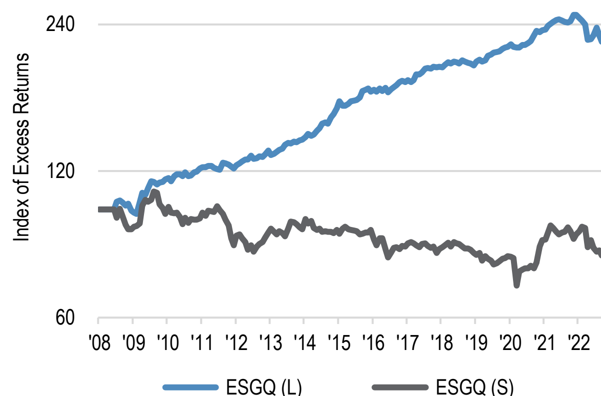
J.P. Morgan's stock allocation tool ESGQ

ESGQ is J.P. Morgan's proprietary ESG score, calculated over 5,000 stocks on a monthly basis. It comprises three building blocks: (i) stable ESG scores from large providers such as MSCI and Sustainalytics that capture the long-term corporate responsibility profile of a company, (ii) faster-moving ESG data (Arabesque, RepRisk) that isolate news flow on potential ESG controversies, and (iii) momentum to capture changes in sentiment and price behavior. Since 2018, returns of the stable component have been on an upward trajectory for long strategies and the long leg of L/S strategies. Sharpe ratio has been healthy, at about 1% while peak to through is lower than the broader market. Risk-adjusted returns are even higher for stocks combining a high & rising ESG score (6%), vs high & falling (3.5%), low & rising (0.1%), and low & falling (-0.6%). The trend is captured through the momentum component of ESGQ. Please click here to learn more.

Figure 18: ESGQ methodology

Source: J.P. Morgan Quantitative and Derivatives Strategy.

Figure 19: Top & Bottom ESGQ price performance relative to equal-weighted benchmark



Source: J.P. Morgan Quantitative and Derivatives Strategy. Data on ESGQ Europe.

ESG funds have driven higher inflows

The success of ESG funds can also be measured by the strength of client demand. Net flows to ESG funds included in Morningstar's sustainable funds universe have outpaced that of conventional funds by a significant margin over the recent past. Between 2016 and 2021, the average organic growth rate (calculated by dividing the cumulative flow for the quarter by the beginning total net assets) reached 14% in average, compared to 2% for conventional funds. While growth in inflows has decelerated since the peak in Q1 2021, particularly since the beginning of 2022, it has shown stronger resilience overall than that of the broader market. In our view, this is because challenging macroeconomic conditions have so far not fundamentally impacted the structural drivers of ESG investing (regulations and client demand),

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

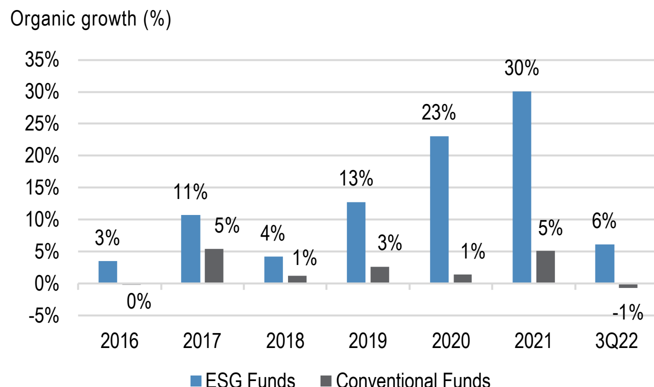
Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

although they may contribute to reshape some of the current ESG practices, as we recently discussed in a separate publication (link).

Figure 20: Net flows to ESG funds have largely outpaced those of conventional funds…

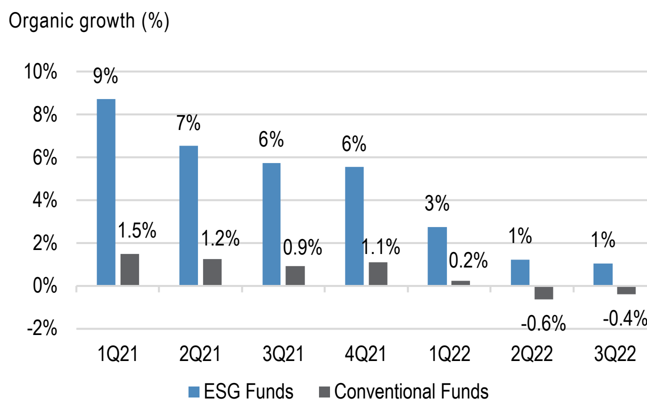
Organic growth (%)



Source: J.P. Morgan based on Morningstar.

Figure 21: …Although the pace slowed down since Q1 2021

Organic growth (%)



Source: J.P. Morgan based on Morningstar.

Thoughts on the "ESG Bubble" Concept

The rapid growth in ESG flows prompted the Bank for International Settlements to forewarn in September 2021 "about the possibility that a bubble might develop" and "signs that ESG assets' valuations may be stretched" (link). J.P. Morgan European Utilities analysts have flagged that pure renewable players were significantly more expensive than integrated utilities (link), while the J.P. Morgan EMEA ESG team regularly highlighted the high price-to-earnings (P/E) ratios of clean tech stocks (link). However, the popularity of the low-carbon/clean technology segment of the ESG market may not be representative of the overall tilt of the broader ESG market, in our view, which follows more diverse investment strategies than one might assume, as we discuss in the fourth chapter. For example, the P/E of equity indices based on ESG ratings are broadly in line in with their non-ESG counterparts.

The ESG Bubble debate does, however, highlight the scope for ESG investing to evolve further, in our view. By definition, ESG frameworks that limit their scope to factors that are *currently* financially material will miss those that are soon going to become financially material, and may have a smaller investable target universe of "good" ESG candidates. The reliance of ratings on disclosure (or estimated disclosure) is by nature more backward-looking, which can be particularly limiting at a time when many companies are investing and adapting at speed to become improved versions of themselves, and/or increase their exposure to high-growth areas linked to sustainability. These things combined provide an opportunity for investors to consider ESG in a manner that is more forward-looking and comprehensive in our view, which could in turn, improve diversification and reduce crowding.

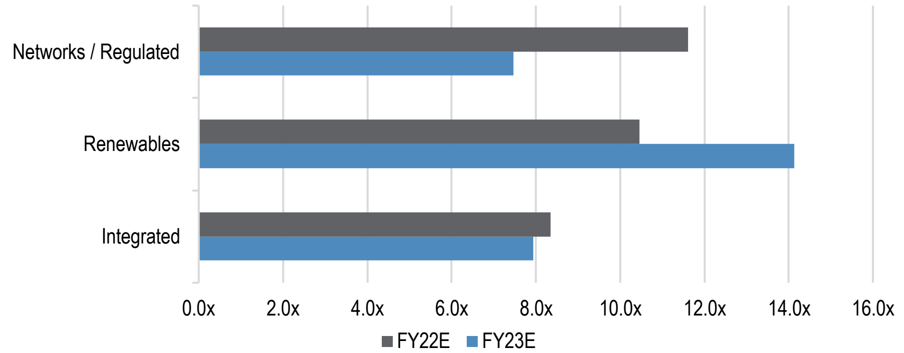
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 22: J.P. Morgan European Utilities analysts prefer exposure to the energy transition theme via the cheaper, larger integrated utilities than pure players

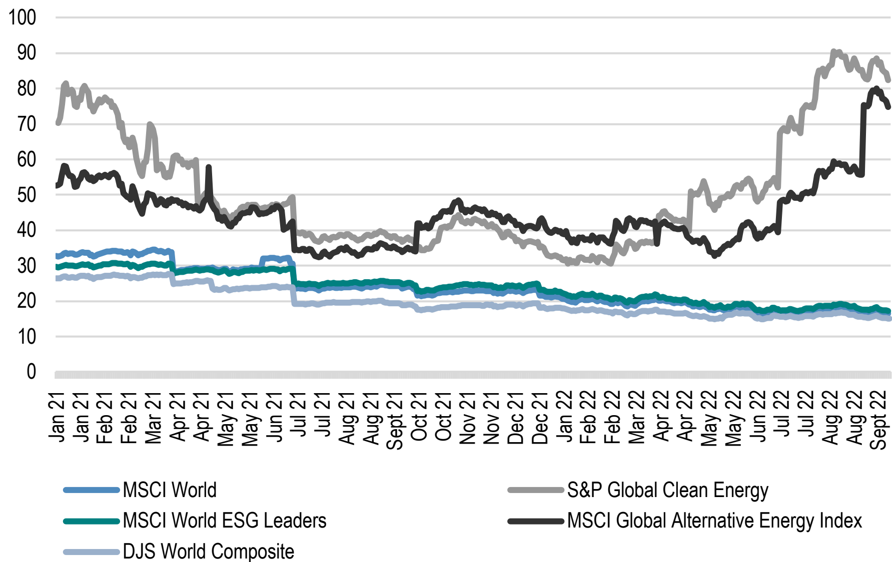
Median EV/EBITDA across our European Utilities coverage



Source: J.P. Morgan European Utilities as of Sept. 21st 2022. "Network/Regulated" excludes water utilities (United Utilities, Severn Trent and Pennon).

Figure 23: Low-carbon indices have significantly higher P/E than mainstream ESG indices

P/E for selected ESG and non-ESG indices



Source: J.P. Morgan based on Bloomberg.

Value Meets Values: ESG to Manage Risks

Many sustainability megatrends relate to sources of systemic risks

There has been growing recognition over the recent years that while certain companies can be beneficiaries (usually via innovation), sustainability megatrends often link to issues which not only pose idiosyncratic risks to specific companies, but also systemic risks to global economies. In its annual survey of global risks, the World Economic Forum highlighted the potential economic, societal and political disruptions from climate action failure, biodiversity loss, and social cohesion erosion, among others. While governance factors are less considered as a source of risk in this context per se, they are seen as necessary resources to manage future disruptions.

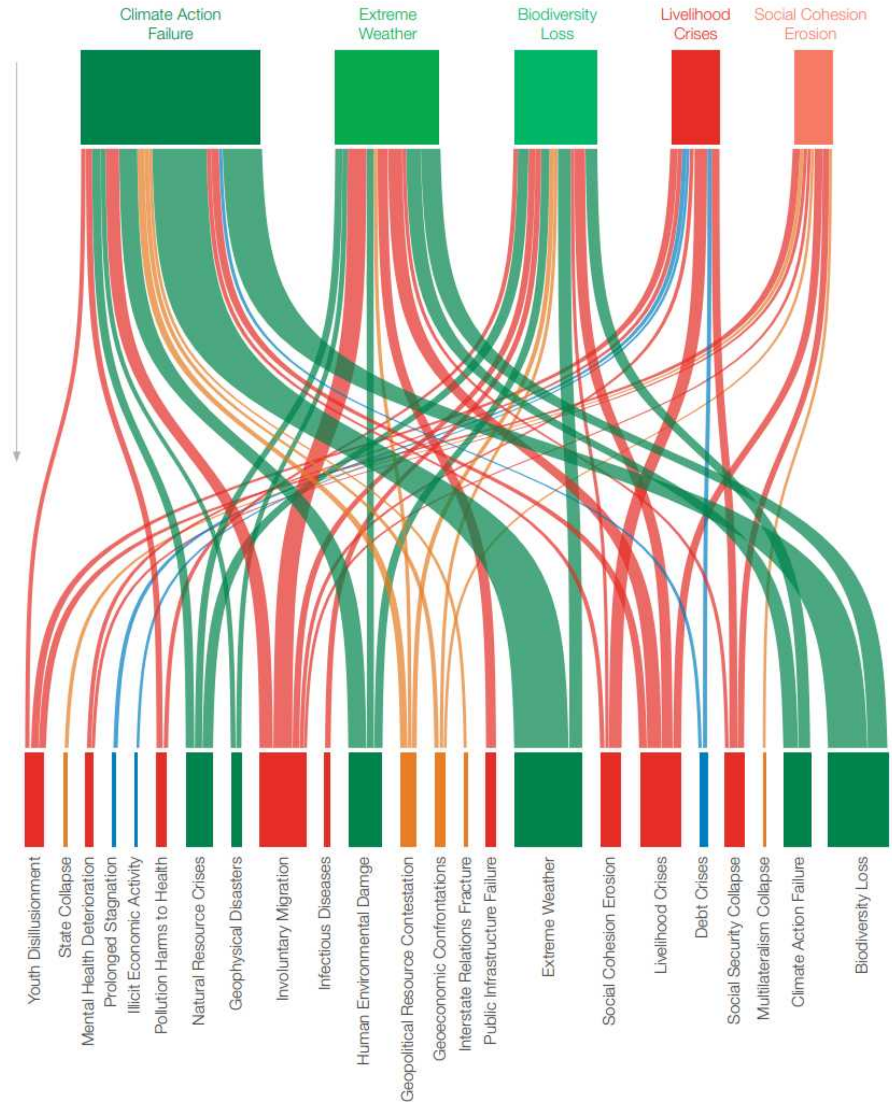
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 24: Most global, systemic risks identified by the World Economic Forum are linked to environmental and social factors

Most potentially damaging risks (top row) and risks they will aggravate (bottom row)



Source: WEF, The Global Risks Report, 2022 (link).

System Research assesses linkages between sustainability and systemic risks

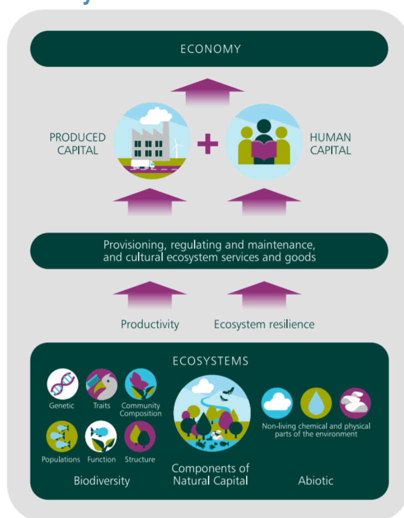
Systemic risks linked to sustainability megatrends have highlighted the interconnectivity between economic, political, social and ecological systems (link). A growing field of "systems research" has emerged to better understand these links, such as the Dasgupta review on the economics of biodiversity commissioned by the UK Government in 2021, which considerably enhanced knowledge on the role of natural capital in global economies. As we will discuss later, systems research is also increasingly used by financial regulators to assess the potential impact of sustainability megatrends on financial stability (see here).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

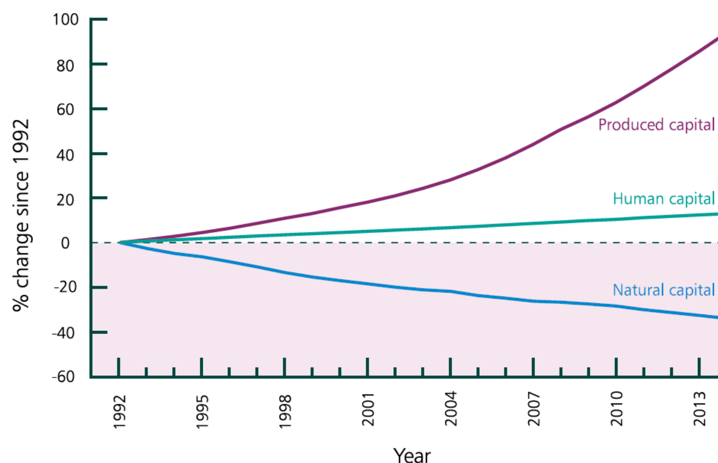
Figure 25: The Dasgupta review highlights the linkages between natural capital, human capital and the broader economy…



Source: Dasgupta Review (link).

Figure 26:…and the decorrelation between produced capital on one hand, and human and natural capitals on the other

Global wealth per capita, 1992-2014



Source: Dasgupta Review based on Managi and Kumar (2018).

"Focusing on system health (…) over the long term will positively impact financial and economic returns."

Lukomnik & Hawley

Considering sustainability values to preserve "beta"?

From an investor standpoint, systemic risks can significantly affect financial returns. This is particularly true for large and diversified asset owners (so-called "universal owners") such as pension funds, sovereign wealth funds, foundations and endowments, which own a large proportion of the world's economies and thus are overwhelmingly exposed to macroeconomic conditions. Therefore, it has been argued that such investors have an interest to promote business practices of their investees that do not fuel sustainability-related systemic risks to preserve the long term financial performance of their portfolios (Lukomnik & Hawley,2021).

"*Universal owners (…) – exist to serve their beneficiaries. Because these funds are widely diversified and their returns depend primarily upon the performance of the financial market as a whole (beta), they can best serve beneficiaries and satisfy their legal duties by preserving the health of the whole economy and the environmental and social systems on which it depends.*"

Cambridge University (link)

When value meets values: The rise in system investing

The emergence of universal ownership theories was followed in 2015 by the creation of The Investment Integration Project, the first organization advocating for "system investing" by both asset owners and managers (link). **System investing** is based on the recognition that financial and economic systems from which investors generate returns, are dependent on, and impacted by the health of other systems, including the environment and societies. ESG investing is used as a framework to incorporate

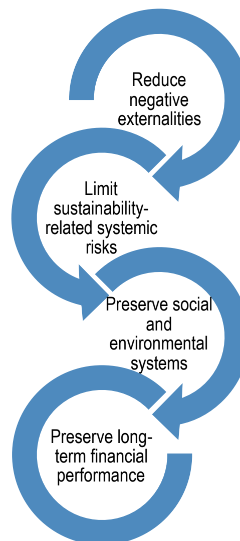
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

sustainability *values*, manage companies' externalities[1] and thus, preserve "system health" and long-term financial *value*.

Figure 27: The view from system investors: considering sustainability values to preserve long-term financial performance



Source: J.P. Morgan.

ESG as a tool to position portfolios to successfully navigate policies and regulations

Rising public awareness on environmental and social issues – from climate change and biodiversity loss to rising inequalities and consumer protection – has resulted in populations increasingly calling on their governments to take more action, which has in turn driven new policies and regulations. This can have implications both at the sector level, through tectonic shifts in the competitive landscape, and at the company level, via additional taxes and costs among others, which can ultimately affect the value of both debt and equity instruments. Therefore, knowledge of current and future ESG themes can help investors to anticipate shifts in the regulatory and policy landscape and position their portfolios accordingly.

Implications for the Materiality Debate

We have identified three main drivers for investors to consider ESG factors in their investment process:

(i) Generating alpha by integrating ESG as a complementary tool to financial analysis

(ii) Creating positive impact or avoiding negative impact based on a set of sustainability or ethical preferences, and

(iii) Managing the health of environmental and social systems to preserve portfolio returns over the long term.

These various motivations imply different investment objectives, time horizons, and definitions of reasonable investors (link) and fiduciary duty (link). More practically, they also imply different data and information needs:

[1] Externalities occur when the creation of economic value results in a cost for the environment or the society (see the glossary here).

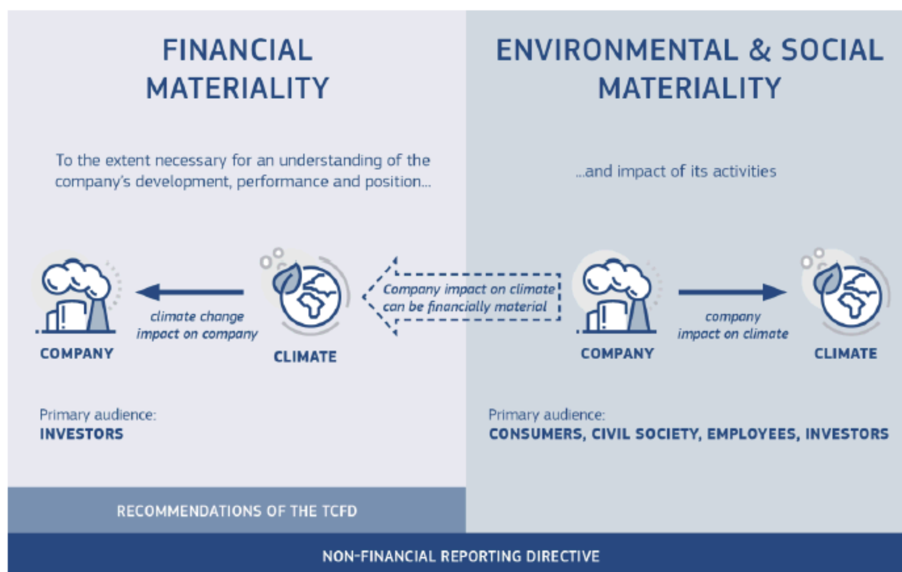
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

- Investors using ESG to uncover Alpha need information about ESG risks and opportunities that could have a financial impact. This is usually referred to as the **financial materiality perspective,** although in practice most financial materiality perspectives focus more on current, rather than potential financial materiality, in our view.
- Other ESG investors need a broader range of information on both ESG risks to enterprise value, and ESG impacts on the company's stakeholders across the value chain. This is usually referred to as the **double materiality perspective**.

Figure 28: The EU based its ESG regulations on a double-materiality approach, which consider both risks/opportunities and impacts.



Source: EU Commission, 2019 (link).

Fiduciary Duty and ESG: Engine or brake?

The compatibility between ESG investing and fiduciary duty has been a recurrent debate in the ESG market. Fiduciary duty is the legally binding duty of investors toward their beneficiaries and generally involves a duty of both care and loyalty. In a recent survey of asset owners by Morningstar, 22% of respondents identified fiduciary duty as a driver in choosing to invest in ESG, while the same proportion indicated that they consider it as a barrier (link) owing – among others – to a perceived trade-off between sustainability and financial performance. In our view, how investors position themselves on this debate primarily depends on (i) local regulations and (ii) clients' specific mandates. Narrow interpretations of fiduciary duty may result in some investors focusing solely on short to medium term financial interests of beneficiaries, while broader interpretations may involve considering clients' sustainability and ethical preferences, exposure to (inherently longer term) sustainability-related systemic risks, and the financial interests of future generations. Better data on the link between financial and sustainability performance, combined with transparency on the measurement of sustainability performance, will be key to inform this debate, in our view.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

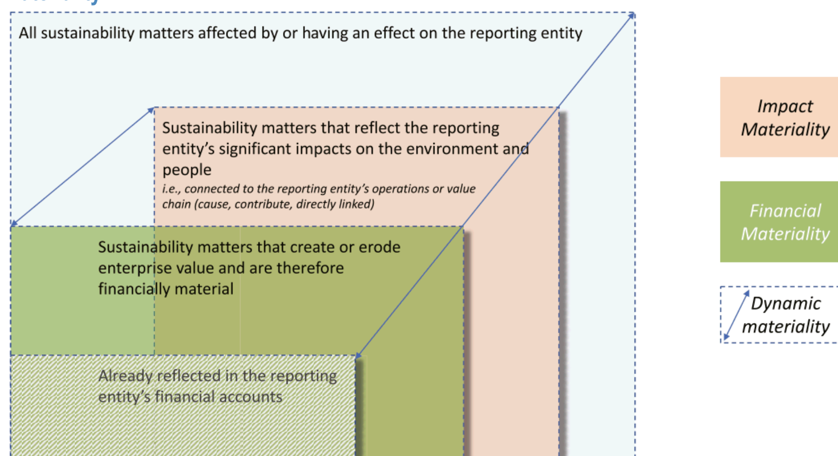
The double materiality lens is better suited to meet the needs of all categories of ESG investors, in our view

While we recognize that reporting based on double rather than financial materiality would be more demanding for companies, this lens addresses the needs of a broader set of investors by providing information on both risks and impacts, in our view. Information on impacts could then be equally used by "alpha-focused" investors - because a company's current ESG impacts may drive tomorrow's financial risks (so-called "dynamic materiality"). Therefore, a more inclusive approach to corporate reporting could allow investors to be more forward-looking in their assessment of enterprise value, by capturing evolving relationships between impacts and risks over time. For further details, please read our Materiality Matters report (link).

"*A reporting entity's impacts on people and the environment can also affect the entity's business model and therefore create or erode its enterprise value (the so-called 'rebound' or 'boomerang' effect). The extent to which they create or erode enterprise value may change over time (the so-called 'dynamic materiality').*"

EFRAG (link)

Figure 29: A double-materiality approach enables one to capture the dynamic nature of materiality



Source: EU EFRAG, 2021 (link).

Determining materiality has become a key differentiator for ESG investors and vendors

ESG investors have different definitions of materiality depending on the drivers and objectives of their investment strategy. As a result, new methodologies have emerged to determine the materiality of ESG factors. Two developments have been particularly important, in our view:

- The development of industry-specific materiality assessment, which enables to assess ESG factors most material to a specific sector. In our view, this approach has facilitated the integration into existing financial analysis frameworks, which is itself industry-specific.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 8: Industry-specific materiality assessment has helped integrate ESG into existing financial analysis

Most material ESG themes for the oil and gas, and banking sectors according to the Sustainability Accounting Standards Board (SASB).

Oil & Gas (E&P)	Investment banking and brokerage
Greenhouse Gases (GHG) Emissions	Employee Diversity and Inclusion
Air Quality	Incorporation of Environmental, Social, and Governance Factors in Banking & Brokerage
Water Management	Business Ethics
Biodiversity Impacts	Professional Integrity
Security, Human Rights, & Rights of Indigenous Peoples	Systemic Risk Management
Community Relations	Employee Incentives & Risk Taking
Workforce Health & Safety	
Reserves Valuation & Capital Expenditures	
Business Ethics & Transparency	

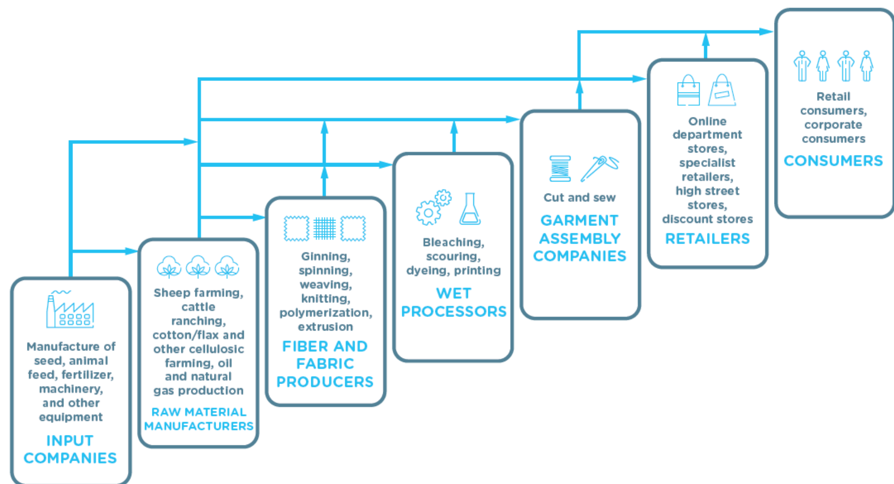
Environmental Social Governance

Source: J.P. Morgan based on SASB (link). Classification between E, S and G themes by J.P. Morgan. We discuss SASB in more details here.

- The development of a "value chain approach" by the Capitals Coalition, which assess material ESG impacts and dependencies across a firm's full value chain. This has become the reference framework for investors who consider ESG impacts on all stakeholders (as opposed to only shareholders or creditors), including suppliers and customers. We note that recent regulations have tended to increase companies' responsibility toward sustainability risks and impacts in their supply chain, from the disclosure of conflict minerals under the US Dodd-Frank Act, to the UK Modern Slavery Act and the recent EU Proposal for a Sustainability Due Diligence Directive (link), which suggest that supply chain management is becoming increasingly financially-material.

Figure 30: Impact-focused investors typically base their materiality assessment of a company's entire value chain…

Example of value chain mapping for the apparel industry



Source: Natural Capital Protocol: Apparel Sector Guide (link). Based on Trucost 2016.

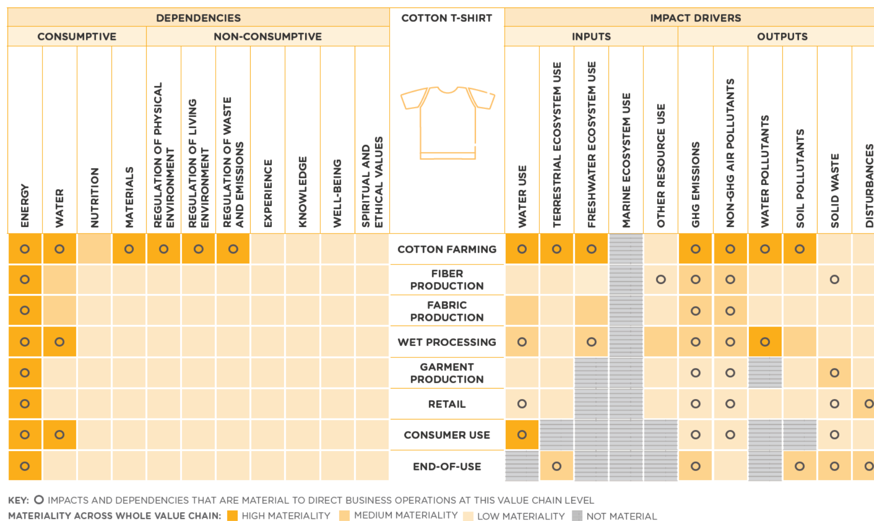
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 31:…As most material impacts and dependencies can occur far outside the company's direct operations

Environmental impacts and dependencies of the apparel industry



Source: Natural Capital Protocol: Apparel Sector Guide (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

The Growth of ESG – Flows & AUM Trends

This chapter provides an overview of global ESG flows using Morningstar data[2], and analyses the range of definitions of “ESG AUM”. AUM invested under an ESG mandate or strategy tripled globally between 2016 and 2021, reaching c.6% of global AUM as at Q4 2021. While active equity funds domiciled in Europe continue to represent the lion’s share of the market, there are signs that it is diversifying in terms of geographic focus and investment style. We also introduce the sustainable debt market, which has been a key component of ESG investing, using data from the Climate Bond Initiative (CBI).

Tracking Flows: Deciphering “ESG AUM”

Providers use different definitions of ESG funds

Estimates of ESG funds, and hence of flows and performance, vary widely between data vendors. In this note, we use Morningstar’s sustainable fund universe as a conservative proxy for the ESG market, which was estimated to US$2.9tn in Q4 2021 and US$2.2tn in Q3 2022. Comparatively, Bloomberg’s estimate of ESG AUM was closer to US$5.4tn in H2 2022 while the Global Sustainable Investment Alliance’s was around US$35tn in 2020 (data is aggregated from regional and national reports from GSIA members, except in Europe, where it is estimated based on secondary industry data). Those discrepancies reflect differences in the way vendors define and track ESG funds, a tangible evidence of the varying interpretations of what constitutes an ESG fund discussed in the first chapter.

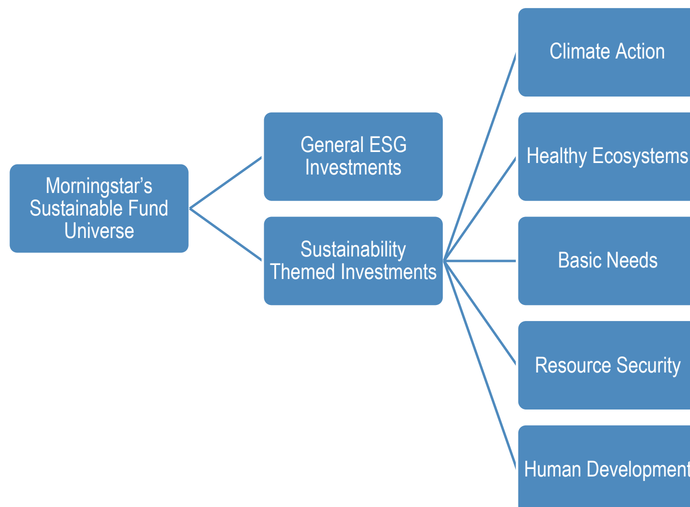
Morningstar’s sustainable universe includes funds where ESG factors drive investment decisions

Since August 2022, Morningstar’s sustainable universe comprises funds where ESG factors play a “central” role in the overall investment process. Funds are broken down in two categories: (i) general ESG investment products; and (ii) sustainability themed investments.

[2] The scope of ESG funds does not include “ESG integrated funds” which consider ESG criteria in the investment process but do not make ESG considerations the focus of investment process. It also excludes money market funds, feeder funds, and funds of funds to avoid double counting.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Figure 32: Morningstar's taxonomy of ESG Funds



Source: J.P. Morgan based on Morningstar.

General ESG investments funds are defined as followed:

> *"General ESG Investment products use ESG criteria as a central focus or binding factor in their security-selection and portfolio-construction process. (...) These investment products endeavor to promote sustainability and minimize negative impact, without focusing on a specific theme or area of action."*

Unlike General ESG funds, sustainability-themed investments typically focus on specific ESG themes:

> *"Sustainability Themed Investment products explicitly target exposure to one or more sustainability themes as part of their investment process. (...) Beyond their thematic focus, these investment products may or may not employ the approaches used by General ESG Investments in their investment decisions."*

Data suggests that Morningstar excludes a large portion of integration funds from its sustainable universe

Morningstar excludes funds where ESG factors are not "central" to the overall investment process, which we believe could de facto exclude some integration funds, where ESG factors are "generally no more significant than other factors in the investment selection process" (see here).

As of September 2022, Morningstar's sustainable funds universe excluded about 60% of funds classified as Article 8 under SFDR, resulting in YTD inflows looking quite different compared to the broader SFDR universe (discussed by J.P. Morgan European Financials Analysts in their latest EU SFDR Fund Update link). While we acknowledge that integration is an important component of the current ESG market, we consider Morningstar's sustainable fund universe as a more conservative and accurate estimate of the market.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 9: 60% of SFDR Article 8 Funds do not qualify as "sustainable" according to Morningstar

		Sustainability Categories				% of SFDR funds in Morningstar's sustainable fund universe
		Yes	No	N/A	Total	
EU SFDR Categories	Article 8	3,701	5,938	228	9,867	38%
	Article 9	1,126	21	40	1,187	95%
	Total	4,827	5,959	268	11,054	44%

Source: J.P. Morgan based on Morningstar.

Overview of Global ESG Flows

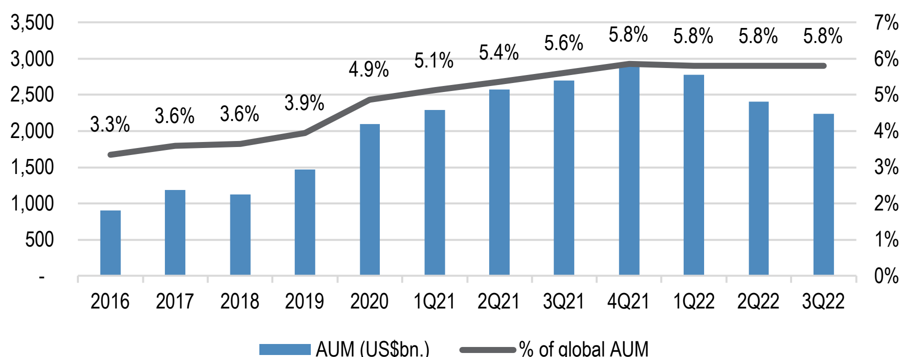
In this section, we summarize some of the key trends that have shaped the ESG market since 2016 using Morningstar's universe of sustainable funds and conclude by contrasting with some of the dynamics observed on a broader universe of ESG funds, based on data from the GSIA.

ESG investing reached a record US$2.9tn in 4Q 2021

The total amount of global ESG AUM has multiplied by 3.3x between 2016 and 4Q 2021, increasing the market share of ESG AUM relative to global AUM to 5.8% from 3.3% over the period. This represents a 27% CAGR in ESG AUM over the period compared to 12% only for non-ESG AUM.

Figure 33: ESG AUM reached US$2.9tn in Q4 2021, representing a 27% CAGR since 2016

Total AUM (US$bn) and market share (%) of global ESG funds



Source: J.P. Morgan based on Morningstar.

Europe continues to dominate the market with >80% of global AUM

Close to three quarters of new ESG funds globally have been launched in Europe between 2016 and Q3 2022, resulting in the region domiciliating a large majority of ESG AUM (84%). The market share of ESG funds relative to total AUM is currently at 30% in Europe, compared to 2% in APAC and 1.3% in the US.

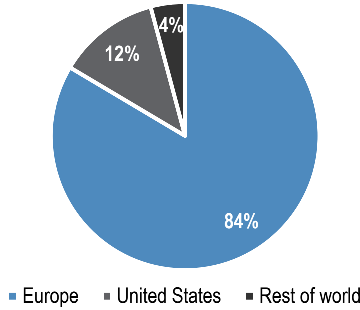
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 34: The lion's share of ESG flows still go to funds domiciled in Europe

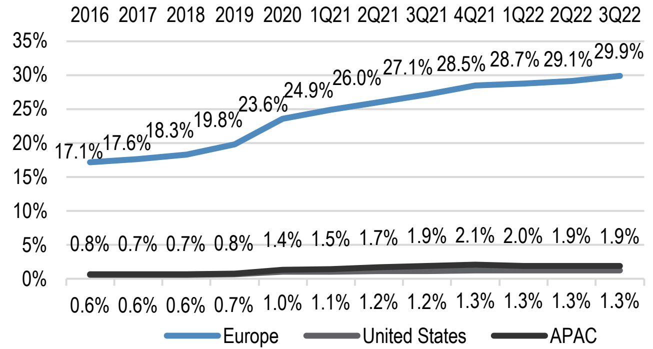
Breakdown of global ESG AUM by region of domiciliation (as of Q3 2022), %



Source: J.P. Morgan based on Morningstar.

Figure 35: The market share of ESG funds reached 30% in Q3 2022 in Europe

Market share of ESG funds by region (based on AUM), %



Source: J.P. Morgan based on Morningstar.

There are signs of geographic diversification with APAC growing the fastest

A growing percentage of ESG AUM have been domiciled in the US and more marginally in the rest of the world in recent years, with APAC showing the fastest growth. Meanwhile, ESG investors have increasingly adopted global investment universes. Further regulations outside Europe (described here) could contribute to accelerate these trends, in our view.

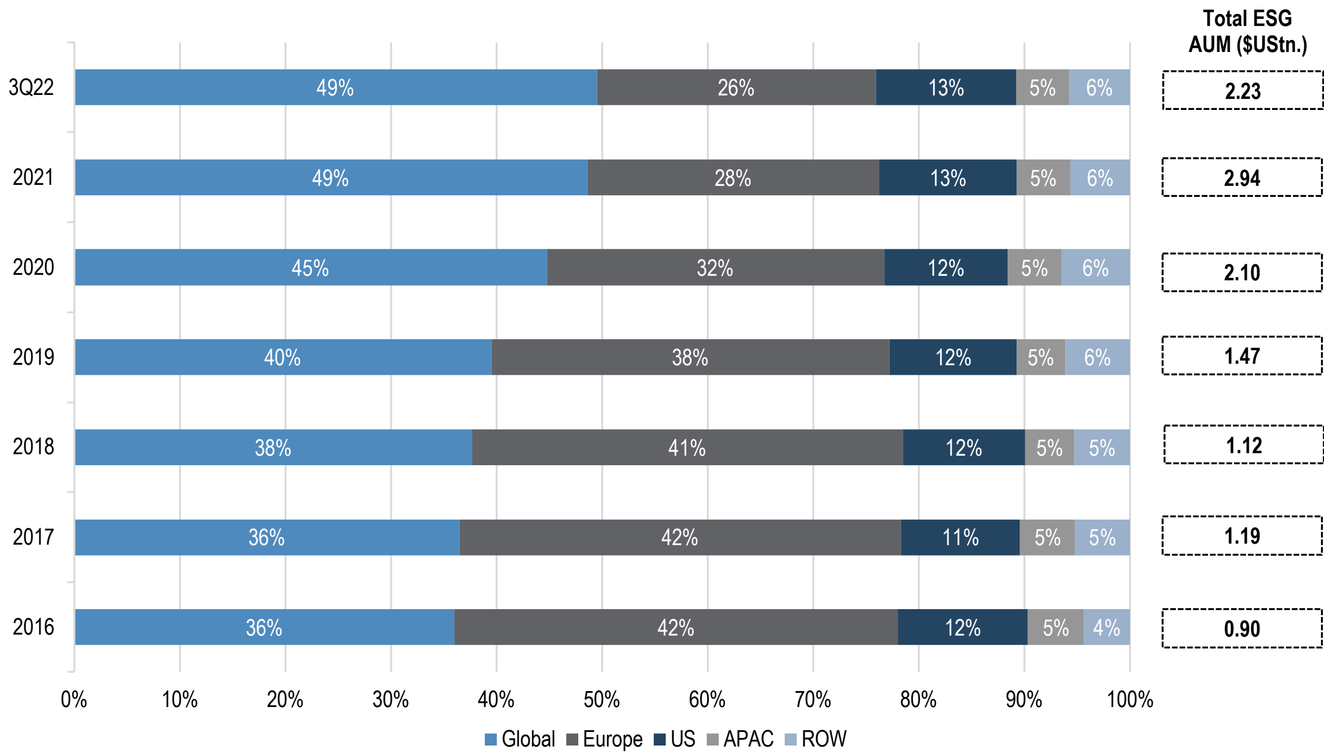
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 36: ESG investors are increasingly looking for global opportunities

Breakdown of global ESG AUM by geographic focus by year, %



Source: J.P. Morgan based on Morningstar.

Active equity investors still represent the majority of ESG investors. Between 2016 and Q3 2022, equity investors represented 57% of ESG AUM on average, followed by fixed-income investors at 22%. On the other hand, the proportion of ESG AUM under passive investing increased to 25% from 9% over the period (we discuss ESG indices in more details here).

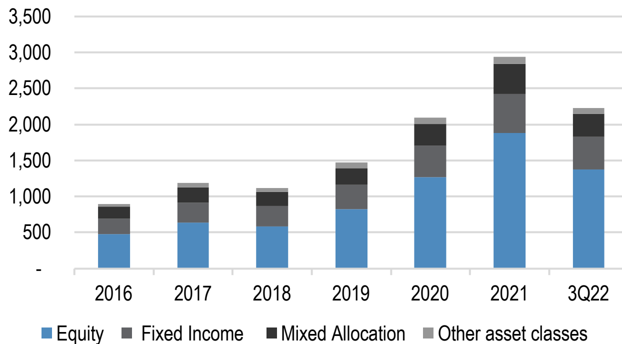
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 37: Equity represented 57% of global ESG AUM on average between 2016 and Q3 2022

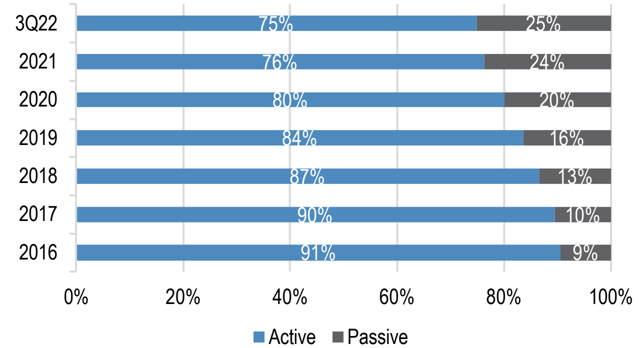
Breakdown of global ESG funds' AUM by asset class, US$bn



Source: J.P. Morgan based on Morningstar.

Figure 38: The share of passive investing grew to 25% from 9% over the period

Breakdown of global ESG AUM by investment style, %



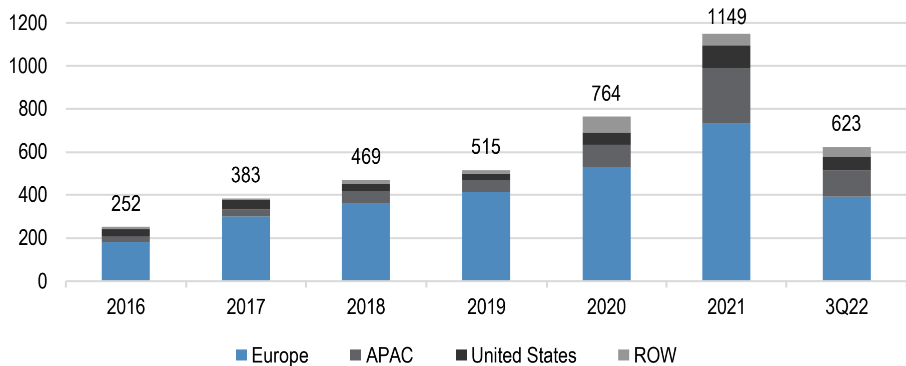
Source: J.P. Morgan based on Morningstar.

The growth in new ESG funds has surpassed the growth in AUM

Has the growth in ESG funds been driven by the creation of new funds or the reclassification of existing conventional funds as ESG? Data seems to suggest the former. Between 2016 and Q4 2021, the annual growth in new funds increased more rapidly than AUM under ESG mandates, at 35% vs. 27% (2022 could be the first year of YoY decrease).

Figure 39: The number of new ESG funds increased by 35% on average between 2016 and Q4 2021

Number of ESG funds by inception year



Source: J.P. Morgan based on Morningstar.

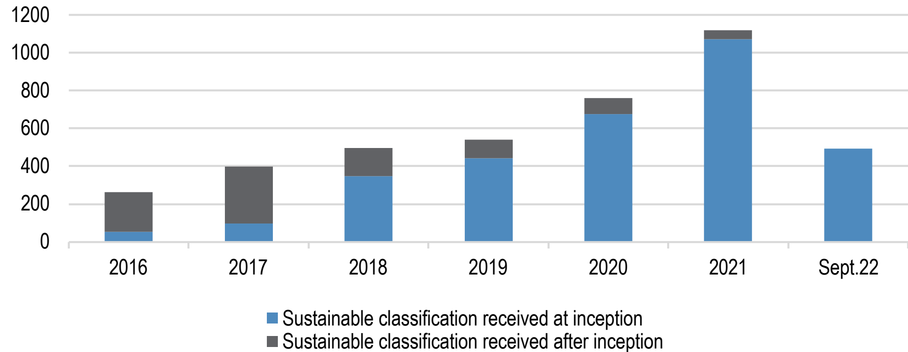
To gain insights into the proportion of funds that have been reclassified as sustainable in the course of their lifespan, we compared the inception date of ESG funds with the date at which Morningstar classified them as "sustainable". Since 2018, most funds have been classified as sustainable by Morningstar within a year of inception. Although not a perfect measure, this suggests that reclassification may have been a limited phenomenon in Morningstar's sustainable fund universe over the past four years (we acknowledge that this conclusion may not apply to the broader SFDR universe).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 40: Most ESG funds were classified as "sustainable" by Morningstar the same year as inception, suggesting that reclassification has become a limited phenomenon



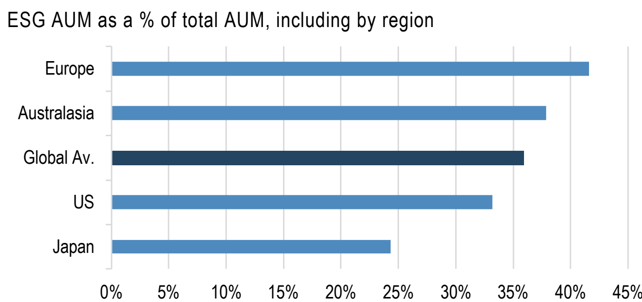
Source: J.P. Morgan based on Morningstar as of Sept. 2022. "Sustainable classification received after inception" includes funds that were classified by Morningstar at least a year after inception.

Taking into account ESG integration funds shows a different picture of the ESG market

As previously discussed, data suggests that Morningstar excludes a large proportion of integration funds from its sustainable universe (see here). To gain insights into a broader spectrum of ESG funds, we use data from the GSIA (link). It suggests that funds considering ESG factors as part of the investment process (including those that incorporate ESG factors in the context of their financial analysis) could represent a significant portion of assets across all regions, at 36% on average globally in 2020. The GSIA also estimates that US ESG AUM surpassed European ESG AUM in 2020, suggesting that ESG investing may be a more global phenomenon.

Figure 41: The GSIA estimated at 36% the market share of ESG funds globally in 2020

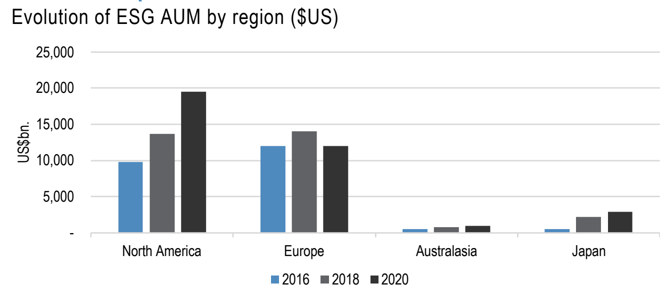
ESG AUM as a % of total AUM, including by region



Source: J.P. Morgan based on the GSIA (link). See our analysis of the GSIA 2020 Report for more details (link).

Figure 42: The GSIA estimated that ESG AUM in the US surpassed those in Europe in 2020

Evolution of ESG AUM by region ($US)



Source: J.P. Morgan based on the GSIA (link). See our analysis of the GSIA 2020 Report for more details (link).

In our view, diverging data on the ESG market mostly reflects the varying interpretations, or lack of clarity, on the purpose of ESG within an investment mandate. As we expect that various ESG investment philosophies will continue to co-exist, we believe that clearer disclosures from fund managers on the role of ESG in their investment process could help to track ESG market trends more accurately. Until then, considering complementary datasets such as Morningstar and the GSIA may remain investors' best solution to monitor the diverse dynamics of the ESG market.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Focus on the Sustainable Debt Market

In this section, we introduce the sustainable debt market using data from the Climate Bond Initiative (CBI). Since the issuance of the first green bond in 2008, the sustainable debt market has evolved to play a central component in fixed-income ESG investment strategies. A company's record at issuing sustainable debt may also be considered by non-fixed income investors as part of their assessment of the company's overall ESG credentials.

Use of proceeds vs. linked instruments

The sustainable debt market can be categorized by two main types of instruments:

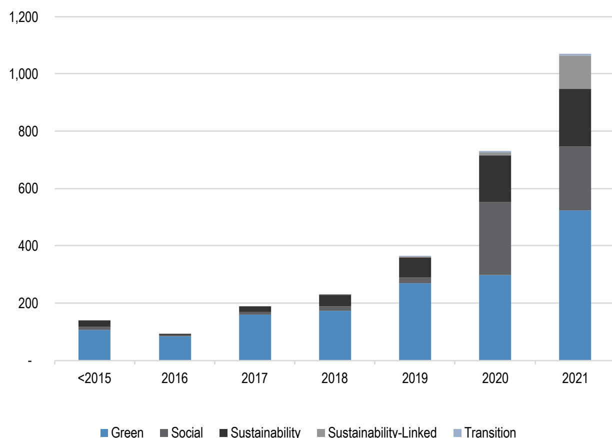
- "Use-of proceeds" instruments, which are bonds and loans where proceeds exclusively finance green, social or sustainable projects, referred to as green bonds, social bonds, and sustainable bonds, respectively (source: ICMA).
- "Linked" instruments, which are bonds and loans where proceeds exclusively finance improvement in the issuer's sustainability credential(s) within a predefined timeline (source: ICMA). This category also includes "transition" instruments, where proceeds enable an issuer to its transition plan. Transition plans can be defined as an entity's action plan to align its business model and strategy with the objective of the Paris Agreement (see here).

Growth driven by green bonds and linked instruments

According to data from the CBI, annual issuance of sustainable debt surpassed US$1tn for the first time in 2021, led by green bonds (which remain by far the most popular instrument), and the growth in linked instruments.

Figure 43: Sustainable bond issuance grew by 63% p.a. between 2016 and 2021, led by green bonds and SLBs

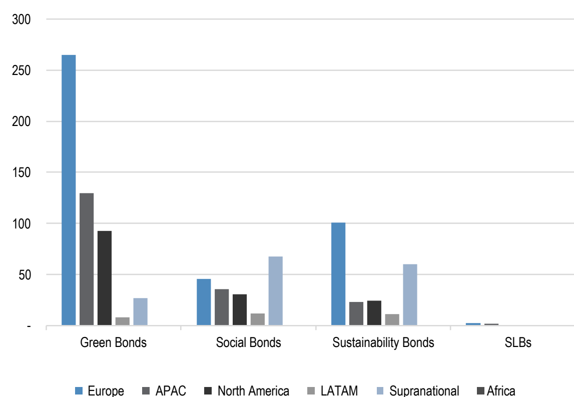
New sustainable debt issuance, US$bn



Source: J.P. Morgan based on the Climate Bond Initiative.

Figure 44: Green bonds issued in Europe represents the most popular instrument

New sustainable debt issuance in 2021 by region and instrument, US$bn



Source: J.P. Morgan based on the Climate Bond Initiative.

In 2021, 80% of green bonds proceeds financed projects in the energy, buildings, and transportation sectors, suggesting that climate mitigation remains the environmental objective most targeted by green bonds. Sustainability-linked instruments seem to attract a more diverse range of sectors, although the utilities and industrials sectors were overall most active.

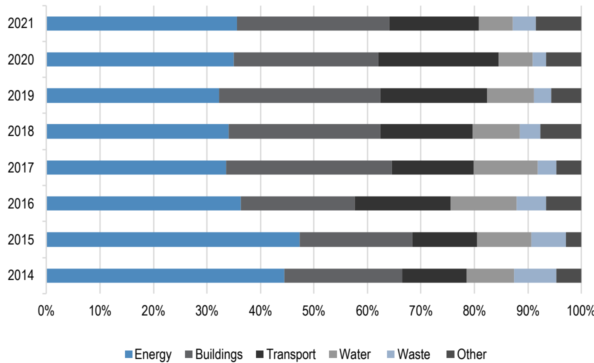
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 45: A majority of green proceeds finance projects in the energy, buildings and transportation sectors

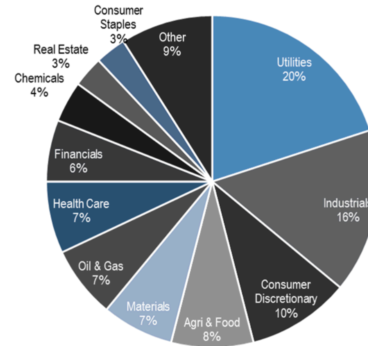
Allocation of green proceeds by sector, US$bn



Source: J.P. Morgan based on the Climate Bond Initiative.

Figure 46: Utilities and Industrials issued the largest share of linked-instruments in 2021

New sustainability-linked issuance by industry, %



Source: J.P. Morgan based on the Climate Bond Initiative.

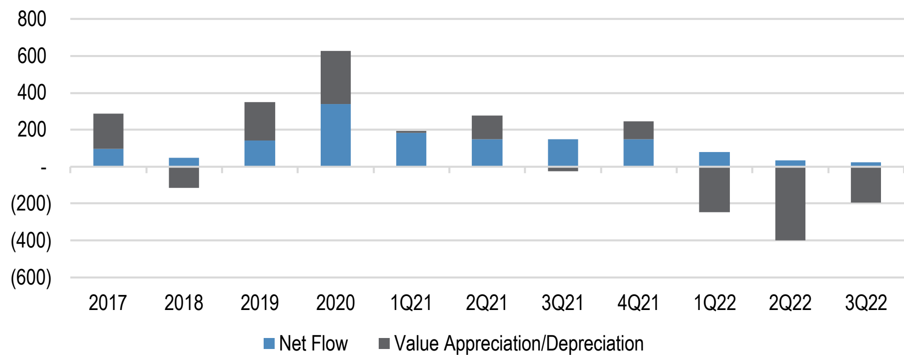
Where Next?

ESG is not immune to cyclical challenges

Global ESG AUM (measured by Morningstar's sustainable universe) have declined by 24% since the start of 2022 as a result of performance factors, many of which are linked to the ongoing geopolitical events and energy crisis. ESG AUM dropped by US$166bn in Q1, US$367bn in Q2, and US$171bn in Q3 primarily due to value depreciation (despite the debates around the future of ESG YTD, net flows remained positive over the period, when considering the Sustainable fund universe).

Figure 47: Variations in ESG AUMs

Breakdown between net flows & value appreciation/depreciation (US$bn.)



Source: J.P Morgan based on Morningstar.

For equity funds, the negative performance may have been partly driven by the market shift from Growth to Value since the beginning of 2022, owing to the lower style exposure of ESG funds to Value. Taking Morningstar's sustainable universe, we found a higher proportion of funds included in the Morningstar categories Global Large-Cap Blend and Growth (32% and 26%, respectively) than in Value (14%). Looking at a broader universe of ESG funds, J.P. Morgan Quantitative Research team highlighted that ESG investment strategies have typically favored underlying sector tilts Long Technology (a proxy for growth) and Short Energy (a proxy for value), and increased their exposure to other Styles, particularly Quality (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Recent Research by ESMA suggests similar results, with the Value exposure of ESG funds declining over time compared to non-ESG funds (link).

Table 10: L/S ESGQ return correlation to L/S styles – since 2018

	Value	Quality	Momentum	Low Volatility	Size
ESGQ	-6.90%	20.40%	21.20%	10.60%	0.50%

Source: J.P. Morgan Quantitative and Derivatives Strategies (link). Returns since 2018. Click here to learn more about ESGQ.

Table 11: Exposure of equity funds to value and growth stocks according to ESMA

	April 2019		September 2021	
	Non-ESG	ESG	Non-ESG	ESG
Value	29%	29%	27%	21% [>***]
Growth	38%	38% [>*]	30%	31% [<<<***]

Source: J.P. Morgan based on Morningstar, ESMA (link). Note: average of EU equity UCITS individual exposure to value and growth stocks as of April 2019 and September 2021. The symbols "<" and ">" indicate whether the exposure is greater for ESG or non-ESG funds. The stars represent the significance level of the differences which is reported as follows: 0.01 (***), 0.05 (**), 0.1 (*). For instance, the symbol "<***" indicates that the exposure is greater for ESG funds than for the non-ESG funds and the difference is significant at the 1 % confidence level.

Regulation will remain a powerful growth driver; further penetration of integration, transparency, and innovation are key for the future of ESG

YTD '22 performance is in stark contrast with the exceptional 40% growth in ESG AUM observed between 2020 and 2021, which we believe was partly driven by the implementation of the landmark EU Sustainable Finance Disclosures Regulation (see here). While we expect this year to accelerate the need for increased clarity on the role of ESG within an investment mandate, we do not expect a widespread reduction in investor attention to ESG as a whole; rather we continue to foresee more attention on the less cyclical ESG challenges such as data quality and impact measurement methodologies.

As we discuss in the following chapters, regulation has been, and will likely remain, one of the most powerful drivers of ESG flows. In addition, many "non ESG" investors (depending on valuation) will choose to invest in the multi-year trends that solutions to ESG-linked issues provide. Several considerations within E, S, and G pillars, such as Governance, have also long been of relevance to "non-ESG" investors. These overlaps in the Venn diagram will likely increase in hand with the financial materiality of E, S and G factors, for example sustainability credentials as a driver of consumer preference and hence top line performance or margins.

We expect further penetration of ESG integration, transparency, and innovation (notably on impact investing) to be key to maintain the attractiveness of the market in the longer term.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

From Integration to Impact: Shades of ESG Investing

Overview

In this chapter, we define the main types of ESG investment strategies, including ESG integration, screening, sustainable thematic investing, impact investing, investment stewardship and portfolio tilting. In our view, the recent growth in ESG integration illustrates the growing popularity of ESG as a complementary tool to financial analysis and will more likely serve investors that consider ESG as a standalone alpha source. We also expect further growth in impact-focused strategies, in line with our view that values and impact will remain major drivers of sustainable investment. We conclude this chapter by a case study highlighting new approaches to ESG investing in highly exposed sectors.

Broadly speaking, we identify six categories of strategies, which have been shaped by multiple factors, including demand and expectations from asset owners, innovations from asset managers, new listing and regulatory requirements, and data availability, and thus will continue to evolve.

Table 12: Definition of most common ESG investment strategies and application in the investment process

	Strategy	Definition
Security Selection	**ESG Integration**	The systematic and explicit inclusion by investment managers of environmental, social and governance factors into financial analysis.
	Screening	Applying filters to lists of potential investments to rule companies in or out of contention for investment, based on an investor's preferences, values or ethics.
	Sustainable Thematic Investing	Investing in themes or assets specifically contributing to sustainable solutions - environmental and social.
	Impact Investing	Investing to achieve positive social and environmental impacts - requires measuring and reporting against these impacts demonstrating the intentionality of investor and underlying asset/investee and demonstrating the investor contribution.
	Investment Stewardship	Employing shareholder power to influence corporate behavior through (i) direct corporate engagement, which consists in discussing ESG issues with companies to improve their handling of such issues; and (ii) proxy voting, which is formally expressing approval or disapproval through proposing and voting on shareholder resolutions on specific ESG issues.
Portfolio Construction	**Portfolio Tilting**	Targeting specific sustainable metrics at portfolio level over a certain hurdle via security selection and position sizing

Source: J.P. Morgan based on the GSIA (link) and PRI (link).

It is noteworthy that ESG investment strategies are not exclusive. For example, integration and screening are often combined with other actions, particularly engagement and proxy voting, which can be employed once the portfolio is built. Similarly, impact investing can be considered as a subset of thematic investing.

Assessing which strategy dominates Morningstar's sustainable universe is difficult because the classification of ESG funds does not follow the categories described

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

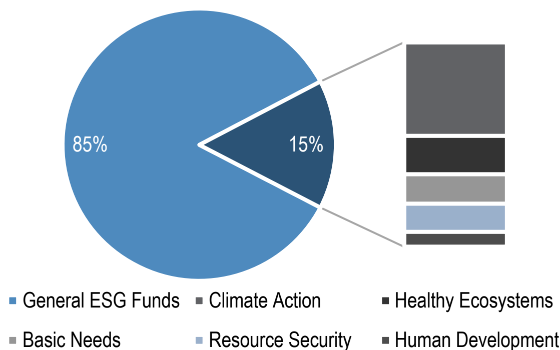
Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

above and excludes some funds that solely rely on integration (see here). At a high-level we found around 85% classified as "General ESG" and 15% as "Thematic" funds (primarily focused on Climate Action) within their universe, per Figure 49 below. On a broader universe such as that tracked by the GSIA in 2020, ESG integration and screening dominate, albeit in our view the categories provided will not always be mutually exclusive (with thematic investing likely overlapping with a number of ESG integration approaches).

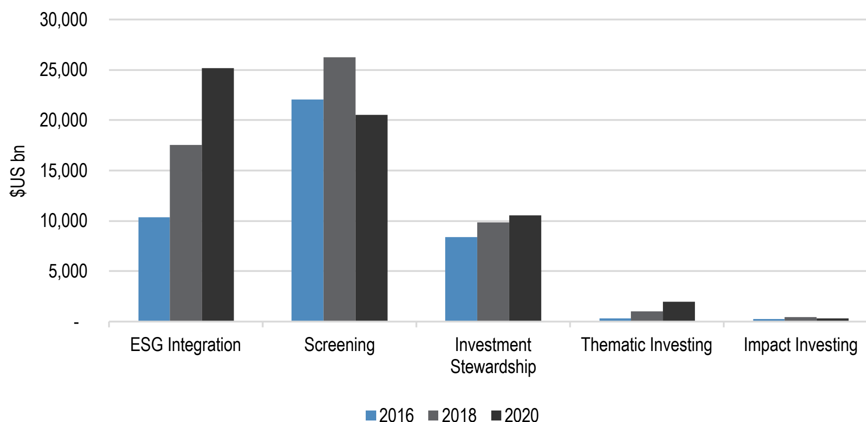
Figure 48: ESG funds in Morningstar's sustainable universe is dominated by "General ESG" Funds

Split between General ESG and Thematic funds, and by theme (% of funds)



Source: J.P. Morgan based on Morningstar as of Sept. 2022. Morningstar's definition of "General ESG Funds" is available here.

Figure 49: According to the GSIA, integration and screening have historically been the most common ESG strategies



Source: J.P. Morgan based on the GSIA (link).

Integration

The rise in ESG integration illustrates the growing popularity of ESG as a complementary tool to financial analysis

The GSIA estimates that AUM under an ESG integration mandate has multiplied by 2.4x between 2016 and 2020. Integration is defined relatively broadly by the GSIA:

"*The systematic and explicit inclusion by investment managers of environmental, social and governance factors into financial analysis*".

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

The US SEC complemented this definition by the idea that ESG factors in integration funds do not have a greater influence than other factors in investment decisions:

"*ESG factors are generally no more significant than other factors in the investment selection process, such that ESG factors may not be determinative in deciding to include or exclude any particular investment in the portfolio*."

Should ESG integration be considered as an ESG investment strategy?
ESG integration strategies have been criticized by some market participants for their lack of emphasis on impact, while others continue to conflate ESG integration strategies with impact investing. In our view, integration is the natural approach adopted by investors who use ESG as a complementary tool to financial analysis, and the first step when building an ESG strategy. In Europe, where ESG approaches (and possibly financial impacts to corporates) are typically more advanced, many investors are expanding integration to all traditional investment and risk management processes (link). This suggests that over time, ESG integration may become "business as usual" for many investment firms and thus, more widespread for investors but less of a differentiator and marketing argument for "ESG funds".

Screening

Screening helps investors to decide if they include (positive screening) or exclude (negative screening) companies based on a set of pre-defined criteria. Negative was the dominant form of screening between 2016 and 2020, according to the GSIA, applying to about US$21 trillion of ESG AUM over the period (vs US$1.6 trillion for positive screening). Having said that, our recent discussions with investors also show growing appetite for positive screening, particularly momentum-based strategies. Inclusions and exclusions are powerful tools as they can apply to both single stock and index derivatives.

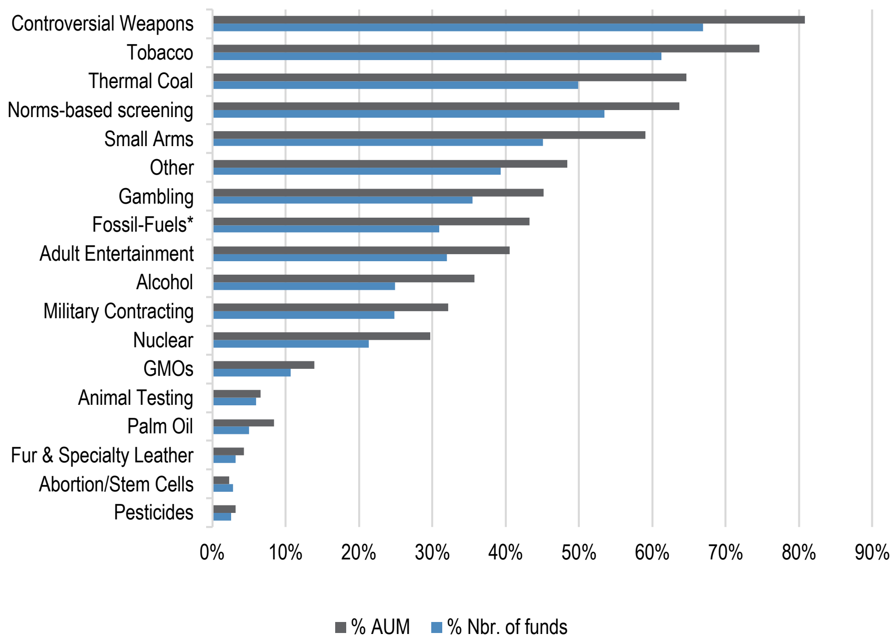
Negative screening is widely applied in ESG investment strategies
As of September 2022, c.76% of funds classified as "sustainable" by Morningstar employed some forms of negative screening. Most common criteria for negative screening include non-compliance with international norms (including on controversial weapons) and tobacco. The fossil fuel divestment campaign launched by 350.org in 2008 also resulted in the exclusion of companies operating in the coal, oil and gas industries by 1,550 institutions representing US$40.48tn of assets (link), partly owing to concerns over the risk of stranded assets (see glossary).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 50: Exclusion criteria employed in global sustainable funds



Source: J.P. Morgan based on Morningstar as of Sept. 2022. Note: % AUM (Nbr. of funds) is calculated as the total AUM (number) of global sustainable open-end funds and ETFs employing specific exclusion criteria divided by the total AUM (number) of global sustainable open-end funds and ETFs employing exclusion criteria. The sum does not add up to 100% as most funds employ several exclusions. *The category "fossil fuels" may encompass a diverse set of exclusion criteria based on the type of fossil fuel and the degree of companies' exposure among others.

In Europe, exclusion criteria have been partly shaped by sustainable finance labels

Labels provide a third-party opinion on the alignment of an ESG fund with a set of pre-defined criteria. Most exclusion criteria currently apply to the defense, tobacco, nuclear, and fossil-fuel sectors.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 13: Exclusion criteria in European sustainable labels

Exclusion Type	LuxFLAG ESG (Luxembourg)	FNG-Siegel (Germany, Austria & Switzerland)	Towards Sustainability (Belgium)	Umweltzeichen (Austria)	Nordic Swan Ecolabels (Nordic Countries)
Norms-based	Global Compact & OECD Guidelines	Global Compact	Global Compact + MSS[1] of the EU Taxonomy	"In house" framework	"In house" framework
Controversial Weapons	Resale & production	Production & components	Resale, production & components	Resale & production	Resale, production & components
Conventional Weapons	-	Production & components	Production & components	Resale & production	Resale, production & components
Tobacco	Resale & production	Production	Resale, production & components	-	Resale & production
Genetic Engineering	-	-	-	Resale & production	-
Nuclear Energy	>5% of revenue from uranium exploration and extraction, the production of nuclear-based electricity, and nuclear-related equipment and services *(criteria will likely be revisited following the EU's decision to include nuclear in the Taxonomy)*	>5% of revenue from uranium exploration and extraction, the production of nuclear-based electricity, and nuclear-related equipment and services	>5% of revenue from uranium exploration and extraction, and the production of nuclear-based electricity	>5% of revenue from uranium exploration and extraction, the production of nuclear-based electricity, and other nuclear-related equipment and services	>5% of revenue from uranium exploration and extraction, the production of nuclear-based electricity, and nuclear-related equipment and services
Coal	"Encouraged"	5% of revenue from exploration and extraction, and 10% from the production of coal-based electricity	5% of revenue from exploration, extraction, and the production of coal-based electricity	5% of revenue from exploration, extraction, and the production of coal-based electricity	5% of revenue from exploration, extraction, and the production of coal-based electricity
Oil & Gas	"Encouraged"	5% of revenue from exploration, extraction, and equipment and services to unconventional modes of production[2]	Non-expansion of unconventional capacities[3], and at least one additional criteria: (i) 5% of revenue from unconventional, (ii) 50% of CapEx to contributing activities[4], (iii) declining carbon intensity[5]	5% of revenue from exploration, extraction, and production of oil and gas, and production of oil-based electricity	5% of revenue from exploration, extraction, and production of oil and gas, and production of oil and gas-based electricity

Source: J.P. Morgan based on Novethic (link), Toward Sustainability Technical Criteria (link). Note: the information on labelling criteria is based on eligibility criteria documents available online on March 31st, 2022. The French SRI Label was excluded as it only requires *disclosure* of exclusion criteria applied by the fund manager. [1]: Minimum Social Safeguards, see section on the EU Taxonomy here; [2]: Unconventional oil and gas include oil sands and hydraulic fracking technologies. [3]: Unconventional oil and gas include extraction of tar/oil sands, shale oil, shale gas and Artic drilling. [4]: Activities included in the EU taxonomy, see details here, [5]: In line with 2°C scenario from the IEA.

Table 14: Companies in our European coverage that meet selected exclusion criteria of European sustainable labels (JPMe)

Exclusion Type	Companies in our European Coverage
Controversial Weapons Exposure	None
Conventional Weapons Exposure	All our European Defense coverage: BAE Systems, Rolls-Royce, Babcock, Thales, Dassault Aviation, Naval Group, Safran, Airbus, Rheinmetall, KMW+Nexter, ThyssenKrupp, Hensoldt, MTU Aero, Leonardo, Saab
Tobacco Exposure	All our European Tobacco coverage: Imperial Brands, Philip Morris International, Swedish Match, British American Tobacco
Uranium Mining (>5% revenue)	Kazatomprom
Nuclear Power (>5% revenue)	Endesa, Enel, Iberdrola, Naturgy, Engie, E.ON, Fortum, RWE, Uniper, Centrica
Coal Mining (>5% revenue)	BHP, Glencore, Anglo American
Coal Power (>5% revenue)	EDP, ENEL, Engie, E.ON, Fortum, RWE, Uniper
Oil & Gas (>5% of revenue from oil & gas exploration and production)	All our European Integrated Oil & Gas coverage (Shell, BP, Total Energies, ENI, Equinor, OMW, Galp)
Oil & Gas (>5% revenue from oil sands and hydraulic fracking technologies)	None
Oil & Gas (>5% revenue from tar/oil sands, shale oil, shale gas and Artic drilling)	None
Oil & Gas (>1% CAPEX from tar/oil sands, shale oil, shale gas and Artic drilling)	Shell, BP, Equinor, Total Energies: likely >1% spend on unconventionals. We note that the definition of "expansion" is not straightforward as shale assets are high decline so most 'growth' activity can often be net replenishment rather than net addition. OMV and Galp do not have unconventional exposure.
Gas Power	EDP, Endesa, Enel, Iberdrola, Naturgy, Engie, E.ON, Fortum, RWE, Uniper, SSE
Oil Power	Endesa, ENEL

Source: J.P. Morgan estimates based on latest available data.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Will exclusion criteria evolve? Not all have the flexibility to do so

While we have seen few significant changes to exclusion criteria historically, results from a recent investor survey conducted by J.P. Morgan suggest that cyclical challenges, such as those linked to Ukraine-Russia and the energy crisis, may impact some exclusion criteria (link).

About half of respondents indicated that some of their fossil-fuel-related exclusions could evolve as a result of the current energy crisis, while only 28% expect no change (albeit with significant divergence between generalists and ESG specialists). The proportion of respondents who expected their exclusion policies on defense to evolve was significantly lower (15%), although this could still have a notable impact on investor perception on the sector according to our European Defense analysts (link).

Having said that, asset managers may have limited flexibility to depart from established exclusions, which are often set by asset owners themselves: According to the PRI, 64% of asset owner signatories systematically required their actively managed equity assets to comply with their own exclusion policy in 2021, and 61% for actively managed fixed-income (link). European funds may have even less flexibility if they seek to receive one of the ESG labels described in Table 13, as we do not expect their exclusion criteria to evolve rapidly. Further, some exclusions will likely remain a pre-requisite for inclusion in ESG funds in our view, such as compliance with international norms including on controversial weapons, and exposure to coal, which is seen as incompatible with most Paris-aligned climate scenarios (see here for more details on the Paris Agreement).

Positive screening: the rise in “momentum-based” strategies

Positive screening has historically included best-in-class and best-in-universe approaches, which consist in investing in the top performers within a sector or broader investment universe. More recently, positive screening has also focused on identifying best improvers, which are companies that have experienced, or are likely to experience a significant positive change in ESG ratings or key ESG metrics (so-called “momentum-based” strategies). From a quantitative perspective, we already mentioned that risk-adjusted returns were higher for stocks combining a high and rising ESG score (6%), vs high and falling (3.5%), low and rising (0.1%), and low and falling (-0.6%), resulting in the inclusion of a momentum component in J.P. Morgan’s ESGQ (see here). At a fundamental level, positive screening based on stock picking can enable investors to express constructive stances on companies and industries highly exposed to ESG risks, especially when combined with investment stewardship (see our case study here).

How to identify a momentum player? The example of RWE

While RWE derives a relatively small portion of its revenue from renewable activities (only 18% in 2021), the company has pledged to reach carbon neutrality by 2040 through a complete transition of its business model from coal to renewables. Its growth strategy ‘Growing Green’ is backed by €50 billion in investments in renewable energy by 2030, a number that we expect to increase further. The resulting ratio of green capex over green revenue (88% vs 18%) is a powerful forward-looking indicator of its alignment with the Paris Agreement, in our view. We are confident that the company will deliver on its plan given its track-record: RWE no longer operates any hard coal fueled power plants in Germany and the UK, will gradually

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

shut down until 2038, and convert remaining units to biomass plants in the Netherlands.

Please click here to access the full note: RWE – Green Sparks.

Please click here to access the full analysis on ESG Discovery, our new digital platform to centralize forward-looking fundamental ESG analysis from our sector analysts working in fundamental Equity and Credit Research.

Table 15: RWE earns median-grade ESG Ratings by MSCI, Sustainalytics, and Refinitiv

	Better ESG						Weaker ESG
MSCI	AAA	AA	A	BBB	BB	B	CCC
Sustainalytics	15-	15-20	20-25	25-30	30-35	35-40	40+
Refinitiv	90+	90-80	80-70	70-60	60-50	50-40	40-

Source: J.P. Morgan based on Bloomberg, Sustainalytics and Refinitiv as of Sept. 2022. For detail on each of those ratings, please see the section on ESG Ratings here.

Thematic and Impact Investing

Investors typically differentiate between sustainable thematic investing and impact investing: The first refers to investing in order to benefit from a particular (sustainable) trend, while the latter, as per the widely accepted definition from the Global Impact Investing Network (GIIN), puts the emphasis on generating positive, measurable social and environmental impact alongside a financial return. Impact investing can thus be thought of as a subset of Sustainable thematic investing with the measurability feature setting it apart.

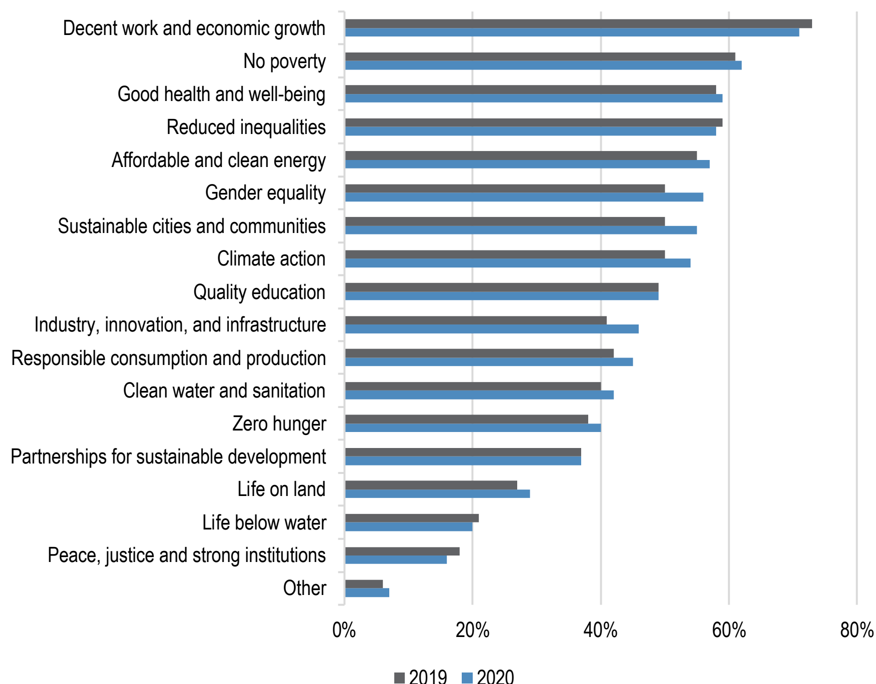
As mentioned in the second chapter, impact investing remains one of the primary drivers of responsible investment and the ultimate objective for many ESG investors. According to the GIIN's annual survey, social-related SDGs were most targeted by impact funds over the recent years, while "Affordable and clean energy" and "Climate action" were the most represented environmental objectives.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 51: "Decent work and economic growth" and "No poverty" were the top two SDGs themes targeted by impact investors over the past two years



Source: J.P. Morgan based on the GIIN Annual Impact Investor Survey (link).

"The current business model - focused on short term financial returns for shareholders – is not conducive to support business' contributions to the SDGs"

United Nations

While impact investing is perceived as the ultimate goal for many ESG investors, it is also the most difficult to implement, in our view.
Assessing holistically the positive and negative effects of a company or project on people and the planet is a challenging exercise. Among others, it needs to consider the multiple sustainability dimensions, which may be measured using different indicators, and are sometimes contradictory (for example, a desalination plan may be seen as a solution to improve water availability but could have negative impacts on climate, as this technology is typically highly energy-intensive).

Second, impact investment typically implies a long time horizon and higher level of risks, which may deter many investors (see link). In a recent report, the G7 Impact Taskforce recommended development banks to take more actions to address this issue, including by scaling up public-private financing (so-called "blended finance") and partnerships (link).

Third, impact investing might imply giving up some financial performance to achieve sustainability objectives, as mentioned by the US SEC in their proposed reporting requirements for impact funds (see link), although further Research would be needed to demonstrate this, which may also vary significantly according to the selected timeframe.

Despite those challenges, initiatives have emerged to improve and standardize impact measurement.

- In the EU, the taxonomy of sustainable activities attempts to standardize the definition of technologies and activities that can be considered as having a positive sustainability impact. Its framework considers the compatibility of the activities with the Paris Agreement, and their potential side-effects on other

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

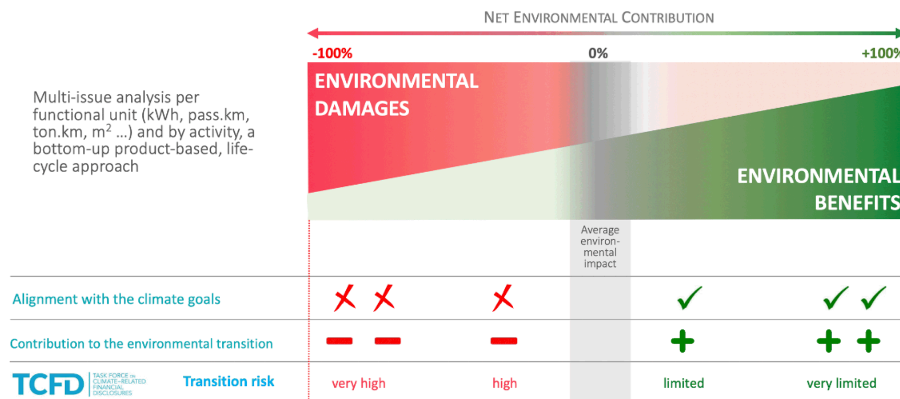
Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

environmental and social objectives. Please see the chapter on ESG Regulations to learn more (here).

- At a global level, the Impact Measurement Project is working to "build and further global consensus on how to measure, assess and report impacts on people and the environment." This initiative is supported by the United Nations and includes leading impact-focused organizations such as the GIIN, International Finance Corporation (IFC), PRI, and OECD, as well as sustainability standards setters (link).
- The Stockholm Resilience Centre identified nine planetary boundaries "within which humanity can continue to develop and thrive for generations to come" (link). It provides a common framework for assessing the positive impact of a company or activity, based on its compatibility with those planetary boundaries.
- Some investors have invested significantly into models that can provide a holistic measurement of impact, such as the Net Environmental Contribution (NEC) initiative founded by Sycomore, SWEN Capital Partners, Ofi and Eurinvest, which aims at measuring contribution of activities and companies to the global transition toward a sustainable, resilient economy.

Figure 52: The NEC metric calculates the extent to which activities and companies are aligned with the global transition toward a sustainable, resilient economy



Source: NIC (link).

Investment Stewardship

As part of their investment strategies, many ESG investors seek to influence the company's ESG decisions, practices, and disclosures. Voting at general meetings and engaging directly with companies' management or policy makers (alone or in collaboration with other investors, so-called "collective engagement") have become increasingly popular tools to achieve this goal, according to the GSIA. While voting is exclusively used by equity investors for obvious reasons, engagement is increasingly incorporated into responsible investment policies of fixed-income investors (link).

More ESG proposals, but how many go through?

The number of ESG-related proposal filings has increased materially over the past three years (+43% for Russell 3000 companies between 2020 and 2022), led by climate and human capital-related proposals, which more than doubled over the period (link). However, debate remains on their efficacy. In 2022, only 9% of ESG proposals received support from more than half of shareholders, the lowest level

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

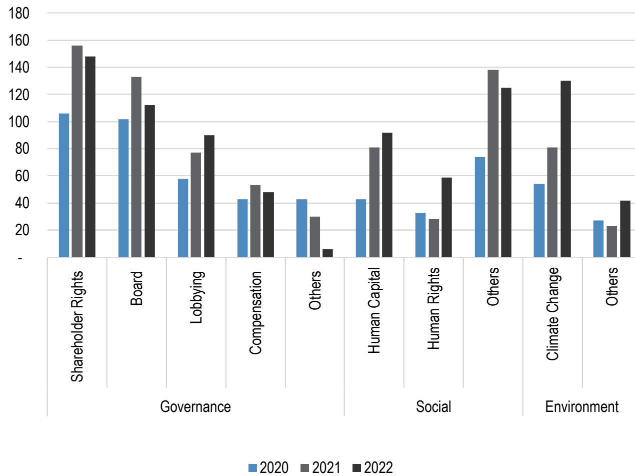
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

since 2020 according to Freshfields. The varying quality and relevance of some of the shareholder proposals were recently noted by Blackrock:

> "*In the U.S., the Securities and Exchange Commission revised guidance on shareholder proposals resulted in a marked increase in environmental and social shareholder proposals of varying quality coming to a vote (…). Our early assessment is that many of the proposals coming to a vote are more prescriptive and constraining on management than those on which we voted in the past year. (…) global proxy advisors ISS and Glass Lewis have been recommending that shareholders not support overly prescriptive or constraining proposals.*"
>
> Blackrock, 2022 Investment Stewardship report (link)

Figure 53: ESG-related shareholder proposals has increased by 46% over the past three years…

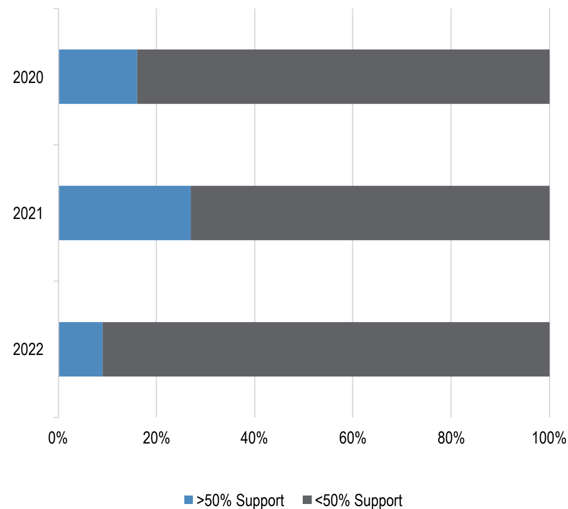
Number of proposals by topic and year



Source: J.P. Morgan based on Freshfields' Trends and Updates from the 2022 Proxy Season Report (link) and ISS. Scope: Russell 3000 companies.

Figure 54:...Although debates persist on their efficacy

Number of proposals by level of support and year



Source: J.P. Morgan based on Freshfields' Trends and Updates from the 2022 Proxy Season Report (link) and ISS. Scope: Russell 3000 companies.

One feature of many ESG proposals is that they can attempt to be too broad or far reaching, which even if supported can make them challenging to implement. The 2022 proxy season suggests that climate-related proposals that are "narrowly tailored and core to a company's business" are more likely to receive broad support (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Example of a proposal receiving broad support: Chevron's methane emissions disclosures

Background

The Environmental Protection Agency (EPA) formula used to estimate methane emissions is not a good foundation for a corporate mitigation strategy. It fails to capture many major leaks, wasting valuable product (worth $2 billion per year) and substantially underestimates potent emissions. Actual emissions have been found to be between 50 and 90% higher than what is reported using the formula (…) According to EPA data, Chevron ranks 73d of U.S. top 100 oil and gas producers, with a methane intensity of 0.08%. However, given the limitations of EPA's methodology it is unclear whether this ranking can be trusted.

Proposal

Shareholders request that the Board issue an analysis of (…) the reliability of Chevron's methane emission disclosures. The report should:

- Summarize the outcome of any activities to directly measure methane emissions by the Company;
- Provide investors with insight as to whether there is likely to be a material difference from the Company's published estimates of methane emissions;
- Assess the degree to which the difference may also alter estimates of the Company's Scope 1 emissions.

The report should be made public, omit proprietary information and be prepared expeditiously at reasonable cost.

At management's discretion, we recommend consideration of the feasibility of the following in the report:

- Provide a narrative explanation of the difference between the Company's estimated methane emissions and the Company's own direct measurements, or any third party measurements, by site or region;
- Reporting any efforts to validate emissions estimates and disclosure through a third-party audit or evaluation.

Shareholder Support: 98%

Source: CERES (link).

Example of a proposal receiving limited support: Imperial Oil's capex alignment with a net-zero scenario

Background

In its World Energy Outlook 2021, the International Energy Agency (IEA) has produced a comprehensive Net Zero Emissions by 2050 scenario (NZE) in which "the rapid drop in oil and natural gas demand means that no fossil fuel exploration is required, and no new oil and natural gas fields are required beyond those that have already been approved for development… Also not needed are many of the liquefied natural gas (LNG) liquefaction facilities currently under construction or at the planning stage" (link). Imperial Oil could redirect expenditures dedicated to explore and increase reserves to low carbon opportunities such as using bitumen to produce non-combustion and high-value products (see Alberta Innovates' Beyond Bitumen Combustion strategy, link).

Proposal

Shareholders request that Imperial Oil adopt a policy to cease capital expenditures in exploration and developments of new oil and gas fields in order to align its business strategy to a net zero emissions by 2050 pathway as described in the International Energy Agency Net Zero Emissions by 2050 scenario.

Shareholder Support: 1.5%

Source: CERES (link).

In addition, organizations such as Share Action have pointed to the lack of disclosures on proxy voting currently, with only 55% of the world's 75 largest asset managers disclosing a record of proxy votes at Annual General Meetings and 17% disclosing the reasons for their voting decisions in 2020 (link). These suggest that more transparency and guidance may be needed for voting to become a compelling component of ESG strategies.

Engagement: more transparency may lead to a bright future

While there is limited data on the number of ESG-related engagement initiatives, various investor surveys and alliances suggest that these have become an important component of investors' ESG investing strategy. 51% of ESG funds within Morningstar's sustainable universe indicate using engagement as part of their investment process (as of Sept. 2022), while the PRI reported a growing proportion of signatories reporting engagement with policy makers in 2021 (link), and a growing number of collaborative investor engagements on its website:

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 55: Collaborative investor engagements on ESG issues coordinated by the PRI since 2015

Source: J.P. Morgan based on the PRI (link).

Similarly to voting, more transparency is needed on the actual outcomes of engagement initiatives, with only 17% of the world's 75 largest asset managers publishing "a comprehensive record of ESG-related engagement" in 2020 according to Share Action (link). Our own discussions with investors suggest that engagement is increasingly seen as a constructive way to support companies in their transition compared to exclusions (see our case-study below).

J.P. Morgan EMEA Equity Research has developed a library of engagement questions to help investors in their engagement efforts, which can be accessed on ESG Discovery (link).

Portfolio Tilting

Investors may seek to construct a sustainable portfolio by targeting one or several metrics (GHG emissions, Diversity Equity and Inclusion targets, weighted average ESG score where the individual scores are provided by an external vendor, etc.) above a predetermined hurdle (this can be the fund's benchmark or some other pre-defined goal). This can be achieved by security selection as described above, but also through a sizing framework where investors choose to consciously allocate larger positions to ESG winners or improvers.

Case Study: "Managed Phaseout" In Highly Exposed Sectors

In 2022, 450 financial institutions representing $130 trillion of assets launched the Glasgow Financial Alliance for Net Zero (GFANZ)[3] at the annual international climate negotiations (COP26). Members committed to accelerate the decarbonization of high-emitting assets, primarily energy companies producing or consuming fossil-fuels, through a combination of screening and proactive engagement rather than divestment, which imply giving up the ability to drive positive change (link).

According to the alliance, this "managed phaseout" approach enables to:

"*Mitigate financial marginalization for companies with high-emitting assets but credible transition plans; Allow financial institutions to stay engaged with companies in high-emitting sectors and support them through their transition to net-zero; and Draw in broader stakeholders in support of a just transition and continuity of critical services.*"

[3] Note that the GFANZ resulted in a number of "sub-alliances", including the Net-Zero Asset Managers initiative, Net-Zero Banking Alliance, Net-Zero Asset Owner Alliance, Paris Aligned Investment Initiative, Net-Zero Insurance Alliance, Net Zero Financial Service Providers Alliance and the Net Zero Investment Consultants Initiative. See our dedicated report on the Net Zero Asset Management Alliance to learn more (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Transition strategies on the hook

The key focus of investors applying a managed phaseout approach is the so-called "climate transition strategy" of companies. While there is no standard definition of a transition strategy, it can be broadly defined as:

"*A time-bound action plan that clearly outlines how an organization will pivot its existing assets, operations, and entire business model towards a trajectory that aligns with the latest and most ambitious climate science recommendations. i.e., halving GHG emissions by 2030 and reaching net-zero by 2050 at the latest, thereby limiting global warming to 1.5°C.*" (Carbon Disclosure Project[4])

A transition strategy typically describes a series of actionable steps to meet a long-term Net Zero (also called climate neutrality) target. A Net Zero target means that the company commits to cutting greenhouse gas emissions to as close to zero as possible and re-absorb any remaining emissions from the atmosphere. Net-zero pledges covered 91% of global GDP in June 2022, vs 68% in 2021 and only 16% in 2019 (link and link).

Credible transition strategies as criteria for positive screening

The main challenge for investors using a managed phaseout approach is demonstrating that their investees progress towards their long-term climate target and thus, that their investment portfolios will decarbonize over time. As a first step, investors may decide to only invest in companies that have robust and credible transition strategies. Several frameworks have emerged to help investors in this assessment, including the Sciences-based Target Initiative (SBTi) and Transition Pathway Initiative (TPI). While their methodology may slightly differ, those organizations generally use the following criteria to assess the credibility of transition plans:

- Inclusion of interim targets and milestones
- Clear timeline for both interim and long-term targets
- Clarity on the type of GHG emissions covered (carbon, methane, etc.) and scopes (1, 2, and 3)
- Details on how the transition plan will be financed
- Company's reliance on carbon offsets and credits.

[4] Carbon Disclosure Project (CDP): please visit the section of the report dedicated to corporate reporting for more details (here).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 16: Main frameworks available to investors to assess the quality of a company's Net Zero target and transition plan

	Role	#. of companies in scope	Business Model	Link
CDP	Collects and analyses quantitative and qualitative information on companies' climate strategy, including their transition plans	13,114 (analysis of transition plans available only at aggregated-level)	NGO funded by a combination of government and philanthropic grants and mission-complementary fee for service	Here (information at company-level is available here)
SBTi Net Zero Standard	"Validates" that a company's Net Zero target is in line with SBTi's Net Zero Standards	Net zero targets of 15 companies validated (as of June 2022), and 1,118 submitted net zero targets awaiting approval	Partnership between the UN and three NGOs: CDP, the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF).	Here
Transition Pathway Initiative (TPI)	Assesses the alignment of companies' climate target with climate scenarios from the IEA	491	Research Centre at the London School of Economics, supported by 131 investors($US50tn AUM)	Here
Net Zero Tracker	Assesses the quality of Net Zero targets based on public disclosures (link)	2,001	Partnership between the University of Oxford, the Net Climate Institute, the Energy & climate Intelligence Unit and Data-Driven EnviroLab	Here
Climate Action 100+	Assesses companies on emissions reductions, climate-related governance and disclosures	166 (representing 80% of global industrial emissions)	Coalition of 700 investors ($US68tn AUM) engaging with largest global emitters on their climate strategy	Here

Source: J.P. Morgan based on the Net Zero Stocktake Report from Net Zero Tracker of June 2022 (link), CDP, SBTI, NZ Tracker, Climate Action 100+, CCRM and WWF as of Sept. 2022.

Engagement and voting to generate accountability

Investors also use engagement and voting to attempt to hold companies accountable for delivering on ambitious climate commitments. Climate Action 100+ is the largest investor alliance engaging with companies on their transition strategy. Engagement focuses on three key asks: (i) implementing strong governance of climate risks, including board oversight; (ii) enhancing climate disclosures; and (iii) reducing absolute GHG emissions. The organization also 'flags' shareholder proposals that align with those three objectives and in 2022, four of the 37 proposals flagged by the initiative received majority support (echoing our earlier comment that shareholders remain cautious about proposed ESG resolutions):

Table 17: Four proposals flagged by Climate Action 100+ have received majority shareholder support

Company	Shareholder Proposal	Support (%)	Link
Chevron Corp	Report on Methane Measurement	98%	Here
Caterpillar Inc.	Report on GHG Emissions Targets	96%	Here
Boeing Co.	Report on alignment with Climate Action 100+ Benchmark Net Zero Indicator	91%	Here
ExxonMobil	Report on Climate Change Financial Risks	51%	Here

Source: J.P. Morgan based on Climate Action 100+ (link), as of May 26, 2022.

The managed phaseout: a framework for combining "E" and "S" investing?

One of the key objectives of the managed phaseout approach is ensuring a "just transition", which is minimizing negative repercussions from climate policies and maximizing positive social impacts for workers and communities (see glossary) – in other words, considering both the "E" and the "S" of ESG.

"*The early retirement of high-emitting assets can come with significant just transition considerations as the assets may be of particular importance in a national or local context. For example, affected stakeholders might face loss of employment, discontinuity of critical services, and other challenges. The potential to incorporate just transition considerations and partner with broader stakeholders can be key to both successful financing and delivery of a Managed Phaseout plan.*"

GFANZ (link)

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

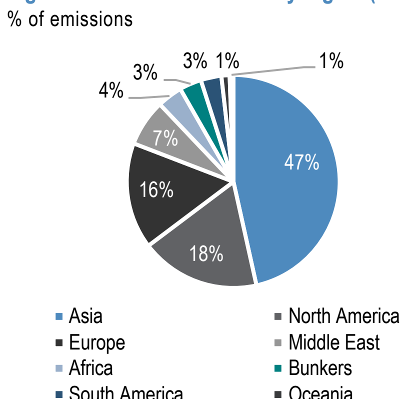
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Our Global Energy team highlighted the importance of an effective just transition in their J.P. Morgan Global Energy Outlook (link), which forecasts that supply growth would miss demand growth by 20% by 2030 given current spending rates, implying an energy deficit and structurally higher energy prices, potentially leading to higher levels of energy poverty. However, we also emphasized that ESG investors typically consider a just transition more holistically and on a longer timeframe, including the social costs associated with physical risks (see ESG Meets GEO). In this perspective, as with any other climate strategies, the success of the managed phaseout approach will eventually be measured by its ability to reduce investees' absolute GHG emissions sufficiently rapidly to align with the Paris Agreement.

Asia: a bright spot of transition opportunities

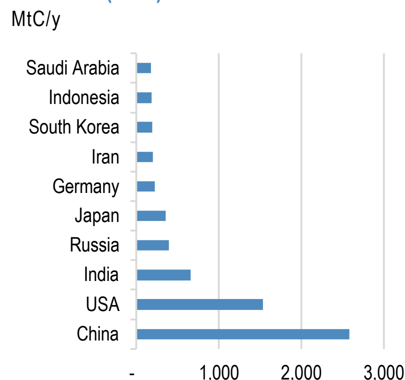
As investors look to transition their portfolios toward Net Zero by targeting real emissions reductions on a global scale, they cannot ignore Asia. Almost half of global emissions are generated in Asia, making the region the most environmentally material to climate change.

Figure 56: Global emissions by region (2019)
% of emissions



Source: J.P. Morgan based on the Global Carbon Project (link).

Figure 57: Five of the top 10 emitters are Asian countries (2019)
MtC/y



Source: J.P. Morgan based on the Global Carbon Project (link).

J.P. Morgan Asia Pacific ESG Analysts have developed a framework to identify climate alpha opportunities in carbon-intensive sectors (link), which shows that companies that have forward-looking net zero commitments and a track record of reducing emissions intensity outperform their sector peer group, with Utilities showing the biggest divergence, with 11% excess returns, followed by Materials with 8% outperformance and Energy at 6% over the past year.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Alphabet Soup: Data, Ratings & Indices

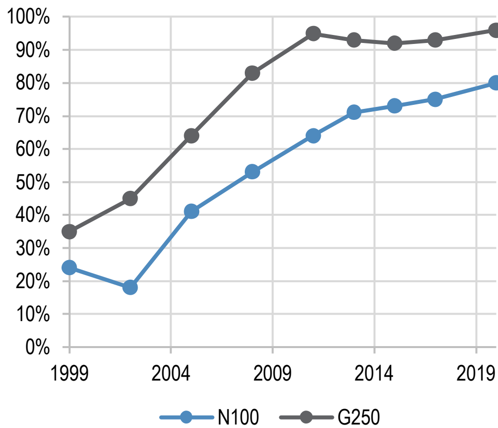
In line with the broader ESG market, the market of ESG data and Research has experienced both rapid growth and diversification over the past decade. We start this chapter by reviewing key features and limitations of companies' sustainability disclosures, including the persisting lack of standardization and availability compared to investors' needs. We then introduce the role of ESG data providers in addressing some of the challenges discussed throughout this Primer, including the various investment objectives of ESG strategies and lack of reported data, although they themselves facing growing criticisms. Despite progress, the lack of high-quality and comparable ESG data remains one of the most pressing challenges for investors, in our view.

Corporate Reporting

The availability of corporate disclosures has improved

Companies have considerably increased the amount of ESG disclosures since the early 2000s, pushed by growing investor demand, regulations and industry initiatives.

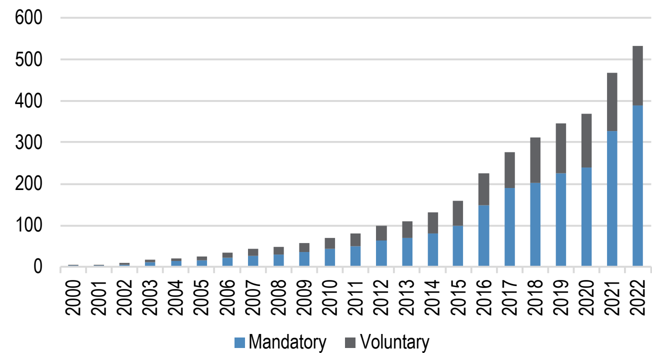
Figure 58: Sustainability reporting rates have improved dramatically since the early 2000s…



Source: J.P. Morgan based on KPMG Survey of Sustainability Reporting 2020 (link). Note: N100 includes the top 100 companies by revenue in 52 jurisdictions selected for the study. G250 includes the world's 250 largest companies by revenue as defined in the Fortune 500 ranking of 2019.

Figure 59: …Partly driven by growing regulatory requirements

Cumulated number of corporate disclosure requirements and split between mandatory and voluntary disclosures



Source: J.P. Morgan based on the PRI (link). Note: 2022 YTD (as of Aug. 24th).

Companies have historically based their sustainability reporting on voluntary sustainability reporting standards.

To identify relevant information points, companies have historically relied on organizations such as SASB and the Global Reporting Initiative (GRI), which developed voluntary reporting sustainability standards. We summarize below the standards that have been most widely used to date.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

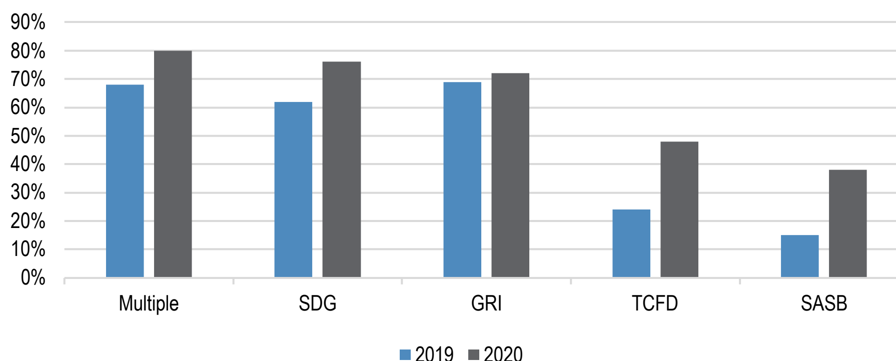
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 18: Most-established international sustainability reporting standards include the GHG Protocol, GRI, SASB, TCFD, CDP and the SDGs

Global Reporting Initiative (GRI)	Greenhouse Gas Protocol	Climate Disclosure Project	Value Reporting Foundation (previously SASB)	UN SDGs	Task Force on Climate-Related Financial Disclosures
Cross-sector sustainability reporting standards, founded in the US in 1997 (first version of the standards published in 2000).	GHG accounting standards launched in 2001 by the WRI and the World Business Council for Sustainable Development (WBCSD).	Questionnaire on companies' exposure to, and management of climate, water and forests. First disclosures date back to 2002.	Sector-specific sustainability reporting standards founded in the US and launched in 2011.	Framework for reporting positive impact published by the UN in 2015	Guidance on climate-related disclosures published by the G20 Financial Stability Board in 2017

Source: J.P. Morgan.

Figure 60: Most companies use a combination of standards to report their ESG data



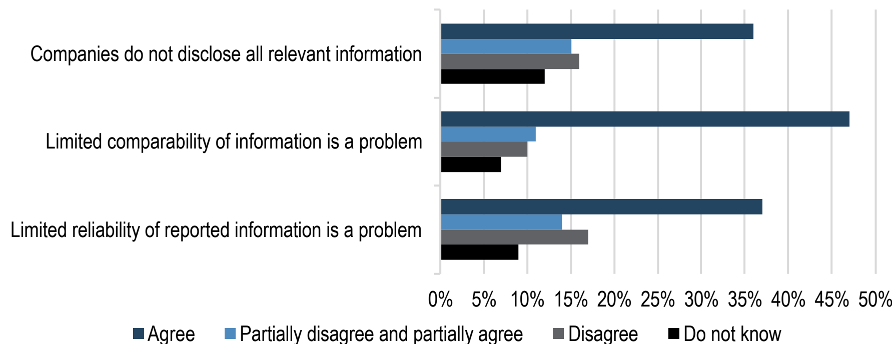
Source: J.P. Morgan based on the International Federation of Accountants (link). Note: "The percentage of ESG reporting framework/standard is calculated as the number of reports that disclose the use of a specific framework/standard vs. the total number of reports that include ESG information (1,283). The sum of the percentages indicated exceeds 100% because most companies use more than one framework/standard for reporting purposes."

"Voluntary reporting frameworks and guidance have prompted innovation and action, although fragmentation has also increased cost and complexity for investors, companies and regulators."

IFRS

Current sustainability reporting practices have delivered mixed results so far. While these standards have undoubtedly helped to scale sustainability disclosures, they have failed to address the needs of investors for comparable, high-quality and consistent data, as shown in a recent survey conducted by the EU Commission.

Figure 61: There is a consensus that the availability, comparability and reliability of ESG data need to improve



Source: J.P. Morgan based on the EU Commission's Summary Report of the Public Consultation on the Review of the Non-Financial Reporting Directive, 2020 (link).

We identify four main limitations to existing sustainability reporting practices.

- **Comparability**: Because sustainability reporting standards are voluntary, companies are able to "pick and choose" the metrics they report on, resulting in

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

companies disclosing different information points. Even when companies seemingly report similar metrics, they often use different methodologies or scope to report their performance.

We illustrate this challenge with the example of reporting on accident frequency rate from five companies in the construction sector, which are not comparable because (i) there isn't a standardized definition of "accident", (ii) some only provide this information at Group-level while some do not, (iii) some exclude contractors from this metric.

Table 19: Reported ESG metrics such as occupational health and safety can be difficult to compare

Comparison of reporting on accident frequency rate for selected companies in the construction sector

	2021 Value	Calculation	Scope	Treatment of Contractors
ACS	13.64	Number of accidents occurring during the working day / Million hours worked	Group	Provided separately for employees and contractors (we indicate the rate for employees).
Bouygues	4.9	Number of accidents involving time off work * 1,000,000/Hours worked	Group	Not disclosed
Eiffage	5.87	Number of lost-time workplace accidents * 1,000,000/Hours worked	France, provided other large markets but not aggregated at Group-level (we indicate the rate for France)	Provided separately for employees and contractors (we indicate the rate for employees).
Ferrovial	6.7	Number of accidents with sick leave * 1,000,000/Hours worked	Group	Frequency rate provided separately for employees, and employees and contractors together (we indicate the rate covering both categories).
Vinci	0.95	Number of recognized occupational illnesses * 1,000,000/Hours worked	Group	Not disclosed

Source: J.P. Morgan; Company Reports.

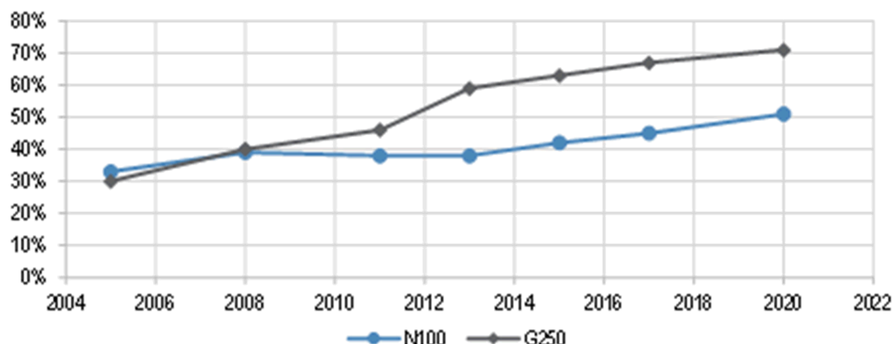
- **Consistency**: Companies can and frequently do change the methodology used to measure metrics and report information. This is particularly problematic given meaningful changes in a company's environmental and social practices often take time to materialize in reported metrics. For example, climate-related investments such as changing the whole vehicle fleet, purchasing new energy-efficient equipment, and engaging with suppliers can take several years to translate into tangible reduction in GHG emissions.
- **Reliability**: Data suggests that assurance of sustainability data has improved, particularly among large firms listed in developed markets. However, external assurance often covers selected metrics only, primarily GHG emissions, as opposed to the company's whole sustainability reporting. More importantly, reasonable assurance remains rare, which implies that most companies have room to improve the credibility of their sustainability information.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 62: The % of companies seeking external assurance improved between 2017 and 2020



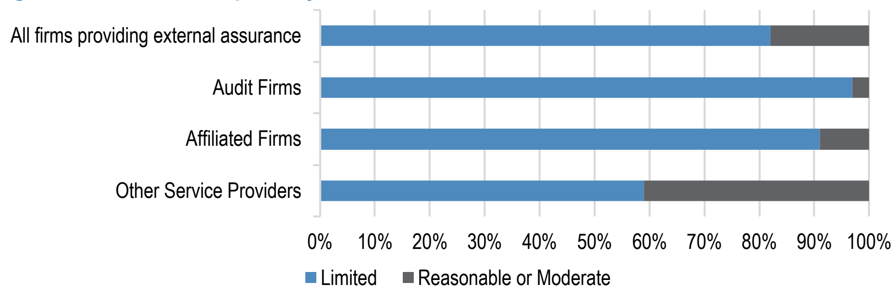
Source: J.P. Morgan based on KPMG Survey of Sustainability Reporting 2020 (link). 2020 figures are estimates of the underlying trend, based on the analysis of the same group of countries and jurisdictions in both 2017 and 2020. The actual N100 rate of assurance based on the new 2020 group of jurisdictions was 49%.

Table 20:…But external assurance rarely covers all sustainability information

Sustainability Information	Companies receiving external assurance (%)
GHG Emissions	95%
Other Environmental	78%
Social	68%
Governance	43%
All Sustainability Information	43%

Source: J.P. Morgan based on the International Federation of Accountants (IFAC) (link).

Figure 63:…And remains primarily limited



Source: J.P. Morgan based on the IFAC (link). Note: An affiliated firm is defined by the IFAC as "an independent entity that is associated with a separate audit firm (typically the audit firm member of a global network."

- **Other issues**: Sustainability information is often scattered across multiple documents (website, sustainability report, CDP questionnaires, proxy voting etc.), overly qualitative, and inconsistent with financial reporting.

Toward global sustainability reporting standards?

In 2021, the IFRS foundation announced its intention to develop global sustainability reporting standards by consolidating existing frameworks, primarily GRI, SASB and TCFD. The initiative, led by its newly formed International Sustainability Standards Board (ISSB), will start by developing climate reporting standards before expanding to other areas of sustainability, with the objective of delivering a "global baseline" of "machine-readable" sustainability-related disclosure standards. Importantly, this initiative is backed by the International Organization of Securities Commission (IOSCO), suggesting a relative broad adoption of the standards by local regulators.

While we welcome this initiative, our initial analysis shows that their approach is likely to remain "light-touch" and focused on financial materiality, which may not

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

suit the needs of all ESG investors (link). As a result, regulators have stepped in, particularly in the EU and Asia, to develop additional reporting requirements (see here).

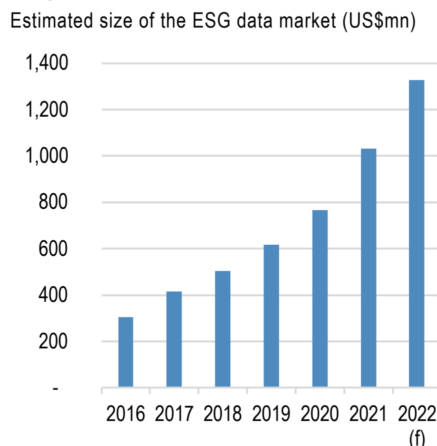
Third-Party Vendors

The market for third-party ESG data is rapidly growing

The expansion and diversification of the type of ESG data needed by investors, combined with weaknesses in ESG reporting, have led to the growth in the market for third-party. New, specialized vendors have emerged, while existing providers of financial data have also invested the market. MSCI, ISS and Sustainalytics are estimated to dominate the market.

Figure 64: The market for ESG data surpassed $1bn for the first time in 2021…

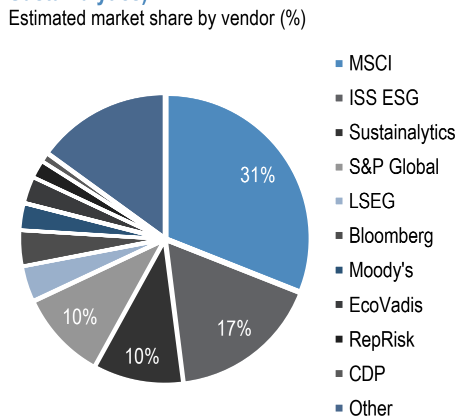
Estimated size of the ESG data market (US$mn)



Source: Opimas (link).

Figure 65: …And remains dominated by three players (MSCI, ISS, Sustainalytics)

Estimated market share by vendor (%)



Source: Opimas (link) Note: those results were corroborated by the 2021 ESG Manager Survey of Russel Investments, which shows MSCI, Sustainalytics and ISS as the most used providers (link).

ESG vendors have different business models, definition of ESG and sustainability, and product mix

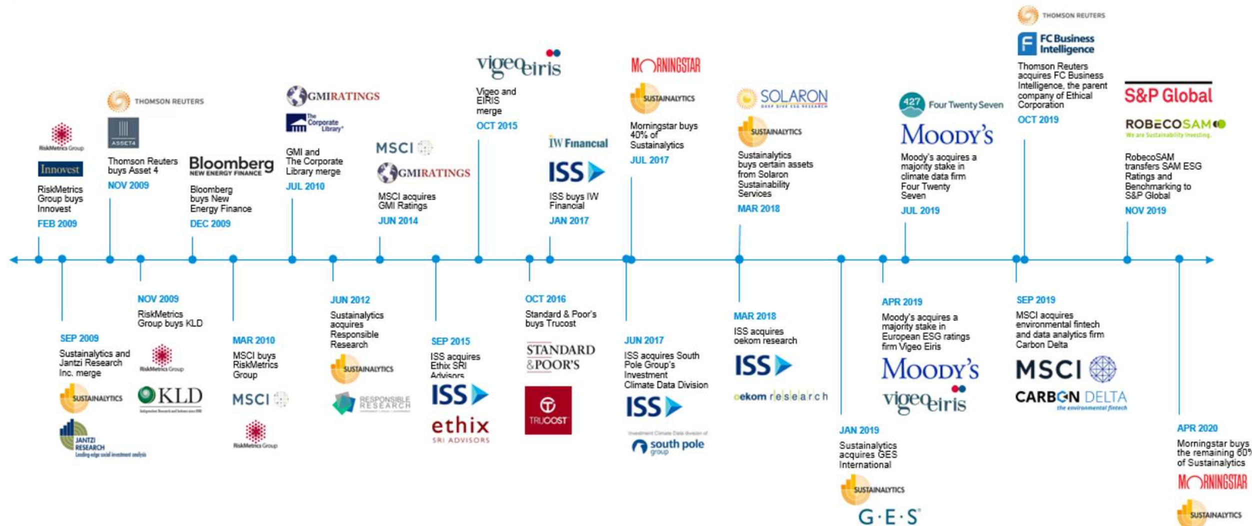
- *Business model*: The ESG data market comprises (i) generalist vendors, which offer both sustainability and non-sustainability products, and (ii) specialized vendors that only provide sustainability products. Generalists typically include existing large providers of financial data and research such as the three largest credit rating agencies (CRAs). Many generalists have gained their ESG expertise by acquiring some of the specialized vendors, resulting in a consolidation of the industry over the past decade.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 66: The acquisition of specialized ESG data providers by larger vendors has led to the consolidation of the ESG data industry.



Source: European Commission's Study on Sustainability-Related Ratings, Data & Research, 2020 (link). Based on ERM Research.

- *Definition of ESG and sustainability*: The lack of consensus on the definition of ESG led many vendors to develop their own definition of ESG and categorization of factors within each of the E, S and G pillars. Interestingly, some vendors such as Sustainalytics have chosen to not classify ESG issues within a specific pillar, which we see as an interesting approach to address the overlap between some of the sustainability topics.

Table 21: ESG data vendors have developed their own definition of ESG

Examples of factors from selected ESG rating providers

Vendor	Environmental factors	Social factors	Governance factors
MSCI	Climate Change Natural Capital Pollution & Waste Environmental Opportunities	Human Capital Product Liability Stakeholder Opposition Social Opportunities	Corporate Governance Corporate Behavior
ISS	Energy Management Climate Change Strategy Water Risk & Impact Environmental Impact of Products	Equal Opportunities Health & Safety Human Rights Suppliers	Board Independence Shareholder Democracy Business Ethics Payments to Governments
S&P	Waste & Pollution Greenhouse Gas Emissions Water Land Use & Biodiversity	Customer Engagement Safety Management Communities Workforce & Diversity	Structure & Oversight Code & Values Transparency & Reporting Financial & Operational Risks
Refinitiv (part of LSEG)	Resource Use Emissions Innovation	Workforce Human Rights Communities Product Responsibility	Management Shareholders CSR Strategy
	ESG Factors		
Sustainalytics (part of Morningstar)	The Environmental and Social Impact of Products and Services Human Rights Data Privacy and Security Business Ethics Bribery & Corruption Access to Basic Services Community Relations Emissions, Effluents and Waste Carbon – Own Operations Carbon – Products and Services	Human Rights – Supply Chain Human Capital Land Use and Biodiversity Land Use and Biodiversity – Supply Chain Occupational Health and Safety ESG Integration – Financials Product Governance Resilience Resource Use Resource Use – Supply Chain	

Source: J.P. Morgan based on MSCI, Vigeo Eiris, S&P, Refinitiv and Sustainalytics.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

- *Product mix*: ESG vendors offer different types of products and solutions, which can be classified in five broad categories:
  (1) **Raw data**: Data that undergoes limited review and changes by the vendor. The value of those products typically lies in the vendors' capabilities to identify new, relevant datasets and collect data on a large scale. Some vendors have also developed methodologies to estimate data when it's missing, and standardize it to ensure comparability.
  (2) **Ratings, rankings and scores**: A vendor's opinion on the relative ESG profile of an instrument or issuer compared to peers. We explore this category in more detail below.
  (3) **Screening**: Products that flag a company's involvement in specific activities or products to inform investors' own screening policies. As discussed in the fourth chapter, screening is a key building block in a majority of ESG investment processes.
  (4) **Controversies and alerts**: Services to monitor ESG-related news flow on companies, including potential breaches in international norms.
  (5) **Audit & advisory services**: Services that allow a company to demonstrate the reliability of its ESG information or improve its ESG profile.

As the ESG market continues to evolve, vendors have refined and adapted their offering, such as developing bespoke solutions to investors, providing products on emerging themes such as biodiversity and DEI rather than the full spectrum of ESG factors, and giving opinion on companies' alignment with new and increasingly complex ESG regulations, which we discuss in the last chapter. In our view, climate data remains the most developed segment of the ESG data market, owing partly to a combination of adequate reporting from companies and the existence of a global carbon accounting standard, the GHG Protocol. We conducted a comprehensive review of GHG emissions and fossil fuel data in a separate report (link).

Ratings

Providers of ESG ratings have become prominent players in this new ecosystem. They indeed offer in theory a simple solution to a complex problem, which is expressing in a single data point the environmental, social and governance practices of a company relative to peers. While increasingly challenged and scrutinized by investors and regulators, third-party ESG ratings often remain a key component of ESG investment strategies and indices. Providers have been able to adapt to the fast-evolving ESG market, including by providing specialized products and leveraging artificial intelligence (AI).

What is an ESG rating?

ESG ratings can be defined as the broad spectrum of ESG ratings, rankings and scorings that serve the assessment of an entity, an instrument or an issuer exposure to ESG risks and/or opportunities (IOSCO). Importantly, a company's ESG ratings may determine its eligibility to ESG indices, which have attracted a growing proportion of global ESG AUM (see here).

How do ESG ratings differ?

While seemingly serving the same purpose (i.e. assessing "exposure to ESG risks and or opportunities"), ESG ratings differ significantly in terms of objective, scope, coverage, inputs, methodology, peer group, outputs, and remuneration model.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

- *Objective*: Unlike credit ratings, which measure the likelihood and severity of default, ESG ratings have different objectives, often defined broadly and qualitatively based on the provider's own definition of materiality (for example MSCI's stated objective implies a financial materiality perspective, while Moody's V.E. score explicitly refers to double materiality).

Table 22: Comparing definition and objective of selected ESG ratings

Provider	Stated definition & objective	Link
MSCI	"MSCI ESG Ratings aim to measure a company's management of financially relevant ESG risks and opportunities."	Here
ISS	"A company's management of ESG issues is analyzed on the basis of up to 100 rating criteria, most of them are sector-specific."	Here
Sustainalytics	"The ESG Risk Ratings measure the degree to which a company's economic value is at risk driven by ESG factors or, more technically speaking, the magnitude of a company's unmanaged ESG risks."	Here
S&P CSA	"The S&P Global Corporate Sustainability Assessment (CSA) enables you to benchmark your industry specific economic, environmental and social criteria that are relevant to the growing number of sustainability focused investors and financially relevant to your corporate success."	Here
Refinitiv	"Measure a company's relative ESG performance, commitment and effectiveness across 10 main themes (emissions, environmental product innovation, human rights, shareholders, etc.) based on publicly-reported data."	Here
Bloomberg	"Measures the amount of ESG data a company reports publicly."	N.A
Moody's V.E.	"Powered by a double materiality lens, measure the extent to which companies are managing material ESG factors."	Here

Source: J.P. Morgan (as of Aug. 26th). ISS refers to ISS' ESG score. Bloomberg refers to Bloomberg's ESG Disclosure Score.

- *Scope*: While most providers consider the full spectrum of ESG factors, some provide a rating specific to a particular theme, such as climate and governance (e.g., ISS Governance Quality Score and CDP Climate score).

- *Coverage*: We indicate the coverage of main ESG rating providers below, although we note that this information is not reported in a consistent manner.

Table 23: Comparing coverage of selected ESG rating providers

Provider	Coverage
MSCI	680,000+ equity and fixed income securities, including 8,500 companies
ISS	11,400+ issuers, including 7,300 companies
Sustainalytics	22,000+ equity and fixed income securities, including 12,000 companies
S&P CSA	10,000+ companies
Refinitiv	12,000+ companies
Bloomberg	11,800+ companies
Moody's V.E.	ESG scores: 140 million+ companies; ESG Assessments: 5,000 companies

Source: J.P. Morgan based on providers' public disclosures (as of Sept. 2022). Bloomberg refers to Bloomberg's ESG Disclosure Score.

- *Inputs*: While all providers rely on public disclosures, others (mostly S&P Global) actively request information through questionnaires or more rarely, direct interactions with the company. Actively requesting information may help to avoid size-bias, which occurs when larger companies receive higher scores because of their stronger reporting capabilities (link), but can also lead to "survey fatigue" from companies (link). Rating providers can also use third-party data such as regulatory, media and NGO sources, as well as specialized data providers (e.g. RepRisk, which is specialized in flagging and monitoring material ESG news flow and controversies, including violations of international standards).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Another important difference between providers is the way they treat missing data, with some penalizing companies that do not report information (e.g. Bloomberg), while others estimate this data. According to the European Commission in its study on sustainability-related ratings, data and research (link), 57% vendors indicated using some form of data estimation, although none marked estimation as a significant data input for research/analysis. Our own Research found limited disclosures on the treatment of missing data by providers.

- *Methodology*: Rating providers differ significantly in terms of how they process, review and transform data into a final score. At a high level, ESG ratings can be split between those that are purely quantitatively driven and those that incorporate analytical judgment from analysts. Interestingly, some providers such as S&P Global and Moody's have also developed two separate ratings, one that is solely derived from a quantitative model (S&P CSA, Moody's ESG Score), and one that includes a qualitative overlay from analysts (S&P ESG Evaluation, Moody's ESG Scores & Assessments). Second, key drivers and their influence in the final ratings vary between providers, and include the company's region of operations, industry, level of sustainability disclosures, size, involvement in certain products and controversies, among others.

- *Outputs*: The final scores are provided at a different level of granularity, and expressed differently, with some ratings based on a numerical scale and others using an alphabetical scale.

- *Peer group*: ESG rankings may only be comparable against industry peers, while others may be comparable across sectors. The former is particularly useful for sector-specific investment strategies such as best-in-class, which aims to pick up the best companies within a sector. In practice, this means that a company in the Oil and Gas and one in the Financial sector with vastly different credentials could both get 100 (assuming a rating expressed on a scale from 1 to 100, with 100 being the highest). On the other hand, ESG ratings that are comparable across sectors typically take into account the level of exposure to ESG risks of an industry and cap the score of companies in highly exposed industries. Their main advantage is that the scores are comparable across the investment universe. We illustrate the impact that the choice of the peer group can have on a company's ESG rating by taking the example of Shell Plc, which scores relatively highly across providers using an industry ranking (suggesting their view of the company's stronger sustainability strategy than many industry peers), but less so on Sustainalytics, which uses a cross-industry ranking.

Table 24: The impact of the peer group on ESG ratings: The example of Shell Plc

Provider	Shell's ESG Rating	Peer Group
MSCI	AA	Industry peers
Sustainalytics	35	Cross-industry
S&P CSA	65	Industry peers
Refinitiv	93	Industry peers

Source: J.P. Morgan based on Bloomberg, Refinitiv, S&P and Sustainalytics. We excluded ISS and Moody's VE as data is not publicly available. We excluded Bloomberg's ESG Disclosure Score, which primarily reflect a company's level of ESG disclosures.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 25: Comparing main inputs and outputs of selected ESG ratings

Provider	ESG Staff	Inputs					Peer Group	Ranking Scale	
		Company Disclosures	Company Questionnaire	Third-Party Data	Feedback from companies	Treatment of missing disclosures		Better ESG	Lower ESG
MSCI	350+	✓	-	Media, NGO, academic, regulatory and governmental sources, CDP	✓	No information found; EC study suggests that estimates are used	Industry peers	AAA	CCC
ISS	500+	✓	-	Media, NGO, academic, regulatory and governmental sources	✓	Estimated data represents 5-10% of all their data inputs (link). Rating penalized if no assumptions can be made.	Industry peers	A+	D-
Sustainalytics	500+	✓	-	Media and NGO sources, CDP, among others	✓	Ratings penalized	Cross-industry	10	40
S&P CSA	500+	✓	✓	RepRisk	✓	We understand that rating is penalized for non-disclosure to the CSA questionnaire	Industry peers	100	0
Refinitiv	350	✓	-	Media and NGO sources	-	Rating penalized (link), EC study suggests that estimates could also be used.	Industry peers	0	100
Bloomberg	Information not found	✓	-	-	-	Rating penalized (Score reflects disclosures)	Cross-industry	100	0
Moody's V.E.	400+	✓	-	Media sources, CDP, among others	✓	No information found; EC study suggests that estimates are used	Industry peers	100	0

Source: J.P. Morgan (as of Sept. 2022), based on public disclosures and the EC (link). Bloomberg refers to Bloomberg's ESG Disclosure Score.

- *Remuneration*: The ESG rating market is largely dominated by the "subscriber pays" model, whereby investors pay for the ratings, as opposed to the "issuer pays" model. While the "subscriber pays" model can help to prevent potential conflicts of interest, it can disadvantage smaller investors that may not have the resources to access the data, and lead providers to prioritize quantity over quality (link).

How to assess a company's ESG consensus? Not with ESG ratings…

In 2019, the Massachusetts Institute of Technology (MIT) highlighted the disparities between final ESG ratings in a landmark study entitled "Aggregated Confusion: the Divergence of ESG Ratings" (link). The study found that the correlation between ESG ratings of some of the largest providers was about 0.54 in average (vs 0.99 for traditional credit ratings), with the highest correlation observed on the environmental pillar (0.54) and the lowest on governance (0.3). The research even found several negative correlations between providers in their assessment of Lobbying, Responsible Marketing, and Indigenous Rights, highlighting the opposite conclusions reached by providers on those topics. It is noteworthy that correlation varies between providers, with correlation increasing to 0.7 between the largest two agencies (Sustainalytics and MSCI) and the two largest CRAs (S&P and Moody's).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 26: The MIT found that correlations between ESG ratings was about 0.54 in average

	Average	KL SA	KL MO	KL SP	KL RE	KL MS	SA MO	SA SP	SA RE	SA MS	MO SP	MO RE	MO MS	SP RE	SP MS	RE MS
ESG	**0.54**	0.53	0.49	0.44	0.42	0.53	0.71	0.67	0.67	0.46	0.7	0.69	0.42	0.62	0.38	0.38
E	**0.53**	0.59	0.55	0.54	0.54	0.37	0.68	0.66	0.64	0.37	0.73	0.66	0.35	0.7	0.29	0.23
S	**0.42**	0.31	0.33	0.21	0.22	0.41	0.58	0.55	0.55	0.27	0.68	0.66	0.28	0.65	0.26	0.27
G	**0.3**	0.02	0.01	-0.01	-0.05	0.16	0.54	0.51	0.49	0.16	0.76	0.76	0.14	0.79	0.11	0.07

Source: J.P. Morgan based on the MIT, 2022 (link). SA, SP, MO, RE, KL, and MS are short for Sustainalytics, S&P Global, Moody's ESG, Refinitiv, KLD, and MSCI, respectively.

These results were confirmed by subsequent studies: Brandon & al. found an average pairwise correlation of 0.45 between ESG rating from seven different providers for firms in the S&P 500 between 2010 and 2017, with the correlation dropping to 0.16 on the governance pillar and 0.46 for the environmental pillar (link). J.P. Morgan US High Grade Strategists found only 17.7% matching across S&P CSA and MSCI ESG scores in the High Grade universe, albeit with markedly higher consistency for issuers obtaining top-scores (link).

Table 27: S&P CSA vs. MSCI: Consistency on less than one quarter of the HG universe, albeit significantly higher at the top of the rating scale

		MSCI ESG							
		AAA	AA	A	BBB	BB	B	CCC	NR
S&P CSA	AAA	**78.4%**	36.0%	22.2%	26.5%	12.5%	0.0%	0.0%	20.7%
	AA	7.1%	**23.7%**	25.4%	19.8%	41.3%	0.0%	67.5%	12.2%
	A	5.4%	29.8%	**17.9%**	17.7%	8.8%	60.5%	0.0%	12.6%
	BBB	8.8%	5.8%	26.4%	**14.9%**	17.5%	3.8%	0.0%	18.2%
	BB	0.0%	3.7%	5.6%	9.4%	**8.0%**	1.5%	0.0%	6.9%
	B	0.0%	0.1%	1.6%	11.0%	9.3%	**16.2%**	16.9%	5.6%
	CCC	0.0%	0.0%	0.2%	0.6%	2.2%	6.9%	**15.6%**	9.4%
	NR	0.3%	0.8%	0.6%	0.1%	0.4%	11.2%	0.0%	**14.4%**

Source: J.P. Morgan US High Grade Strategy and US Credit Strategy (link). Par-value weighted, Column Totals = 100%. Numerical scores converted to a letter score.

Our own research on companies most represented in global sustainable funds, which we see as the ultimate measure for their "ESG consensus". We found that not all companies ranked highly according to ESG ratings agencies, with significant disparities.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 28: Selected ESG ratings of the 15 stocks most held in global ESG funds

Rank	Name	Sector	Portfolio Weight (%)	MSCI	Sustainalytics	S&P CSA	Refinitiv
1	Microsoft Corp	Technology	2.79	AAA	15	97	93
2	Apple Inc	Technology	1.90	A	17	34	80
3	Amazon.com Inc	Consumer Cyclical	1.07	BBB	30	68	87
4	Mastercard Inc Class A	Financial Services	0.89	A	17	82	76
5	Alphabet Inc Class A	Communication Services	0.83	BBB	24	93	75
6	Tesla Inc	Consumer Cyclical	0.79	A	29	42	65
7	Thermo Fisher Scientific Inc	Healthcare	0.76	BBB	14	64	69
8	Alphabet Inc Class C	Communication Services	0.76	BBB	24	93	75
9	NVIDIA Corp	Technology	0.70	AAA	14	91	79
10	Adobe Inc	Technology	0.69	AAA	13	99	78
11	NextEra Energy Inc	Utilities	0.64	AA	28	54	80
12	Novo Nordisk A/S Class B	Healthcare	0.63	AAA	24	80	85
13	UnitedHealth Group Inc	Healthcare	0.57	BBB	18	97	74
14	Linde PLC	Basic Materials	0.56	A	8	99	87
15	Danaher Corp	Healthcare	0.54	AA	12	77	81

Source: J.P. Morgan based on Morningstar, Sustainalytics, Refinitiv, and Bloomberg, as of Sept. 4th, 2022. The portfolio weight is the average weight across the 50 largest ESG portfolios with a global focus, weighted by total AUM as of 2Q22.

Diverse ESG ratings for a diverse ESG market

As highlighted by the European Commission (link), the weak correlation between ESG ratings is "generally recognized and accepted by asset managers and asset owners". It is also our view that current disparities partly reflect the absence of market consensus on (i) how to measure the ESG credentials of a company, which is partly due to the inherent challenges of defining what ESG encompasses, as discussed in the first chapters of this report, and (ii) summarize in one data point various aspects of a company, from its talent strategy to its transition plan, supply chain management and board effectiveness. While some of these aspects may be correlated, many are not (in some cases even contradictory), leading ESG ratings to be an average that may not always be meaningful.

Garbage in, garbage out?

Because sustainability disclosures remain the primary source of information for most rating providers, ESG ratings will continue to reflect some of the weaknesses in corporate reporting (discussed above) until those are addressed. While regulation and the emergence of global standards might help, rating providers can already address some of those weaknesses through their data standardization and review process. Whether they have a team of analysts manually reading annual reports, or employ a crawling algorithm, it is critical that providers have robust quality-review process. Here again, more transparency on the resources and processes to perform the quality review would contribute to improve trust in the ESG rating market, in our view.

The criticisms of ESG ratings

Discrepancies between ESG ratings have undoubtedly questioned their credibility as a proxy for a company's ESG credentials, and fueled criticisms on their overall lack of transparency and subjectivity. The European Securities and Markets Authority (ESMA), the EU's securities markets regulator, identified "increased risks of "greenwashing, capital misallocation, and products mis-selling" as a result of current market practices (link). ESG ratings have been also criticized for their high sensitivity to changes in methodology (link) and inability to anticipate high-profile ESG controversies such as Wirecard's accounting scandal (link) and the allegations

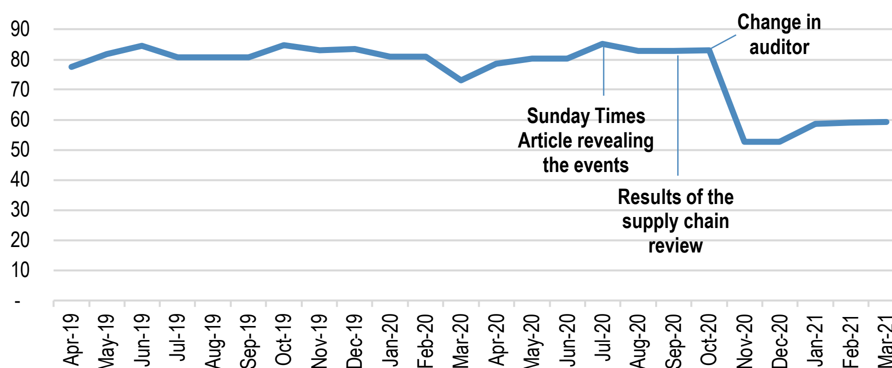
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

of modern slavery against Boohoo in July 2020 – the former had a rating of 19 from Sustainalytics before the controversy occurred, while the latter was rated AA by MSCI and above industry average on supply chain labor standards (link) – although it is noteworthy that there are examples where providers did reflect weaknesses in their ratings before scandals broke (e.g. Volkswagen's emissions scandal in 2015, link). We found limited disclosure from vendors on why Boohoo was rated highly on supply chain management before the controversy arose, although some media suggested that the company's exposure to UK suppliers as opposed to suppliers located in regions with supposedly lower labor standards was considered as a positive differentiator relative to industry peers (link). Further, in our experience, vendors tend to primarily assess companies based on their supply chain policies and disclosures rather than on metrics reflecting the actual implementation of those policies, partly because metrics may simply not be disclosed by companies (as discussed in our analysis of ESG in supply chain, link). Beyond limitations in vendors' methodologies, the Boohoo case also revealed the stickiness of ESG ratings: according to CSRHub the company's aggregated ESG ranking was only downgraded three months after the controversy.

Figure 67: Boohoo's aggregated ESG ranking was only significantly impacted three months after the first press article



Source: J.P. Morgan. For a full analysis of the event, please refer to Boohoo's initiation report from J.P. Morgan European General Retail (link). CSRHub aggregates multiple ESG ratings (link).

We also found cases of ESG Ratings not reflecting corporate events that would arguably be perceived positively by ESG investors. For example, despite selling its South African and Colombian thermal coal assets in the first quarter of 2022, which represented about a quarter of its overall carbon footprint including scope 3, Anglo American's Sustainalytics ESG Ratings has remained at about 24 for the past three years.

Separately, there are instances where the issuance of sustainable debt is not reflected into corporate ESG ratings. Italian utility company Enel SpA issued the first sustainability-linked bond (SLB) in September 2019, which brought upon a new structure of sustainable debt that exceeded $135 billion in issuance in 2021, seeing over 900% growth YoY. An SLB refers to a debt structure whereby the financial characteristics of the vanilla bond may fluctuate depending on whether the issuer fulfils a set of predetermined ESG targets (link). By issuing a sustainable bond, whether a green bond or SLB, the company indicates a sign of sustainability intent, which we believe could be accounted for within its ESG rating. However, in reviewing some ESG methodologies we observe that sustainable debt issuances are not necessarily included.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Regulation in focus

In November 2021, IOSCO summarized the three main issues of ESG ratings as followed (link):

- Lack of transparency around ratings' objective, scope, and methodology
- Lack in governance robust and transparent governance processes, and potentially leading to conflicts of interest (for instance in the absence of proper separation between ratings and advisory businesses)
- Lack of interaction between ESG ratings and data products providers and entities.

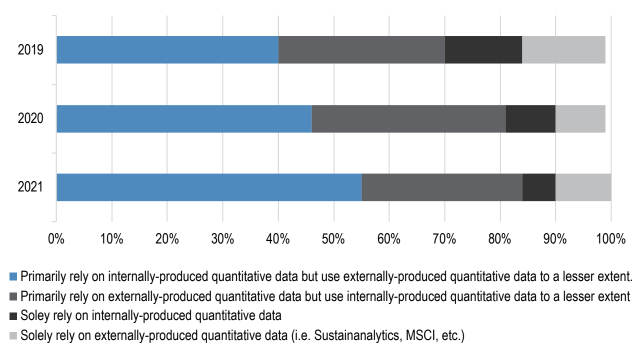
To address those limitations, the organization representing the world's securities regulators called for oversight of ESG ratings and data product providers. While most of those regulations are still in development (see here), we expect regulators to build on some of the measures already applied to credit rating agencies (e.g. on preventing conflicts of interest), while also taking into account the unique nature of ESG ratings, including their typically longer time horizon, higher level of uncertainty and inherent diversity.

Vendors and Investors: Ratings as an input, rather than an end point

Despite those criticisms, we expect investors to continue to utilize ESG ratings, albeit as part of a more detailed proprietary process. As discussed above, these assessments have the advantage of expressing in a single data point the environmental, social and governance practices of a company, often on a large universe of companies and instruments, which can be helpful when viewed in a broader context, recognizing the possible limitations or skew from methodology. In addition, some investors continue to include external ratings in their processes because they are free of their own internal interference and thus may be regarded as more impartial by their clients. Recent surveys and studies seem to confirm that external data are increasingly combined with investors' proprietary analysis of investees' ESG credentials, including through direct engagement.

Figure 68: Surveys suggest that investors increasingly use a combination of external and in-house data to conduct their ESG analysis...

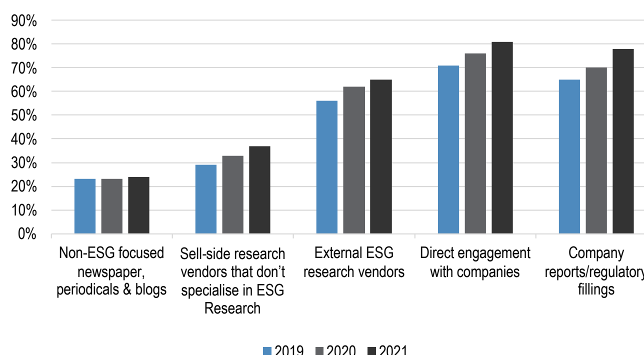
Response to the question: How do you form your ESG insights?



Source: Russel Investment 2021 Annual ESG Survey (link).

Figure 69: ...Including direct engagement with companies

Response to the question: Where is your ESG information primarily sourced from (select all that apply)?



Source: Russel Investment 2021 Annual ESG Survey (link).

Indices

What is an ESG index?

ESG indices provide institutional investors a method to systematically integrate the consideration of ESG factors within an investment process and/or portfolio. By incorporating a predefined assembly of ESG data within an index construction

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

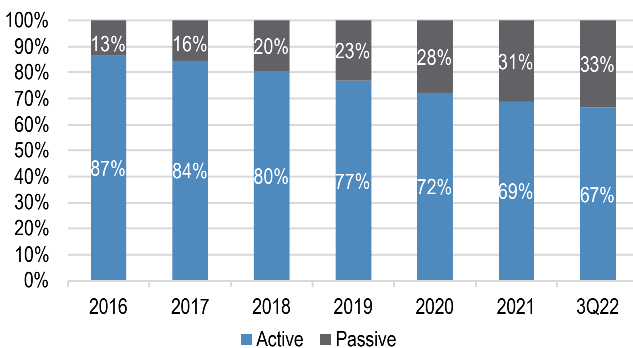
process, investors benchmarked to the index can passively align their investment strategies to particular ESG factors and/or sustainability objectives. ESG benchmark integration often combine multiple investment strategies discussed in the fourth chapter of this report, including exclusionary screening, tilting/scaling, and overweighting/rewarding issuers and instruments based on ESG considerations.

Passive ESG investing is gaining momentum.

The proportion of ESG AUM under passive investing increased to 25% from 9% between 2016 and Q3 2022. Passive ESG investing multiplied by almost 7x in equities and 5x in fixed income over the period, vs ~2x for active management in both asset classes. In Q3 2022, passive investing represented 33% of sustainable equity AUM and 22% of fixed income sustainable AUM, with some notable differences between regions.

Figure 70: Passively-managed sustainable equity AUM reached 33% in Q3 2022

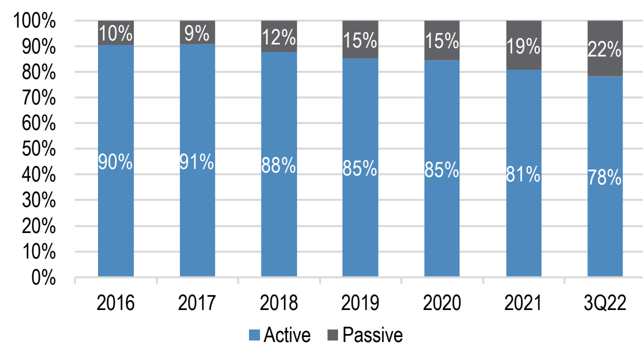
Breakdown of global sustainable equity AUM between active and passive management (%)



Source: J.P. Morgan based on Morningstar.

Figure 71: Passively-managed sustainable fixed-income AUM reached 22% in Q3 2022

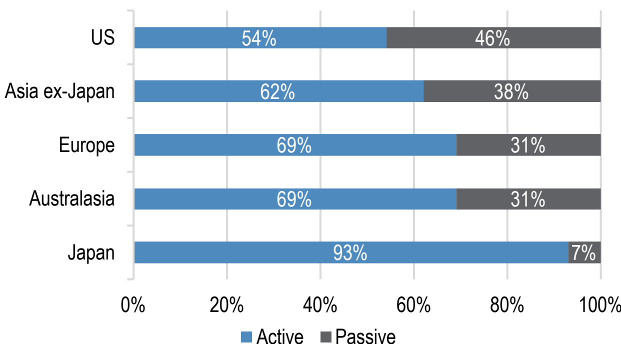
Breakdown of global sustainable fixed-income AUM between active and passive management (%)



Source: J.P. Morgan based on Morningstar.

Figure 72: The US had the highest penetration of passive equity ESG investing as at Q3 2022…

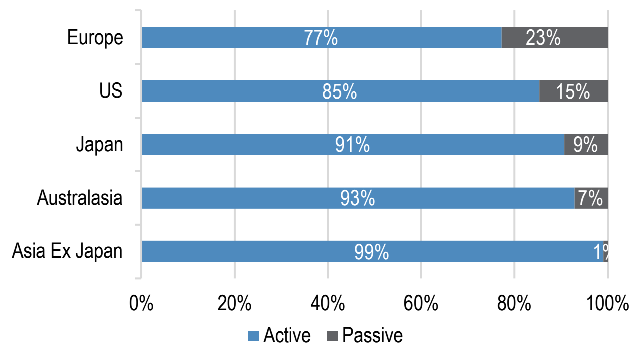
Breakdown of global sustainable equity AUM between active and passive management by region (%)



Source: J.P. Morgan based on Morningstar.

Figure 73:…While Europe had the highest penetration of passive fixed-income ESG investing

Breakdown of global sustainable fixed-income AUM between active and passive management by region (%)



Source: J.P. Morgan based on Morningstar.

ESG indices reflect opportunities and challenges of the broader ESG market

In line with the broader market for ESG data and Research, there is a broad spectrum of ESG indices, in terms of focus and methodology. While most major providers

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

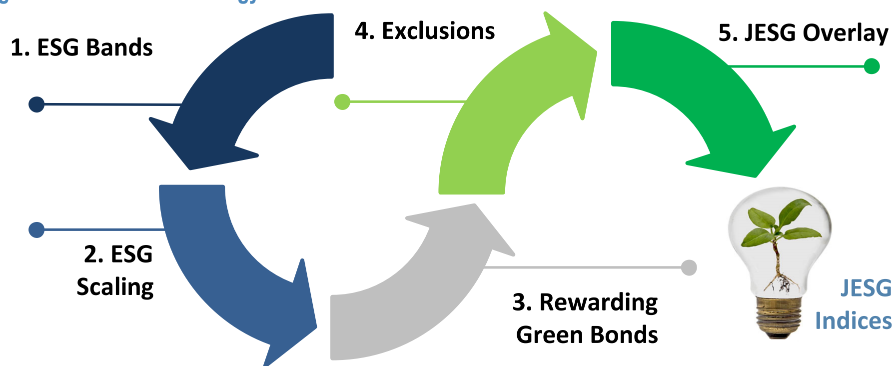
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

have developed an "ESG" version of their flagship indices, others have developed benchmarks focused on specific sustainability themes such as climate change, water, or diversity, inclusion, and sustainable debt asset classes. The ability to focus on a specific area of ESG performance was considered as one the main values of ESG indices according to a recent survey of 300 investment funds conducted by the Index Industry Association (link). Providers develop their benchmark methodology based on in-house data and Research, third-party vendors, or a combination of both, although the recent consolidation of the industry suggests that they are increasingly relying on internal resources (see here). Providers face similar challenges to other ESG market participants to ensure the quality and reliability of the data, as well as growing regulations to ensure the transparency of their underlying methodologies (see here).

J.P. Morgan ESG Index Suite

The J.P. Morgan ESG (JESG) Index Suite is designed to provide fixed income investors with a foundational framework to navigate and incorporate ESG discipline into the investment process regardless of where they are in their ESG journey. All JESG indices are derived from their baseline index, with the ESG criteria applied as an overlay. Through the identification of green bond issuances with the help of Climate Bonds Initiative, and with external top-down ESG analysis from RepRisk and the complementary bottom-up ESG fundamental research from Sustainalytics, our multidimensional index methodology brings standardization in fixed income indices by introducing a well-rounded approach to ESG investing. Please click here to learn more about the JESG Index Suite and here to access J.P. Morgan's benchmark disclosures.

Figure 74: JESG methodology



Source: J.P. Morgan.

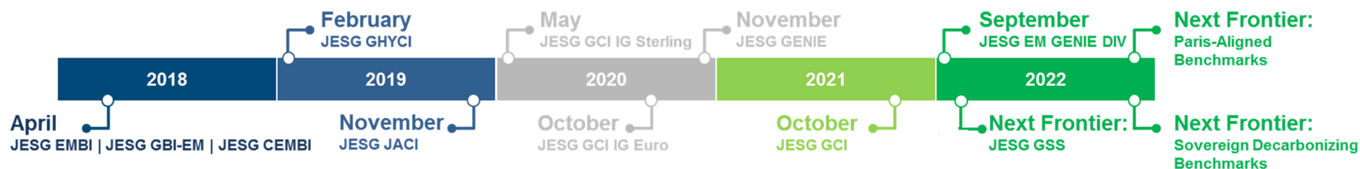
Before the introduction of the JESG methodology, ESG investing in fixed income was disparate, with separate benchmarks available for every ESG investing approach, which prevented the market from converging towards a standard. Amid the plethora of different ESG investment approaches, the JESG methodology seeks to harmonize the best ESG investment strategies into one unified methodology to foster standardization across ESG investing in fixed income.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 75: 5 Years of J.P. Morgan ESG (JESG) Indices

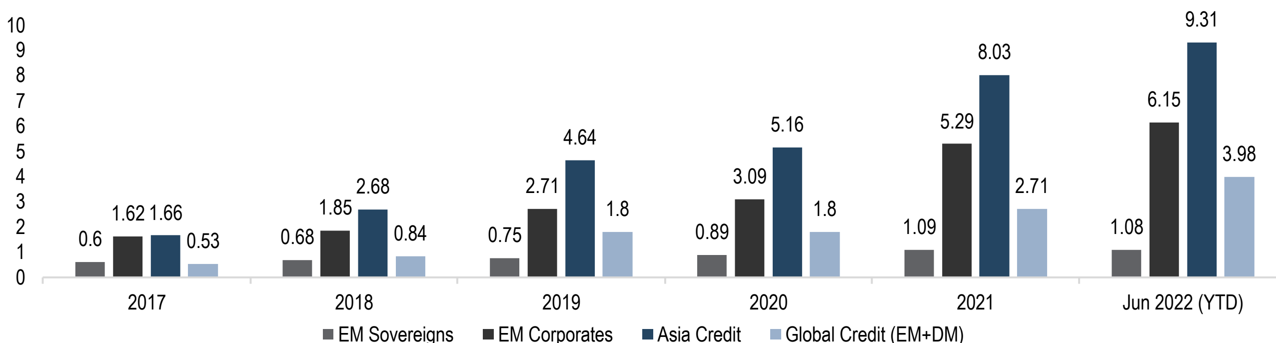


Source: J.P. Morgan.

The JESG Index Suite was first introduced covering various EM fixed income asset classes. The initial launch included the first-of-its-kind ESG EM indices: the JESG EMBI (covering EM hard currency sovereign and quasi-sovereign bonds), JESG GBI-EM (covering EM local currency sovereign bonds) and the JESG CEMBI (covering EM hard currency corporate bonds). The family of baseline emerging market indices has over 90% market share in the emerging market benchmark space. Following the JESG EM suite, the J.P. Morgan ESG Global High Yield Corporate Index (JESG GHYCI) and the J.P. Morgan ESG Asia Credit Index (JESG JACI) were launched in 2019. Since 2020, we have expanded the JESG suite to include the J.P. Morgan ESG Green Bond Index (JESG GENIE), the J.P. Morgan ESG Global Corporate Index (JESG GCI), and most recently the J.P. Morgan ESG Emerging Market Green Bond Diversified Index (JESG EM GENIE DIV). In the four and half years since launch, the JESG Index Suite already has more than $40 billion in benchmarked assets across active and passively managed funds.

Our proprietary JESG scores are central to the JESG index methodology. JESG uses a proprietary ESG construction method, which normalizes JESG index scores for over 170 countries and more than 6,000 issuers daily, using data from Climate Bonds Initiative, RepRisk, and Sustainalytics as inputs. Each issuer is bucketed into one of five bands (quintiles), depending on their final JESG score. The bands function as a scalar/multiplier that is utilized in the overall ESG integration approach. For example, issuers in Band 1 will inherit 100% of their baseline index market value, while issuers in Band 2 will inherit 80% of their baseline index market value, and so on. Issuers in Band 5 will be excluded and will not be eligible for the next 12 months. This approach ensures that our methodology rewards those issuers who hold stronger ESG characteristics by assigning different weight scalers.

Figure 76: Green bond weight in JESG indices has been steadily increasing since 2017



Source: J.P. Morgan. Data as of CoB June 30th, 2022.

The JESG methodology increases the weight of green bonds to incentivize sustainable financing aligned with climate change solutions. If an instrument is

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

categorized as "green" by the Climate Bonds Initiative, the security will receive a one notch Band upgrade. For example, any green bond issued by an issuer in Band 3 will be promoted to Band 2, whereas conventional bonds issued by the same issuer will remain in Band 3. Green bonds by issuers already in Band 1 will not receive any further upgrade. This approach effectively provides positive screening benefits to green bond issuance by increasing their weights relative to conventional bonds from the same issuer.

The uniqueness of the JESG methodology is brought out by the fact that the JESG indices are almost perfectly correlated to their respective baseline benchmarks, while even outperforming the baseline indices in many cases. As expected from an ESG-aligned approach, the JESG indices have outperformed their baseline indices in times of market turmoil, such as the global market sell off seen in recent years.

Table 29: Total returns of JESG Indices

	GBI-EM GD	JESG GBI-EM GD	CEMBI BD	JESG CEMBI BD	EMBIG Div.	JESG EMBI	JACI	JESG JACI	GCI	JESG GCI
2013	-9.0%	-8.0%	-0.6%	-0.2%	-5.3%	-5.0%	-1.4%	-1.0%	2.2%	2.5%
2014	-5.7%	-6.1%	5.0%	4.1%	7.4%	8.8%	8.3%	8.3%	3.2%	2.8%
2015	-14.9%	-15.4%	1.3%	1.5%	1.2%	1.1%	2.8%	2.9%	-3.4%	-3.4%
2016	9.9%	9.6%	9.7%	8.8%	10.2%	8.8%	5.8%	5.5%	5.7%	5.5%
2017	15.2%	15.6%	8.0%	7.7%	10.3%	10.7%	5.8%	5.8%	9.3%	9.5%
2018	-6.2%	-5.9%	-1.6%	-1.4%	-4.3%	-3.8%	-0.8%	-0.9%	-3.3%	-3.4%
2019	13.5%	11.9%	13.1%	12.8%	15.0%	15.9%	11.3%	11.2%	11.5%	11.3%
2020	2.7%	4.0%	7.1%	7.1%	5.3%	5.8%	6.3%	6.2%	9.9%	9.8%
2021	-8.7%	-9.5%	0.9%	0.8%	-1.8%	-2.3%	-2.4%	-2.8%	-2.3%	-2.4%
YTD TR 2022	-14.5%	-15.1%	-13.9%	-12.7%	-20.3%	-21.1%	-10.7%	-11.6%	-15.0%	-14.9%
Annualized Return	-2.5%	-2.6%	2.8%	2.8%	1.3%	1.4%	2.4%	2.3%	1.6%	1.5%
Annualized Volatility	11.3%	11.2%	6.1%	5.9%	8.6%	8.3%	4.4%	4.4%	5.7%	5.8%
Sharpe Ratio	-0.29	-0.30	0.32	0.34	0.07	0.08	0.39	0.34	0.14	0.13

Source: J.P. Morgan. Data as of CoB June 30th, 2022.

Table 30: Returns correlation of JESG Indices

	GBI-EM GD	JESG GBI-EM GD	CEMBI BD	JESG CEMBI BD	EMBIG Div.	JESG EMBI	JACI	JESG JACI	GCI IG	JESG GCI IG
GBI-EM GD	1.00									
JESG GBI-EM GD	1.00	1.00								
CEMBI BD	0.75	0.75	1.00							
JESG CEMBI BD	0.75	0.75	1.00	1.00						
EMBIG Div	0.80	0.80	0.94	0.94	1.00					
JESG EMBI	0.79	0.79	0.92	0.92	0.99	1.00				
JACI	0.67	0.67	0.88	0.88	0.89	0.90	1.00			
JESG JACI	0.66	0.66	0.88	0.87	0.89	0.90	1.00	1.00		
GCI	0.75	0.76	0.86	0.87	0.88	0.88	0.85	0.85	1.00	
JESG GCI	0.75	0.76	0.86	0.86	0.88	0.88	0.84	0.85	1.00	1.00

Source: J.P. Morgan. Data as of CoB June 30th, 2022.

Having said that, we are aware that the ESG landscape is continuously evolving and so will the JESG Index Suite. As clients' ESG ambitions evolve alongside

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

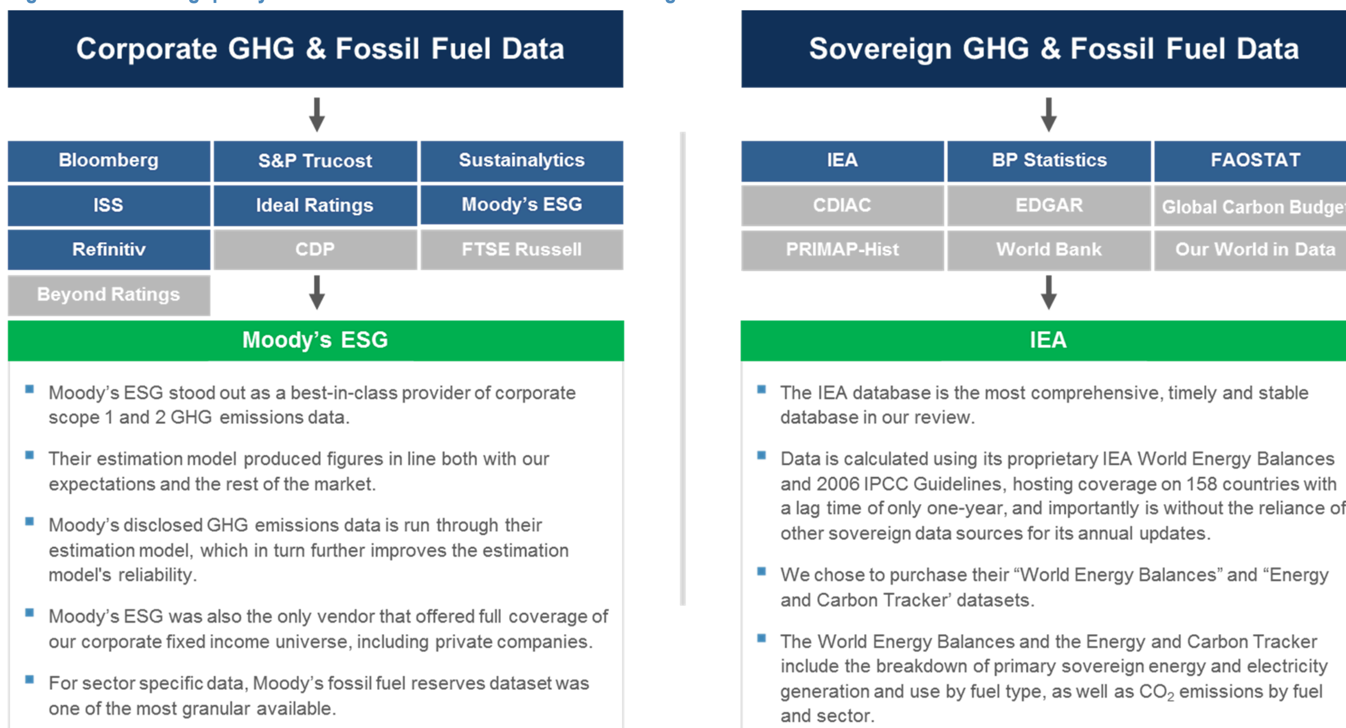
Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

sustainable finance regulations that are set to bring more order into the ESG investing landscape, the JESG Index Suite will advance the breadth and depth of its ESG capabilities across all fixed income asset classes, whether at the sovereign, quasi-sovereign, corporate, or instrument level, as ESG and sustainability-related data improved.

An annual index governance consultation ensures that the JESG Index Suite maintains the most up-to-date ESG considerations and fundamental mechanics. Since 2020, the JESG methodology has enhanced its ethical screening and reduced turnover due to index rebalancing. Issuers exposed to Oil Sands assets are now excluded from JESG Indices, and JESG band updates and corresponding index weight changes are now only reflected on a quarterly basis, compared to previous monthly rebalancing. In 2023, the JESG Index Suite will incorporate the most recent ESG methodologies from our vendors, implement sovereign sanctions-based exclusions, and look to similarly consider rewarding/overweighting social and sustainability bonds in JESG indices.

Future sustainable benchmarks are pivoting towards recent sustainable investing regulation criteria, particularly in the EU. The EU Benchmark Regulation introduced two new climate benchmark definitions, first the "Paris-Aligned Benchmark", and second the "Climate-Transitions Benchmark", which both require minimum carbon reductions in order to be met. Taken together along with the other elements of the EU's sustainable investing regulatory initiatives, there is ballooning demand by investors for quality GHG emissions data, which will act as the 'building blocks' in achieving the goals within the 2015 Paris Agreement.

Figure 77: Obtaining quality GHG emissions data is central to J.P. Morgan's future sustainable benchmark ambitions



Source: J.P. Morgan.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

In order to provide insight to investors, the J.P. Morgan Index Research team embarked on the journey of analyzing the world of greenhouse gas (GHG) emissions and fossil fuel data. We critically evaluated 19 third-party data vendors and publicly available databases, as well as the underlying data itself. J.P. Morgan Index Research have partnered with Moody's ESG and the International Energy Agency (IEA) for GHG emissions and fossil fuel data. Moody's ESG will be utilized for corporate level statistics while IEA provides the best figures for sovereigns. Please see the report "Navigating Greenhouse Gas Emissions Data" for more information.

Since onboarding corporate and sovereign emissions data from Moody's ESG and the IEA, J.P. Morgan Index Research have developed new carbon analytics capabilities for investors covering our existing JESG indices and their underlying flagship benchmarks. Within the inaugural reports, we provide clients not only with the carbon footprint of our JESG indices, but critically the sector and issuer breakdowns driving the index carbon footprint. In doing so, our carbon analytics intends to better equip investors in understanding and communicating the sustainability characteristics of their investments and meet their growing regulatory disclosure requirements. Please see the reports "Introducing J.P. Morgan Corporate Index Carbon Analytics" and "Introducing J.P. Morgan Sovereign Index Carbon Analytics" for more information.

Our emissions datasets will provide us with the ability to derive EU BMR compliant Paris-Aligned (PAB) and Climate Transitions (CTB) benchmarks that are in line in achieving the goals within the 2015 Paris Agreement.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

ESG in Sovereign Debt: Challenges and Opportunities

While ESG strategies and frameworks are becoming increasingly sophisticated in the corporate investment world, investors are also looking to integrate ESG in other asset classes, such as structured finance, real assets, and sovereign debt. The latter has received growing attention given it is the largest asset class within fixed income, reflecting close to $90 trillion (link). While public issuers have long been active in the sustainable debt market, with Massachusetts issuing the first green muni bond in June 2013 and Poland the first green sovereign bond in 2016 (link), investors' demand for more holistic ESG assessments has also increased. New tools have emerged to address this, including sovereign-specific frameworks, initiatives, and data vendors (Maplecroft, Beyond Ratings), although challenges persist.

Sovereign ESG investing: The elephant in the room

In December 2021, the CEO of Sweden's largest pension fund Alecta expressed its pessimism about the organization's ability to achieve its climate objectives, given the "*substantial amount of government bonds or equivalent*' that must be held in portfolios. According to Magnus Billing, this is due to "*a significant part of the issuing states and entities not being on a pathway towards Net Zero today*", combined with "*extremely limited*" room for engagement (link). In our view, his remark reflects the challenges of applying to public entities the ESG investment tools developed in the corporate sphere: Engagement with public issuers can be "*misinterpreted as lobbying, advocacy or an attempt to interfere in governments' policy choices*" (link), while excluding a country/region from an investment universe based on ESG considerations or simply opining on its sustainability agenda may prove controversial, as shown by the criticisms faced by the credit rating agency S&P Global Ratings when it introduced a new ESG Credit Indicator on U.S. States (link). Further, despite some initiatives, such as the World Bank sovereign ESG data portal, high-quality data can be far scarcer for sovereigns than for corporates, particularly on the environmental side (link).

Existing sovereign approaches can suffer from an income bias

An income bias occurs when ESG approaches end up reinforcing, rather than correcting gaps in sustainable development by directing investment flows to strong performers (which, in the sovereign sphere, tend to be wealthier countries).

"*About 90 percent of sovereign ESG scores are explained by a country's national income, thus richer countries tend to have better ESG scores. Prosperous countries tend to have better institutions and less inequality, which are linked to better social conditions and governance*."

World Bank, J.P. Morgan (link)

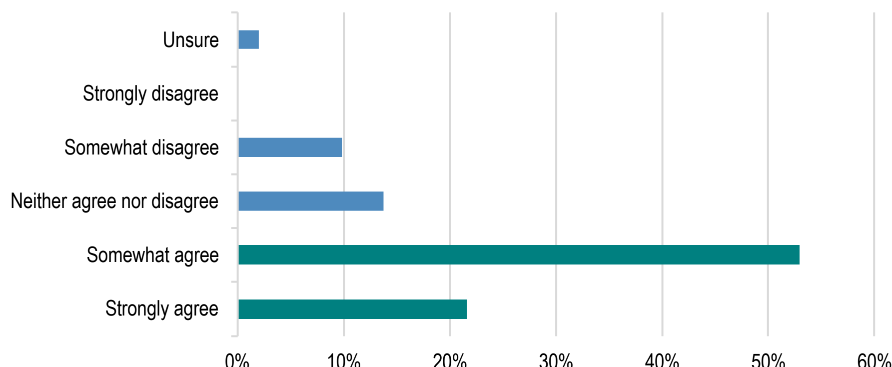
In a survey of EM investors conducted by J.P. Morgan's EM Research team and Global Index Research Group in 2021, three-quarters of the investors, representing $650 billion in AUM, were adamant that ESG funding should support the sovereigns facing the greatest sustainable journeys as opposed to sponsoring those with already strong ESG credentials (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 78: Survey Question 5: "To what extent do you agree with the statement 'sovereign ESG approaches should support those issuers who have the greatest sustainable development journey to accomplish rather than those that are best ESG performers'?"



Source: J.P. Morgan (link).

Solutions for an impact-based and forward-looking sovereign ESG analysis

In a recent report, the World Bank advocated for a Sovereign ESG 2.0 framework, based on five guiding principles including improved data sources, the incorporation of forward-looking scenarios and accounting for the ingrained income bias (link). According to J.P. Morgan's survey of EM sovereign debt, investors have started addressing the latter by adjusting ESG scores for countries' wealth or income or weighing countries' recent successes or setbacks. In parallel, new frameworks, initiatives, and data have emerged to address the unique challenges of sovereign ESG investing.

The PRI has developed a range of resources, including a dedicated guidance on sovereign integration (link), where it identifies fourteen ESG themes relevant to this asset class.

Table 31: The PRI's guidance on ESG integration in sovereign identifies 14 relevant themes

Governance	Social	Environmental
Institutional Strength	Demographic Change	Natural Resources
Political Stability	Education and Human Capital	Physical Risks
Government Effectiveness	Living Standards & Income Inequality	Energy Transition Risks
Regulatory Effectiveness	Social Cohesion	Energy Security
Rule of Law		
Corruption		

Source: PRI (link)

The Guide suggests a number of public data sources that investors can monitor to track the performance of a Sovereign or sub-sovereign entity on each of the E, S and G pillars. Investors can further refine this approach by (i) identifying themes that will likely dominate over their investment timeframe and (ii) assigning specific metrics to each of them, in order to form a forward-looking view on the entity's direction of travel on most material themes.

The PRI is also the driving force behind "ASCOR" (Assessing Sovereign Climate-related Opportunities and Risks), a project which aims to improve the assessment, monitoring and benchmarking of sovereigns' climate performance (link). The largest credit rating agencies have published research on the link between ESG and creditworthiness, partly owing to regulatory pressure (link), while specialized data vendors and alternative data sources have emerged (Maplecroft, Freedom House, PRS Group, among others) to fill disclosure gaps. We also expect multilateral

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

institutions to remain important stakeholders in this ecosystem, by supporting countries' progress towards the UN SDGs and attracting private capital, particularly in emerging markets. Given the importance of ESG policies as a long-term driver of ESG investing (see here), the success of those initiatives may have implications for the future of the ESG market across asset classes, in our view.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Policy and Regulation: Navigating the "ESG Mania"

Regulation[5] has been one of the main drivers of growth in the ESG market. The European Union has historically been leading developments in sustainable finance-related regulations to support its ambitious "Green Deal" agenda, pioneering key approaches on labeling, disclosures, and taxonomy. Over the recent years, the regulatory landscape has become more complex and fragmented, partly owing to new jurisdictions gradually stepping in within Asia and more recently North America and Emerging markets. Although differences will persist, owing to countries' various political agenda and positioning on the "value vs. values" debate, ISSB may succeed in forming a global baseline for future sustainability reporting requirements, while forums of global collaboration between financial regulators and central banks (among others) may drive global convergence on key principles.

Global Overview

In our view, there are three overarching objectives of ESG regulations globally, namely (i) bringing standardization in ESG practices, (ii) improving transparency from companies, vendors, and investors, and (iii) setting specific environmental, social and governance standards for companies and other entities.

- **Bringing standardization**: Regulatory initiatives standardize key ESG concepts and definitions to harmonize market practices. For example, green taxonomies aim to standardize the definition of "green" technologies and activities. More recently, the US SEC proposed to standardize the type and definition of ESG investment strategies (see here).

- **Improving transparency**: Regulators also recognize that ESG remains a dynamic market that will continue to evolve. As a result, their second objective is to improve transparency and disclosures from companies, vendors, and investors to enable market participants to (i) improve the quality of corporate reporting and ESG data, (ii) enable clients to assess differences between ESG definitions and approaches and (iii) prevent "ESG-washing", which are misleading or inflated claims about the sustainability credentials of a product, instrument or company.

Figure 79: Regulators aim to bring standardization and transparency to strengthen trust in the ESG market

Source: J.P. Morgan.

[5] We use the term "regulation" to refer to both policies and regulations.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

- **Setting specific ESG standards**: policy-makers and regulators also set minimum or specific standards on entities' environmental, social and governance practices through labor, environmental, and due diligence laws, among others. These impact the regulatory and competitive environments in which those entities operate, potentially resulting in externalities being priced in (e.g. a carbon price that internalizes the costs of a company's GHG emissions).

In this chapter, we do not attempt to list all ESG regulations but rather to highlight those that are most material to investors, both at global and regional levels.

We identify five types of regulatory intervention:

- **Companies' ESG disclosures**, which are often the primary source of data for investors. Most regulations focus on improving the availability and quality of reported ESG information, including by standardizing data and metrics.
- **Vendors of ESG data and ratings**, which typically focus on improving transparency on methodologies and assumptions, as well as the governance around processes, resources and conflicts of interest. We expect a gradual alignment with regulations applied to vendors of financial data and ratings, although with nuances to reflect the unique features of the ESG market.
- **ESG disclosures for financial products and firms**, most of which seek to ensure that the marketing materials of ESG-labeled financial products fairly reflect the role and influence of ESG factors in the underlying investment process.
- **Taxonomies**, which establish a common definition of green, social or sustainable activities and technologies that contribute to environmental, social and sustainability objectives.
- **Banking supervision and monetary policy,** which focus on ensuring financial stability through the supervision of systemic ESG risks, in particular climate change. The Network for Greening the Financial System (NGFS) is the main group of Central Banks and Supervisors that "shares best practices and contribute to the development of environment and climate risk management in the financial sector" (link). While their work currently focuses on climate-related systemic risks, the NGFS has announced that it would assess nature-related risks more broadly (link).
- **Policies setting specific environmental, social or governance standards**, such as carbon pricing mechanisms, energy efficiency standards, labor laws, supply chain due diligence obligations, among others.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Table 32: Objectives of ESG regulations, by type

	Objective
Corporates	Improve quality and availability of sustainability information
Data Vendors	Improve transparency and quality of third-party sustainability information
Investment products & firms	Standardize the definition of ESG strategies and improve transparency on underlying investment process
Taxonomy	Standardize the definition of sustainable activities and technologies
Banking Supervision & Monetary Policy	Manage systemic ESG risks to ensure financial stability
Specific ESG standards	Define a minimum or specific level of environmental, social and governance performance that entities must comply with within a specific jurisdiction.

Source: J.P. Morgan.

Greenwashing: from a reputational to a regulatory risk

Considered as a reputational risk for many years, green-, social- and ESG-washing are posing growing regulatory and legal risks to investors. Since 2019, several financial regulators, including in the EU, US, UK, Australia, and Singapore, identified greenwashing as a priority. The DWS case showed that greenwashing allegations by regulators could be financially material, with the stock down 14% (i.e. loss of €1.1bn in market capitalization) on the day the SEC and BaFin launched formal investigations over allegations that the asset manager overstated how the firm uses sustainable investing criteria to manage its investments (access our full analysis on ESG Discovery). Navigating greenwashing risks can be difficult as there is no common definition of what qualifies as sustainable. In this context, we identify four best practices for investors: (i) involving ESG and sustainability experts in the assessment of greenwashing risks, (ii) involving compliance and legal departments given the growing complexity of ESG regulations, (iii) running a “common sense check” to mitigate risks of controversies, (iv) applying strong governance practices, with ESG experts materially influencing decision-making.

While the EU has historically led the ESG regulatory agenda, ESG regulation has become an increasingly global trend

The EU and other European countries are responsible for the majority of ESG regulations adopted globally, according to the PRI. However, other markets are stepping in, particularly in Asia, where most countries will have mandatory sustainability reporting implemented by 2023. Regulations to enhance reporting from companies and investors represent the lion’s share of global regulations.

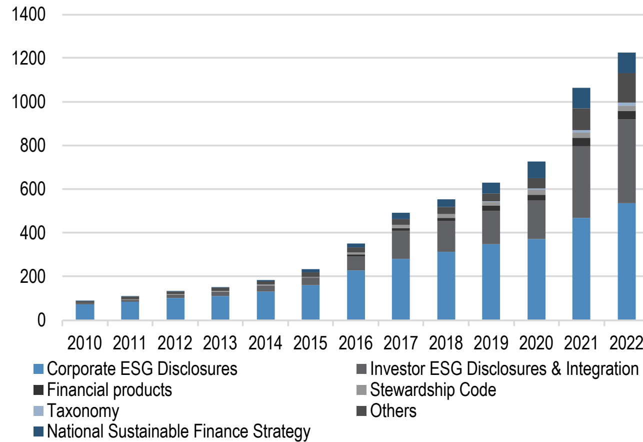
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 80: The growth in ESG regulations has been led by new corporate and investor disclosure requirements

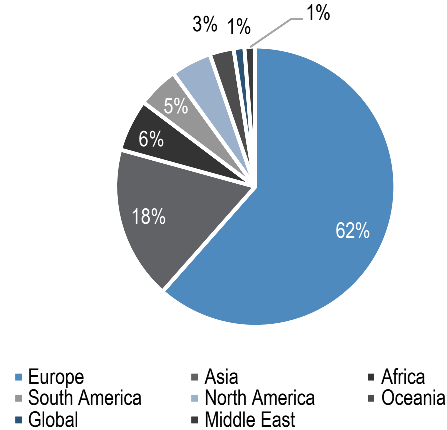
Cumulated number of ESG regulations since 2010, by type



Source: J.P. Morgan based on the PRI (link).

Figure 81: About 60% of ESG regulations have been developed in Europe

Breakdown of ESG regulations adopted since 2010, by region



Source: J.P. Morgan based on the PRI (link).

Table 33: Selected flagship ESG regulations by region and pillar

	EU	North America	Other Developed Markets	Asia & EMs
Corporates	EU CSRD*	SEC's proposed climate disclosures*	UK SDR*	India's BRSR Japan's disclosures on human capital & climate change
Data Vendors	New EU regulation*	-	New UK regulation*	India's proposed ESG ratings regulations*
Investment products & firms	SFDR MIFID EU Benchmarks	SEC's proposed ESG disclosures*	UK SDR*	HK's climate disclosures Singapore's ESG disclosures for retail funds Taiwan's ESG disclosures for onshore and offshore funds
Taxonomy	Green taxonomy Social taxonomy*	Canada's green taxonomy*	UK and Australia's green taxonomy*	ASEAN's plan for a common taxonomy* Thailand's sustainable finance taxonomy* Central American green taxonomy*
Banking Supervision & Monetary Policy	EBA's disclosures ECB's climate stress tests	FED's climate stress tests	BOE's climate stress tests	MAS' climate stress test and investment exclusions

Source: J.P. Morgan, based on Responsible Investor. As of Sept. 2022. Initiatives marked with asterisk are still in development or at proposal stage.

Climate change remains the top priority for most policy-makers

A common feature of ESG regulations is that they either prioritize or focus on climate change. As a reminder, climate change refers to the increase in global temperatures resulting from the concentration of GHG emissions into the atmosphere, 74% of which stemmed from the combustion of fossil-fuels in 2019.

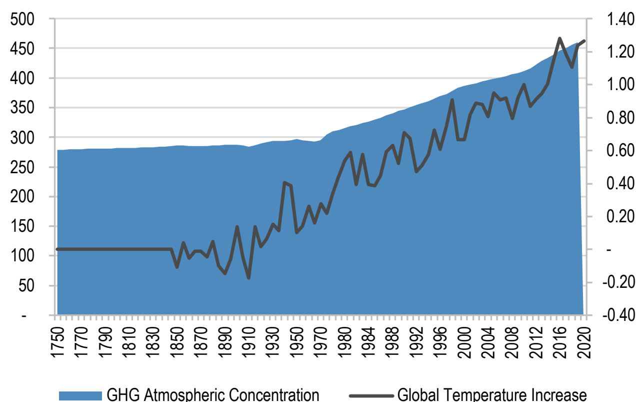
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 82: The atmospheric concentration in GHGs has increased exponentially since the 1970s

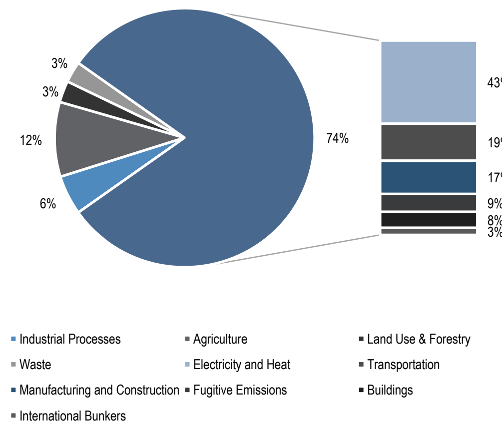
Left axis: PPM CO2e; Right Axis:°C



Source: J.P. Morgan based on the European Environment Agency (link). This chart excludes methane and nitrous oxide emissions, which are the two other types of GHGs.

Figure 83: Combustion of fossil fuel represented three quarters of GHG emissions in 2019

%



Source: J.P. Morgan based on the World Resources Institute (link).

Several factors can explain this trend in our view, including:

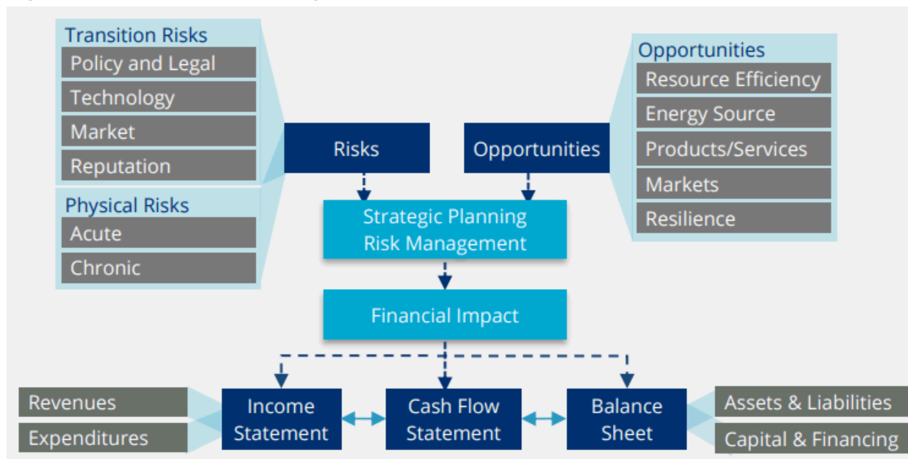
- **A (relative) political consensus**: Most countries recognize that climate change pose a "grave and mounting threat" to societies, partly as a result of Research from the IPCC, an intergovernmental panel of scientists (link). This consensus led to the adoption of the Paris Agreement by 196 countries in 2015, which is a legally binding treaty committing to limit the increase in global temperature between 1.5°C and 2°C by the end of the century in order to "preserve a livable planet" (link).
- **A sense of urgency:** Meeting the objective of the Paris Agreement "can only be achieved if global CO_2 emissions start to decline well before 2030" according to the IPCC (link), which has called for "immediate and more ambitious action".
- **One single metric**: Unlike other ESG themes, entities' contribution to climate change can be measured by one single metric, which is the amount of GHG emissions in tons of CO_2-equivalent. As a result, the measurement of climate risks and impacts have been relatively easier than for other ESG themes, as evidence by the relative higher quality of climate data relative to other ESG data (discussed here).
- **Formalized tools**: This combination of factors has led to the rapid development of tools and frameworks to drive climate action. For example, the TCFD published a mapping of climate-related risks and potential internalization pathways (that are channels through which climate risks can impact a company's financials, strategic planning, and risk management), which is now widely used by companies, financial institutions and regulators alike. It distinguishes between (i) transition risks, which primarily result from companies' impact on climate as well as specific local and sectoral market dynamics, and (ii) physical risks, which result from companies' dependencies to climate and weather conditions.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 84: Internalization pathways: the example of climate risks and opportunities



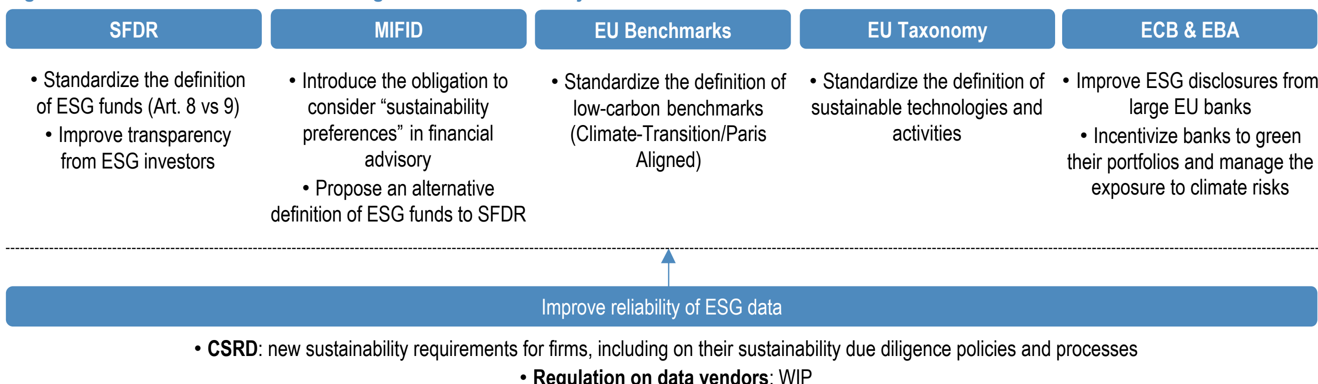
Source: TCFD 2017 Recommendations (link).

EU: Attempting to Pioneer in Unchartered Territories

The EU has been leading ESG and climate-related regulations

The region pioneered key concepts and definitions such as the taxonomy and ESG disclosures for financial products. While it undoubtedly supported the growth in the ESG market, it also created a complex regulatory ecosystem that is increasingly challenging to navigate for investors. Further, it is worth highlighting that the EU has adopted a more comprehensive and ambitious regulatory agenda than its global counterparts. While sharing the objectives of harmonizing market practices and improving transparency, the block also proposed regulations that are more transformative in nature, such as requiring companies to align their business model and strategy with a 1.5°C climate scenario (which is the most stringent target set under the Paris Agreement).

Figure 85: Overview of main EU ESG regulations and their objectives in the EU



Source: J.P. Morgan. As of Sept. 2022.

The Green Deal: The starting point of Europe's unique ambition

In December 2019, the EU Commission adopted the "EU Green Deal Action Plan". This plan includes a comprehensive and disruptive agenda to help all sectors of the economy transition toward more sustainable business models and align with the Paris Agreement. In the financial sector, the Green Deal led to the development of a

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

sustainable finance roadmap to "reorient capital flows towards sustainable investment, in order to achieve sustainable and inclusive growth", which in turn resulted in multiple regulations described below.

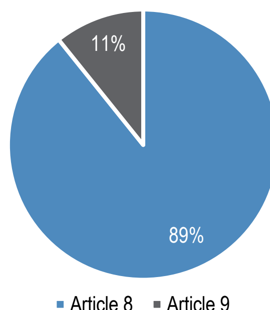
SFDR: A first of its kind revealing investors' appetite for funds with stronger ESG credentials

The Sustainable Finance Disclosure Regulation (SFDR) set new disclosure requirements for investors marketing ESG and sustainable-labeled products in the EU. For the first time, it imposed mandatory ESG disclosure obligations for financial market participants providing investment management and advisory services, both on the firms' own ESG policies ("level 1") and those applied at the fund level ("level 2"). Among others, disclosures include the publication of a Principal Adverse Impact (PAI) statement, which explains impacts of investment decisions on sustainability factors and associated due diligence.

Importantly, **SFDR introduces a distinction between articles 6, 8 and 9 funds**:

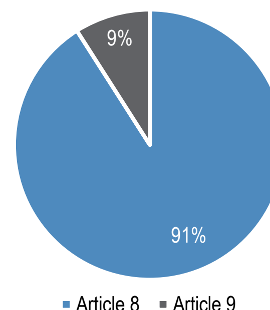
- **Article 6 funds** are funds that do not integrate sustainability in the investment process
- **Article 9 funds** have "sustainable investments" or a reduction in carbon emissions as their objective. This category includes impact funds, which we described earlier as the most advanced type of ESG investment strategies (see here)
- **Article 8 funds** promote, among others, environmental and/or social characteristics, provided that selected investees follow good governance practices. These funds can include any forms of strategies, from integration to engagement and proxy voting. Unsurprisingly, a majority of ESG funds are classified as Article 8 to date.

Figure 86: Article 8 represents the largest proportion of SFDR funds…
Split between Article 8 and 9 funds (%)



Source: J.P. Morgan based on Morningstar. Note: based on Morningstar's SFDR Article 8 and 9 funds universe. As of end of August.

Figure 87:…And the largest proportion of SFDR AUM
Split between Article 8 and 9 AUM (%)



Source: J.P. Morgan based on Morningstar. Note: based on Morningstar's SFDR Article 8 and 9 funds universe. As of end of August.

Despite absolute AUM remaining larger for Article 8 funds, as a percentage of opening AUM, Article 9 funds have been recording much stronger net flow figures of 35% of opening AUM vs. Article 8 net flows 10% of opening AUM in 2021

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

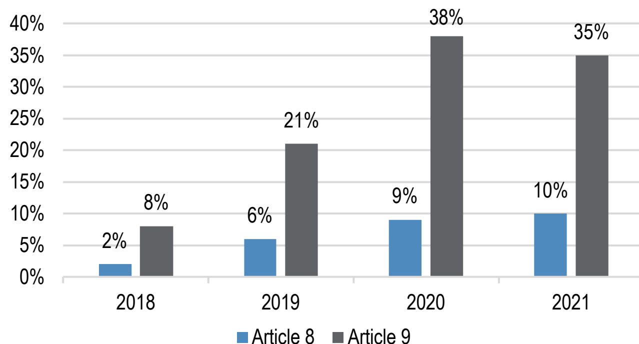
Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

(link). According to the latest analysis of SFDR funds by J.P. Morgan European General Financials analysts, Article 9 funds saw €29.4bn net inflows YTD to September, suggesting that investor appetite remains for funds with stronger ESG credentials (link).

Figure 88: Net flows have historically been stronger for Article 9 vs 8 funds…

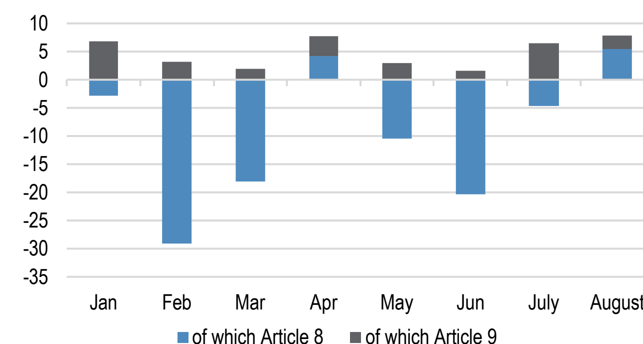
Net flows as % of opening AUM Article 8 vs. 9 (%)



Source: J.P. Morgan based on Morningstar. Note: based on Morningstar's SFDR Article 8 and 9 funds universe.

Figure 89:…And YTD flows have been consistent with historical trends

Article 8 ("Light Green") vs. 9 ("Dark Green") in € billions



Source: J.P. Morgan based on Morningstar. Note: based on Morningstar's SFDR Article 8 and 9 funds universe.

The implementation of SFDR is ongoing and regulators are still refining their enforcement approach. Among latest developments, we highlight the publication of supervisory guidance by the EU Securities and Markets Authority (ESMA) in June 2022, which suggested that regulators may implement unprecedented regulatory oversight in order to prevent ESG-washing (link). The guidance also stipulated that Article 9 funds should solely invest in sustainable assets, although without clearly defining this term. This uncertainty on the regulator's definition of sustainable assets (which should in theory be shielded from potential greenwashing allegations), has led some investors to increase the stringency of their own eligibility criteria to Article 9 funds, resulting in the downgrade of 41 funds to Article 8 in Q3 2022 (vs. only 29 upgrades to Article 9 funds) according to Morningstar (link).

MIFID requires to consider of clients' sustainability preferences.

In August 2022, the EU reviewed the existing MIFID directive to introduce a requirement for financial advisors to incorporate the sustainability preferences of customers as part of their suitability assessment. A recent "mystery shopper" survey conducted by the 2-degree initiative (2DII) in 2021 suggests that this practice was relatively rare, with only 25% of financial advisors asking their clients about their environmental objectives and 19% about social ones across the seven EU countries surveyed.

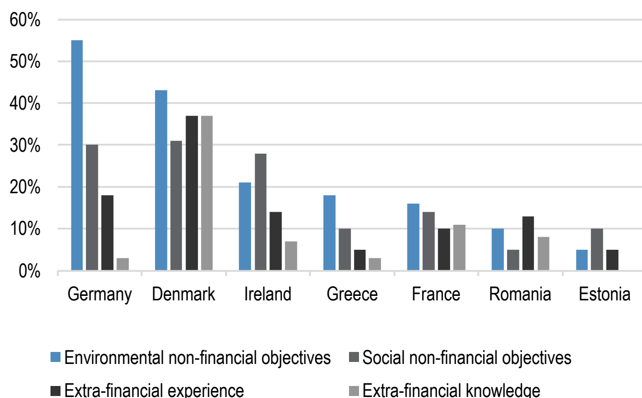
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 90: The 2DII's survey suggests that the assessment of sustainability preferences, experience and knowledge was limited in the EU before the revision of MIFID

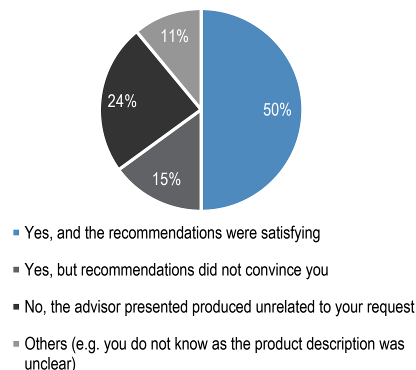
When the advisor assessed your profile, what aspects did they cover?



Source: J.P. Morgan based on 2DII (link).

Figure 91: Half of respondents to the 2DII's survey were satisfied with the way their advisor addresses their sustainability preferences

After you expressed your preferences, did the advisor propose you adequate sustainable products?



Source: J.P. Morgan based on 2DII (link).

We note that MIFID uses an **alternative definition of sustainable funds to SFDR**. Under the directive, funds that invest in "Sustainable investments", in Taxonomy-aligned investments and those that consider their Principal Adverse Impacts would qualify as "sustainable" alongside SFDR funds. In our view, this taxonomy of sustainable funds might be increasingly adopted by financial market participants as it could enable more differentiation between funds relative to the broad Article 8 and 9 categories introduced by SFDR.

Figure 92: Definitions of sustainable funds under MIFID

Source: J.P. Morgan.

The EU also amended its Benchmark Regulation (BMR) to incorporate new climate benchmarks.

The BMR amendments introduced mandatory disclosures for all ESG benchmarks as well as two new corporate climate benchmark definitions to improve the transparency and comparability of information across benchmarks and ultimately to address the risk of "*greenwashing*". The new climate benchmarks are defined as:

- **Paris Aligned Benchmarks (PAB)**, where the benchmark's carbon emissions are aligned with the objectives of the Paris Agreement

- **Climate Transition Benchmarks (CTB)**, where the benchmark provides for a 'decarbonization trajectory', defined in the regulation as a "measurable, science-based and time-bound movement towards alignment with the objectives of the Paris Agreement".

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Figure 93: Recommended minimum standards for PABs and CTBs

	Climate Scenario	Allocation constraint	Self decarbonization	Relative decarbonization	Green to Brown
	IPCC 1.5°C with no or limited overshoot	= or > Exposure to sectors highly exposed to climate change and its mitigation	-7% Minimum yearly reduction in GHG emissions intensity until 2050	CTB: -30% PAB: -50% Minimum reduction in GHG emissions intensity compared to market index	CTB: = or > PAB: 4 * > Ratio between green revenues (%) and brown revenues (%) compared to market index
EU CTB	✓	✓	✓	✓	✓
EU PAB	✓	✓	✓	✓ ✓	✓ ✓ ✓ ✓

Source: EU Technical Expert Group (TEG) on Sustainable Finance (link).

Conceptually, both climate benchmarks pursue a similar objective, but differentiate themselves in terms of their level of ambition. PABs are designed for highly ambitious climate-related investment strategies with stricter minimum requirements, whilst CTBs allow for greater diversification and serve the needs of institutional investors in their core allocation. Both PABs and CTBs come with minimum standards including scope 1+2(+3) carbon intensity reductions relative to the investable universe and year-on-year decarbonization targets.

Corporate reporting: all hopes in the CSRD?

The EU Parliament recently adopted its Corporate Sustainability Reporting Directive (CRSD), which will require around 50,000 EU firms (including private entities) to disclose information on eleven sustainability themes (link), with final adoption expected by the end of 2022. This directive replaces existing sustainability disclosure requirements that have applied to about 11,700 large, listed companies and financial institutions since 2014. Importantly, the CSRD will combine both cross-sector and sector-specific disclosures, and be based on a double-materiality approach (link). First disclosures are expected in 2025.

Table 34: The upcoming EU corporate disclosure standards will likely cover 11 sustainability themes

E	S	G
Climate mitigation & adaptation Pollution Water & Marine Resources Biodiversity & Ecosystems Circular Economy	Own Workforce Workforce in the value chain Affected Communities End-users/Consumers	Governance, Risk Management and Internal Control Business Conduct

Source: J.P. Morgan based on EFRAG (link).

Table 35: Proposed Sustainability Reporting Framework under the EU CSRD

Cross-cutting standards	
Covers sustainability policies, targets, actions and action plans, and resources	
Topical standards	
Sector-agnostic	Sector-specific

Source: J.P. Morgan based on EFRAG (link).

It is worth noting that corporate-related regulations in the EU are more extensive and transformative than in other regions. While focusing on sustainability disclosures, the CSRD together with the recently proposed Corporate Sustainability Due Diligence Directive, also include a requirement for companies to transition their business model and strategy toward a 1.5°C climate scenario, in line with the Paris Agreement.

The EU Green Taxonomy: an attempt to define sustainable activities

The EU Taxonomy is a classification system, which establishes a list of sustainable economic activities. To qualify as “sustainable”, activities need to contribute to one

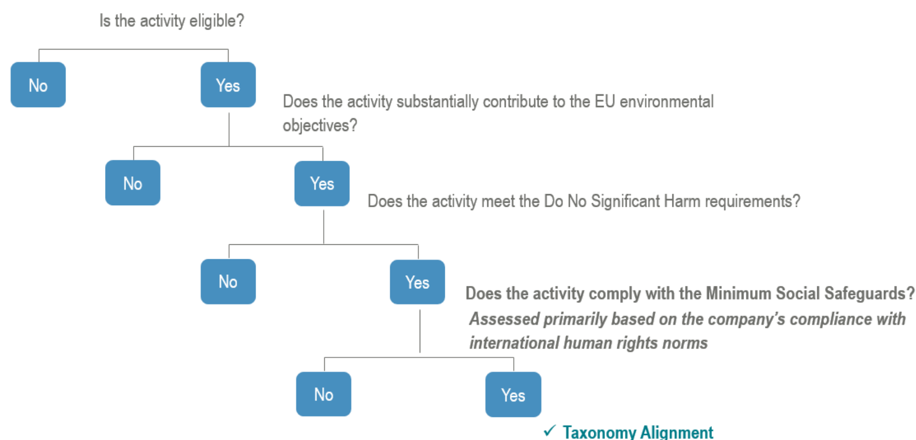
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

of the EU's sustainability objectives, meet the "do no significant harm" requirement and comply with minimum social safeguards.

Figure 94: To qualify as "sustainable" under the EU Green Taxonomy, activities need to meet four criteria.



Source: J.P. Morgan based on BNEF (link).

Table 36: The EU has set six environmental and three social objectives

Environmental Taxonomy	Social Taxonomy
Climate Change Mitigation	Decent Work
Climate Change Adaptation	Adequate Living Standards & Well-Being for End-Users
Pollution Prevention & Control	Inclusive and Sustainable Communities and Societies
Protection & Restoration of Biodiversity & Ecosystems	
Sustainable Use and Protection of Water and Marine Resources	
Transition to a Circular Economy	

Source: J.P. Morgan based on the Platform on Sustainable Finance (link).

The taxonomy has only been finalized for activities contributing to climate change mitigation and adaptation, resulting in an EU-wide definition of climate-friendly technologies. The Taxonomy is to be extended to the other EU environmental objectives, such as Circular Economy and Biodiversity. A proposal for a social taxonomy has also been submitted to the European Commission.

The role of the European Central Bank and Banking Authority in delivering the EU's ESG Agenda

The European Banking Authority (EBA) published a series of new ESG reporting requirements for banks operating in the EU, with a focus on climate risks and opportunities arising from financing activities. Meanwhile, the European Central Bank has conducted a series of climate stress-tests (see takeaways from J.P. Morgan Banks Analysts here) and launched its Climate Action Plan in 2021, which includes measures to further take into account climate change in its corporate bond purchases, collateral framework, disclosure requirements and risk management (link). As part of this plan, the bank recently announced that it would accelerate the decarbonization of its monetary policy portfolios by using a new climate scoring system to guide its purchase of corporate bonds (link). The new climate scores, which consider the quality of the company's GHG reporting, historical trend in GHG emissions, and future decarbonization targets, will:

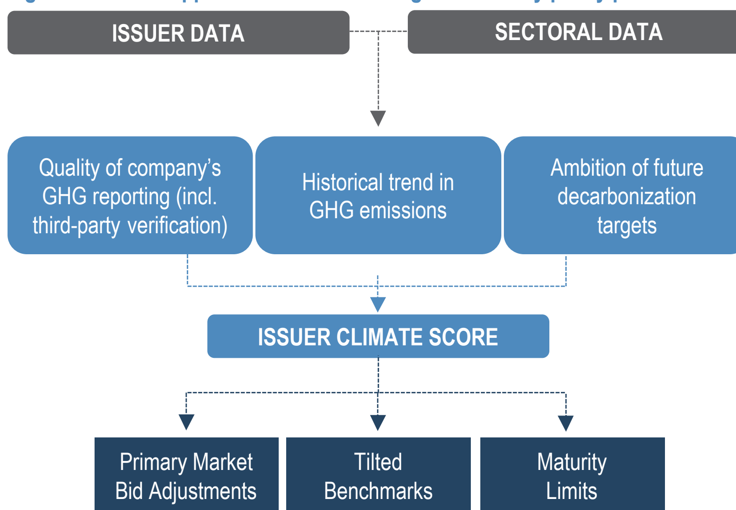
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

- Affect the relative weighting of issuers in the benchmark that guide the Eurosystem's ongoing reinvestment purchases of corporate bonds
- Favor issuers with a better climate performance on the primary market
- Impose maturity limits on bonds from lower-scoring issuers
- Incentivize the purchase of green bonds that meet "stringent" requirements

Figure 95: ECB's approach to decarbonizing its monetary policy portfolios



Source: J.P. Morgan based on the ECB (link).

Data vendors

The EU Commission announced its intention to regulate vendors of ESG data and ratings. As we write this report, there are limited details on the content and scope of this regulation.

US: New Regulatory Attempts but Adoption Remains Uncertain

ESG regulations in the US have accelerated since Biden's election in 2020 (J.P. Morgan Global Research, link). The country notably passed the Inflation Reduction Act, a landmark climate legislation that could result in 30% to 44% reduction of the country's GHG emissions compared to 2005 levels (link).

In line with other financial regulators, the US SEC is particularly focused on preventing green- and ESG-washing, setting up a specific Task Force in March 2021 to investigate ESG claims and recently proposing to increase investors' and companies' sustainability reporting requirements, which we describe in more details below. Having said that, these two ESG regulations are still at proposal-stage and have proven to be less politically consensual than in other regions, as evidenced by the growing "ESG backlash" in the region, which has materialized by the passing of "anti-ESG" laws in Texas and some other US States. Overall, we believe that the lack of political consensus on ESG regulations may remain a challenge for the local ESG market. See our "ESG in the USA" report from J.P. Morgan Strategic Research team (link).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Proposal for new ESG disclosures: toward a US version of SFDR?

In May 2021, the SEC proposed to impose new disclosures to ESG funds. ESG funds could be labelled as either integration or ESG-focused, depending on the significance of ESG factors in investment decisions relative to other factors. The SEC identifies six methods for implementing ESG-focused strategies: (1) tracking of an ESG index, (2) inclusionary screen, (3) exclusionary screen, (4) impact, (5) proxy voting, and (6) engagement with issuers. In our view, this relative precision on what constitutes an ESG-focused strategy contrasts with the broad definition of Article 8 funds under the EU Sustainable Finance Disclosure Regulation (SFDR). Unlike SFDR, the text does not include any requirements at firm-level. Click here to access our full analysis of the proposal.

Table 37: SEC's definition of ESG investment strategies, SFDR-equivalent and key disclosures

Strategy	SEC Definition	SFDR-Equivalent	Proposed Disclosures Requirements
Integration	Strategies where "ESG factors may be considered in the investment selection process but are generally *not dispositive compared to other factors* when selecting or excluding a particular investment".	Article 8 funds that do not use one of the methods described below	Description of the ESG factor(s) considered and their integration in investment decisions – if any
ESG-Focused	Strategies that "focus on one or more ESG factors by using them as a *significant* or *main* consideration in selecting investments or in engaging with portfolio companies."	Article 8 funds that track an ESG index, apply inclusionary and exclusionary screening, or use proxy voting or engagement with issuers to encourage ESG practices or outcomes	Standardized ESG Strategy Overview Table More detailed disclosures provided separately
Impact	ESG-focused strategies that are designed to "achieve a certain ESG impact".	Article 9	Impact targeted and how it is measured

Source: J.P. Morgan based on the SEC and EU SFDR.

Corporate disclosures: A focus on climate change

Unlike the EU, the US is not planning to impose new disclosure requirements on corporates on all sustainability topics and has so far focused on improving climate-related disclosures. Its recent proposal builds on recommendations from the TCFD and emphasizes consistency of climate disclosures with financial reporting. The most controversial aspects of the proposal concern the requirement for companies to disclose climate-related financial metrics in their audited financial statements and the Scope 3 emissions reporting mandate (as we write this report, recent news flow suggests that this provision might be dropped from the final text). The SEC estimates that 6,220 domestic and 740 foreign companies could be in scope. Click here to access our full analysis of the proposal.

The Federal Reserve will conduct its first climate stress tests in 2023.

The Fed will conduct a pilot climate scenario analysis with six of the US' largest banks in 2023 to assess their resilience to climate-related risks. It already mentioned that the results would have no capital or supervisory implications from this pilot exercise.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

UK, Australia, and Canada

UK

The UK published a Roadmap to Sustainable Investing in October 2021, which comprises four pillars: (i) Sustainability Disclosure Requirements for companies, financial institutions, investment firms and products; (ii) Green Taxonomy; (iii) Investor Stewardship (on which the UK has historically led), and (iv) International Leadership on green finance, with the country notably at the forefront of efforts to scale up impact investment. As we write this report, we mainly have details on the first pillar, in particular labelling and sustainable disclosure rules for investment products and firms, which are open for feedback until the end of H1 2023 (see our initial takeaways here). If adopted, they would introduce three categories of funds, namely (i) Sustainable Focus, (ii) Sustainable Improvers, and (iii) Sustainable Impact funds, with associated disclosure requirements at both entity and fund levels. Those requirements will likely evolve to incorporate progress on the Taxonomy (still in development) and ISSB, which the UK said will eventually form the 'backbone' of future corporate reporting requirements. The country already requires TCFD disclosures on a comply or explain basis for the most prominent companies and announced that that it would likely expand the number of companies in scope.

Australia

We expect ESG regulations to accelerate following the change in federal government in May 2022. Beside new emissions reduction targets, the country is developing its own science-based Green Taxonomy and may also introduce new ESG-related requirements as part of prudential standards for its super funds. While regulation is not developing at the same pace as other regions, there are signs that this is already changing, in particular within the financial services sector. In August 2022, the Financial Services Council released its 'Guidance Note 44: Climate Risk Disclosure in Investment Management', setting guidelines on the disclosure of climate-friendly investment features, net zero commitments and climate change risk reporting. Application with the Guidance Note is on a voluntary basis. This followed the release of an Australian Securities and Investments Commission (ASIC) review of "greenwashing" claims and expectations of how managed funds can avoid it.

Canada

Canada's federal ESG regulations are still in development. The country recently launched a sustainability standards board to engage with ISSB on the development of sustainability disclosure requirements for corporates, and recently proposed a Climate Aligned Finance Act to adjust banks' capital requirements based on their exposure to fossil fuel sectors (we understand that the bill is still being discussed in Parliament). Canada also set up a working group to develop its own green taxonomy, although this initiative has been delayed several times because of disagreements on the inclusion of "transition activities", among others.

Asia: The Disclosure Push

In line with the EU and US, Asia-based asset managers face more stringent disclosure requirements on ESG products. Among notable developments, we note that India and Singapore will require ESG funds to invest at least 80% and 67% of AUM, respectively, in securities that are "ESG-aligned", while Taiwan announced disclosure and labeling rules for both onshore and offshore funds. Further, most countries in the region will apply mandatory ESG disclosures by 2023, including in countries that traditionally applied a "comply or explain" approach. We note

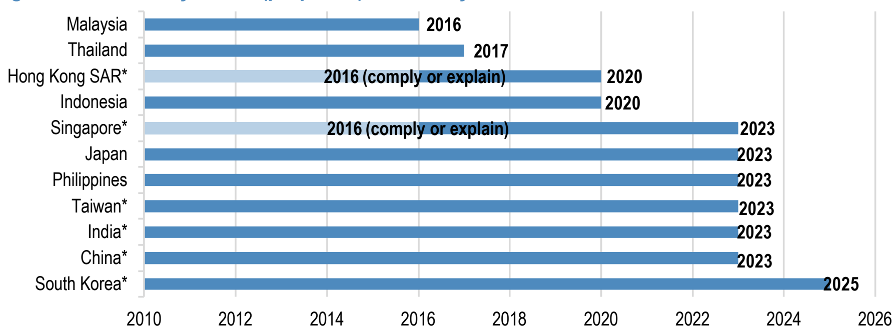
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

positively initiatives by the ASEAN to harmonize regulations among its 10 members, including its attempt to define a common green taxonomy.

Figure 96: Effective years of (proposed) mandatory ESG disclosure rules in Asia



Source: J.P. Morgan based on regulations from selected markets:
* **Hong Kong SAR**: ESG Reporting Guide was revised to mandate all public companies to disclose their environmental issues on a "comply-or-explain" basis in 2016; effective June 2020, certain ESG disclosure became mandatory;
Singapore: Sustainability reporting was introduced on a "comply-or-explain" basis in 2016; effective 2023 climate-related disclosure will be mandatory for companies in financials, agriculture and energy industries;
Taiwan: effective 2023 for steel and cement companies, as well as listed companies whose paid-in capital is higher than NT$10 billion;
India: effective FY22-23 for the top 1,000 listed companies based on market cap;
Mainland China: In May 2022, the State-owned Assets Supervision and Administration Commission of the State Council announced that by 2023, the ESG report disclosure of central SOEs will be fully covered;
South Korea: effective 2025 for companies with at least W2 trillion in total assets.

ASEAN

In February 2022, the ASEAN Capital Markets Forum (ACMF), which comprises securities regulators from the ten-member Association of Southeast Asian Nations, proposed standards to regulate sustainable and responsible funds in the region, with the objective to provide disclosure and reporting requirements that can be consistently applied by fund managers in the ASEAN jurisdiction. This notably includes the development of a common green taxonomy. As a reminder, ASEAN member states include Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

Mainland China

Mainland China has historically developed non-binding guidance and guidelines to help the development of its ESG and sustainable debt markets, including on green issuance and sustainability reporting. More recently, the China Securities Regulatory Commission (CSRC) introduced mandatory disclosures on environmental penalties for all listed companies, as well as other environmental information for most polluting entities such as pollution discharge and status of pollution control facilities. In parallel, the State-owned Assets Supervision and Administration Commission of the State Council announced mandatory ESG reporting for central SOEs by 2023.

In 2020 the EU and China initiated a working group under the EU's International Platform on Sustainable Finance (IPSF) on taxonomies. This resulted in a Common Ground Taxonomy (CGT) which is a comparison highlighting areas of commonality and differences between the EU and China's green taxonomies. The latest version of the CGT (June 2022) does not create a common standard, but jointly recognizes certain climate mitigation activities, and is aimed at smoothing international economic activities. The work draws on the green bond catalogue issued in 2015 by the People's Bank of China (PBOC), usually referred to as "a taxonomy".

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Hong Kong SAR

The Hong Kong stock exchange (HKEX) has led the development of ESG reporting in the region, with requirements for listed companies to provide ESG disclosures on a comply or explain basis in place since 2017. HKEX gradually moved toward mandatory disclosures since then, including on the board's consideration of ESG matters, and TCFD-aligned climate reporting.

With respect to ESG disclosures on investment products, the Securities and Futures Commission (SFC) is following a climate first approach and issued amendments to the Fund Manager Code of Conduct, which mandate fund managers to take into consideration climate-related risks of their investments and make appropriate disclosure (such has Scope 1 and 2 GHG emissions at fund level). Large fund managers (AUM HKD4bn to HKD8bn) are expected to meet the requirements by 20 August 2022. The SFC also aims to adopt the Common Ground Taxonomy being led by China and the EU, and supports the IFRS proposal for the ISSB.

India

While still nascent, the size of the Indian ESG market has multiplied by five between 2019 and 2021 (source: Times of India), showing growing interest in the country. In 2021, the Securities and Exchange Board of India (SEBI) announced new requirements for the top 1,000 listed by market capitalization to report sustainability information from FY2022/23 onwards in newly created 'Business Responsibility and Sustainability Reports' (BRSR). It has also proposed more stringent rules for ESG mutual funds, including to invest at least 80% of total AUM in securities that disclose sustainability information and follow the ESG theme of the fund. In 2022, India proposed new regulations on ESG rating providers, including the obligation to identify ESG ratings as either risk or impact-based.

Indonesia

The country's Financial Services Authority has mandated sustainability reporting for all banking corporations starting from 2019 and other listed companies from 2020.

Japan

In line with its European and US counterparts, Japan's Financial Services Agency announced the establishment of a framework to prevent "greenwashing" in the marketing of ESG products and hinted toward the development of an organization dedicated to the certification of ESG products. More recently, the Japanese government announced that companies will be required to provide non-financial disclosures on human capital and diversity, and climate change by 2023.

Singapore

Singapore has considerably accelerated its sustainable finance initiatives. In 2021, the Singapore Exchange (SGX) announced that all listed companies will be required to provide TCFD-aligned climate disclosures from 2022 onwards on a comply or explain basis. Reporting will gradually become mandatory, first for companies in the (i) financial, (ii) agriculture, food and forest products, and (iii) energy industries (by 2023), followed by (iv) materials and buildings, and (v) transportation industries by 2024. Since 2022, companies are also required to provide detailed disclosures on board diversity.

The Monetary Authority of Singapore's (MAS) has also been active to regulate ESG investing and accelerate climate finance, as shown by (i) the introduction of new disclosure requirements for ESG-labeled retail funds from 2023 onwards, including

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

details on the investment strategy and the allocation of at least two-third of the fund's net asset value to sustainable investments; (ii) the exclusion of new coal and oil sands and tilt to low-carbon activities in its own investments; and (iii) and the deployment of new climate scenarios and stress-tests.

Taiwan

Since late 2021, Taiwan regulators has released a number of rules to strengthen ESG disclosure from public companies. In December 2021, the Taiwan Stock Exchange (TWSE) announced mandatory ESG reporting rules for companies in selected industries including food and beverage, chemical, and financial & insurance. In January 2022, Taiwan's Financial Supervisory Commission (FSC) announced that steel and cement companies, as well as listed companies whose paid-in capital is higher than NT$10 billion (US$330 million) must from 2023 reveal their greenhouse gas emissions in annual reports. Onshore ESG funds also have to comply with process and disclosure requirements, including setting at least one sustainability objective, describe how the investment strategy will help to achieve that objective, and ensuring that at least 60% of their assets under management (AUM) are invested in companies whose operations are in line with the goal(s). Further disclosures were announced in 2022 for offshore ESG funds, including the sustainability objectives, measurement standards, and exclusions, among others.

Thailand

Thailand's SEC mandates sustainability reporting for listed companies, using a framework that is "proportionate to the company's size and complexity and meets domestic and international standards". In 2021, the SEC proposed disclosure additional requirements for sustainable and responsible investment funds. Meanwhile, the Bank of Thailand announced the development of a "sustainable finance taxonomy", which would consider social and environmental impacts holistically.

Malaysia

The country adopted mandatory sustainability reporting for all listed companies in 2016, which is earlier than most Asian and emerging markets as part. In March 2022, Bursa Malaysia launched a public consultation paper on its proposal to require all listed issuers to provide climate change related disclosures that are aligned with TCFD, and recently announced new reporting on banks' exposures to green and polluting activities.

Philippines

Bangko Sentral ng Pilipinas (BSP) requires banks to adopt sustainability principles in risk management, strategic objectives, and corporate governance framework since 2020. Broader sustainability reporting will be required for all listed companies from 2023 onwards (with potential financial penalties in case of non-compliance), and ultimately for all companies, although first on a comply-or-explain basis.

South Korea

Sustainability disclosures will become mandatory for companies with at least W2 trillion in total assets by 2025 and will be extended to all KOSPI-listed companies by 2030. Disclosures will cover response plans to environmental and health crises such as the Covid-19 pandemic, labor management, and governance, among others.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Perspectives from Emerging Markets (ex. ASIA)

ESG regulations in EM are still in their infancy, and the focus has historically been on governance rather than environmental and social themes. Among EM ex. Asia, Colombia seems to be leading on new sustainable finance regulations. Noteworthy is the role of stock exchanges in the promotion and implementation of responsible investing practices in those regions.

Brazil

The B3 stock exchange played an important role in the creation of ESG standards in the country. In 2000, it created a new listing type in 2000 named “New Market”, which aims to only include companies with the best governance standards, beyond local regulations. In 2010, it officially committed to the PRI (Principles for Responsible Investment), becoming the first emerging-market exchange to do so, and has been a member of the PRI Brazil ESG Practices Working Group since then. In 2016, Brazil had around sixty institutional investors signing the PRI with some R$804mn AUM. Still, indexes and exchange traded funds that track intrinsic socio-environmental features (such as ICO2, ISEE, IGCX) and broader adoption of ESG practices by Brazilian companies is still a relatively recent phenomenon.

Chile

Chile has pursued efforts to promote adoption of good ESG practices, which are becoming increasingly common within large companies and in public policies, although the pace is still slow. A study by the Center for Corporate Governance and Society of the Chilean University of Los Andes – released in March 2022 – finds that 51% of local business leaders estimate that ESG initiatives will have a positive effect on their companies’ profitability over the next three years. Among the country’s sustainability policies, we particularly note the country’s ambitious Green Hydrogen Strategy as part of its Carbon Neutrality ambition, and the reduction in the number of mandatory working hours.

Colombia

Colombia´s new government under the new President Gustavo Petro has announced upcoming reforms in decarbonization, climate adaptation, reforestation and energy transition, including new hydrogen developments and the end of fracking, as well as labor reforms to improve working conditions. On sustainable finance more specifically, the country’s financial regulator, Superintendencia Financiera de Colombia (SFC), launched a new sustainable finance roadmap, which prioritizes the development of a Central American taxonomy, new ESG disclosures for investment products, and the supervision of the impact of climate and biodiversity risks on the stability of the financial system.

Mexico

Sustainable debt has so far been the most dynamic segment of the ESG market. Mexico was the first issuer of green bonds in the Pacific Alliance according to the Mexican Stock Exchange, with Mx$32.5bn of green bonds issued by both private and public entities and launched the first SDG-linked sovereign bond in 2020. Other financial instruments have been issued such as social and sustainable bonds. Interest from equity investors is still nascent but rising, including with the launch in 2020 of the first S&P/BMV Total Mexico ESG Index.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

South Africa

While asset managers started offering ESG-focused products only recently, the implementation of important regulations could further accelerate the growth in ESG investing, including the Section 54 of the Mine Health and Safety Act (that forces companies to think more about health and safety) and the Regulation 28 of the Pensions Fund Act (outlining a fund's fiduciary duty to give appropriate consideration to factors that may materially impact the sustainable long-term performance of a fund's assets). In parallel, the Institute of Directors in Southern Africa released the Code for Responsible Investing in South Africa (CRISA), which directs institutional investors to incorporate sustainability considerations into their investment analysis. The country has recently accelerated its transition to renewable energy as part of its broader overhaul of the energy sector, with financial support from the US and EU. On the other hand, South Africa is also facing heightened scrutiny on its money laundering policies (link).

Conclusion: Will There Ever Be Convergence of ESG Regulations?

Over the recent years, the regulatory landscape has become more complex and fragmented, partly owing to new jurisdictions stepping in. In this context, could investors expect ESG regulations to gradually converge? To some extent – yes. ISSB may succeed in forming a future global baseline (i.e. minimum standards) for sustainability reporting, while forums of global collaboration between financial regulators and central banks (IOSCO, TCFD, NGFS) may drive global convergence on key principles, in particular (i) ensuring that funds' marketing materials fairly reflect the role of ESG in the investment process, and (ii) requiring more information from ESG rating providers on their methodology. In the sphere of taxonomies, we expect higher convergence of environmental vs. social taxonomies, which should (in theory) be informed by the same global science-based planetary boundaries (see here).

Having said that, differences will persist, owing to countries' various political agendas and positioning on the "value vs. values" debate. Jurisdictions such as the EU will likely complement ISSB by additional sustainability disclosures in order to align with their double materiality approach to corporate reporting. Despite room for convergence on green taxonomies, we expect that countries will continue to take different stances on technologies such as nuclear and gas power depending on their own energy policies, while we expect that specific environmental, social or governance standards will remain fragmented as influenced by a combination of multiple regional and global political, economic, and geopolitical dynamics.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Glossary

Article 8 funds: Category of ESG funds created by the EU SFDR. It includes funds which promote, among other characteristics, environmental or social characteristics, or a combination of those characteristics, provided that the companies in which the investments are made follow good governance practices.

Article 9 funds: Category of ESG funds created by the EU SFDR. It includes that have sustainable investment as their objective or a reduction in carbon emissions as their objective.

Carbon dioxide (CO_2): Primary type of GHG emitted through human activities. The main activity that emits CO_2 is the combustion of fossil fuels (coal, natural gas and oil) for energy and transportation, although certain industrial processes and land-use changes also emit CO_2.

Carbon credits: A carbon credit is a generic name for a certificate that represent the equivalent of 1 ton of CO_2 equivalent from GHG. Carbon credits are instruments issued by a specific scheme, such as an Emission Trading Scheme (ETS), a baseline and offset scheme, or a Carbon Offset scheme, under specific rules that guarantee their quality (so-called Monitoring, reporting, & Verification).

Carbon offsets: A carbon offset is a specific type of carbon credit, which is issued on the back of a GHG reduction, avoidance, or removal project. A carbon offset can be issued under compliance mechanisms such as the Clean Development mechanism, Joint Implementation mechanism, and the carbon offsets pocket of an ETS, or by voluntary mechanisms such as Gold Standard and Verra.

CCRM: *Climate Corporate Responsibility Monitor* – Assessment of the climate strategy of 25 major global companies conducted by NewClimate Institute in collaboration with Carbon Market Watch (CCRM).

CDP: *Carbon Disclosure Project* – A global disclosure platform for investors, companies, cities and regions to monitor, manage and disclose their environment impact.

CDSB: *Climate Disclosure Standards Board* – International consortium of business and environmental NGOs, committed to advancing and aligning global corporate reporting to equate natural capital with financial capital.

Climate scenarios: Plausible representation of future climate and associated rise in temperature that has been constructed to investigate the potential impacts of climate change. Climate scenarios are typically based on a set of assumptions regarding the future evolution of climate policies and technologies, among other variables. Climate scenarios projecting an increase in global temperature "well below 2°C" are considered as aligned with the Paris Agreement.

Controversial weapons: Weapons banned under international conventions such as the Treaty on the Non-Proliferation of Nuclear Weapons (1968), Biological and Toxin Weapons Convention (1972), Chemicals Weapons Convention (1997), Mine Ban Treaty (1999) on anti-personnel mines, Convention on Certain Conventional Weapons (2001) including non-detectable fragments, incendiary weapons, booby traps, and blinding laser weapons, and the Convention on Cluster Munitions (2008). The type of weapons included may slightly differ between investors and vendors.

COP: *Conference of the Parties* – Main decision-making body of a convention signed under the United Nations, which usually includes all countries of the United Nations that have signed and ratified the convention. An international convention

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

(also called treaty) is an agreement between different countries that is legally binding to the contracting States (UN). Conventions most relevant to ESG investors include the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

COP 21: 21st Convention of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC). This conference occurred in 2015 and resulted in the Paris Agreement.

CSRD: *Corporate Sustainability Reporting Directive* – Currently a legislative proposal of the EU Commission, aiming at expanding the scope and strengthen the content of mandatory ESG reporting for EU corporates. It will replace the NFRD.

CSDDD: *Corporate Sustainability Due Diligence Directive* – Directive proposes new requirements on the management of sustainability risks and impacts for companies and financial institutions in the EU. The CSDDD does not include disclosure requirements

CTB: *Climate Transition Benchmark* – A benchmark that is labelled as an EU Climate Transition Benchmark where the underlying assets are selected, weighted or excluded in such a manner that the resulting benchmark portfolio is on a decarbonization trajectory and is also constructed in accordance with the minimum standards laid down in the EU delegated acts of the EU Sustainable Benchmark Regulation.

Double Materiality: Assessment of the importance of an ESG issue for an entity, based both on the sustainability impacts of the entity and its value chain on stakeholders (including the environment) as well as the financial risks and opportunities posed by the ESG issues to the entity.

EFRAG: *European Financial Reporting Advisory Group* – Private association established in 2001 by the European Commission. Its Member Organizations are European stakeholders and National Organizations having knowledge and interest in the development of IFRS Standards and how they contribute to the efficiency of capital markets. EFRAG is the main body advising the European Commission on the new sustainability standards under CSRD.

Environmental factors: Environmental factors stem from a firm's impacts on, and dependencies to natural capital. Examples of impacts include GHG emissions, waste, discharges to soil and groundwater, among others. Example of dependencies include the use of materials, energy and water, a balanced climate and pollination.

Eurosif: *European Sustainable Investment Forum* – Eurosif is the leading pan-European sustainable and responsible investment (SRI) membership organization whose mission is to promote sustainability through European financial markets.

Externalities: Situations when the effect of production or consumption of goods and services imposes costs or benefits on others which are not reflected in the prices charged for the goods and services being provided. (OCED).

Global Warming Potential: Factor describing the radiating forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO_2. The following table indicates the 100-year time horizon GWP relative to CO_2.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Common Name	GWP Values
Carbon Dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous Oxide (N_2O)	265
Hydrofluorocarbons (HFCs)	4 – 12,400
Perfluorocarbons (PFCs)	6,630 – 11,100
Sulfur hexafluoride (SF_6)	23,500

Source: J.P. Morgan based on IPCC Fifth Assessment Report

Governance factors: People, policies and processes that direct and control the company, which are partly defined by the firm's own practices, and by local regulation and business environment.

Greenhouse gases (GHG): Gases that trap heat in the atmosphere. These include Carbon dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur hexafluoride (SF_6). A company's GHG emissions are reported in tonnes of carbon dioxide equivalent (CO_2e). CO_2e is the universal unit of measurement to indicate the Global Warming Potential (GWP) of each of the six GHGs, expressed in terms of the GWP of one unit of CO_2. It is used to evaluate releasing (or avoiding releasing) different GHG against a common basis.

Greenwashing: Behavior or activities aiming to give the impression that an entity is doing more to support or protect the environment than it really is.

GRI: *Global Reporting Initiative* – Independent, international organization that develops the most widely used standards for sustainability reporting (the GRI standards).

IASB: *International Accounting Standard Board* – The International Accounting Standards Board (IASB) is an independent, private-sector body that develops and approves International Financial Reporting Standards (IFRSs). The IASB operates under the oversight of the IFRS Foundation.

IFRS Foundation: *International Financial Reporting Standard* – The IFRS Foundation is a not-for-profit, public interest organization established to develop a single set of high-quality, understandable, enforceable and globally accepted accounting and sustainability disclosure standards—IFRS Standards—and to promote and facilitate adoption of the standards.

IPCC: *International Panel on Climate Change* – The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

IRF: *Integrated Reporting Framework* - The International Integrated Reporting Framework is used to accelerate the adoption of integrated reporting across the world. An integrated report is a concise communication about how an organization's strategy, governance, performance and prospects lead to the creation of value over the short, medium and long term.

IOSCO: *International Organization of Securities Commissions***;** It is the international body that brings together the world's securities regulators and is recognized as the global standard setter for the securities sector. IOSCO develops, implements and promotes adherence to internationally recognized standards for securities regulation. It works intensively with the G20 and the Financial Stability Board (FSB) on the global regulatory reform agenda.

ISSB: *International Sustainability Standards Board* – Announced in November 2021 by the IFRS foundation trustees, its mission is to develop a comprehensive global baseline of sustainability-related disclosure standards.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Just Transition: The notion of a 'just transition' was incorporated in the 2015 Paris Agreement as a way of signaling the importance of minimizing negative repercussions from climate policies and maximizing positive social impacts for workers and communities (Robins & Rydge, 2019).

Materiality: Measure of how important an information is when making a decision.

Methane (CH4): Second largest type of GHG after carbon emissions. It is mostly emitted during the production and transportation of coal, natural gas and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in landfills.

Net Zero: Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance, in order to meet the objective of the Paris Agreement (UN).

NFRD: *Non-Financial-Reporting Directive* – An EU directive which entered into force in 2014 and impose to large companies to publish information on environmental matters, social matters and treatment of employees, respect of human rights, anti-corruption and bribery as well as diversity on company boards. It applies to large public companies with more than 500 employees. This covers approximately 11 700 large companies and groups across the EU.

NGFS: *Network of Central Banks and Supervisors for Greening the Financial System* – A group of Central Banks and Supervisors created in December 2017 to "help strengthening the global response required to meet the goals of the Paris agreement and to enhance the role of the financial system to manage risks and to mobilize capital for green and low-carbon investments in the broader context of environmentally sustainable development" (NGFS). Importantly, the NGFS develops climate scenarios that are used by regional Central Banks and Supervisors to design their own climate regulations (link).

PAB: *Paris Aligned Benchmark* – EU Paris-aligned Benchmark' means a 'benchmark that is labelled as an EU Paris-aligned Benchmark where the underlying assets are selected in such a manner that the resulting benchmark portfolio's GHG emissions are aligned with the long-term global warming target of the Paris Climate Agreement and is also constructed in accordance with the minimum standards laid down in the EU delegated acts' of the EU Sustainable Benchmark Regulation.

Planetary boundaries: This concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes (Stockholm Resilience Centre).

PRI: *Principles for Responsible Investment* – The UN-supported PRI is the world's leading proponent of responsible investment. It works to understand the investment implications of ESG factors and to support its international network of investor signatories in incorporating these factors into their investment and ownership decisions.

SASB: *Sustainability Accounting Standard Board* – SASB was founded as a nonprofit organization in 2011 to help businesses and investors develop a common language about the financial impacts of sustainability prospects.

SBTI: *Sciences-Based Target Initiative* – SBTI is a partnership between the UN and three non-governmental organizations – the Carbon Disclosure Project (CDP), the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). This partnership "verifies" the alignment of an entity's climate target with sectoral decarbonization pathways, taking into account latest climate science.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Scope 1: Direct GHG emissions – Direct GHG emissions occur from sources that are owned or controlled by the entity, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment.

Scope 2: Electricity indirect GHG emissions – Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the entity. Purchased electricity is defined as electricity that is purchased or otherwise bought into the organizational boundary of the entity. Scope 2 emissions physically occur at the facility where electricity is generated.

Scope 3: Other Indirect GHG emissions – Scope 3, otherwise known as the holy grail of emissions data, is currently an optional reporting category in the GHG Protocol. Scope 3 emissions are a consequence of the activities of the entity, but occur from sources not owned or controlled by the entity. Some examples of scope 3 activities are the extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services (e.g. vehicles).

SDR: *Sustainability Disclosure Requirements* – UK regulation currently in development, which will include new disclosure requirements for corporates and investors, as well as a taxonomy.

SFDR: *Sustainable Finance Disclosure Regulation* – EU regulation which came into force in March 2021. It is lays down ESG disclosure obligations for manufacturers of financial products and financial advisor toward end-investors. It distinguishes between Article 8 and 9 funds.

Social factors: Social factors stem from a firm's impacts on, and dependencies to human capital. Examples of impacts include occupational accidents, women's empowerment, workers' rights and community volunteering, among others. Example of dependencies include the reliance on an engaged, diverse and healthy workforce, skilled talent pipeline, and consumer trust.

Stakeholders: Person or group of people who are involved with an organization and therefore has responsibility towards it and an interest in its success. Stakeholders typically include shareholders, creditors, employees, customers, suppliers, local communities and the broader society (J.P. Morgan based on the Cambridge Dictionary and the WEF).

Stranded assets: assets that suffer from unanticipated or premature write-downs, devaluation or conversion to liabilities due to the unexpected acceleration of sustainability megatrends. The term is typically used in the context of the energy transition to designate the stranding of fossil-fuel resources that could occur if the transition to a 1.5°C scenario accelerated (J.P. Morgan based on Lloyd's). Research found that 56 to 60% of oil and gas reserves and 90% of coal reserves must remain unextracted to align with a 1.5°C scenario (Nature).

TCFD: *Taskforce on Climate Finance-Related Disclosures* – Formed by the G20 Financial Stability Board, its goal is to develop recommendations for more effective climate-related disclosures that could promote more informed investment, credit, and insurance underwriting decisions and, in turn, enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks.

TNFD: *Taskforce on Nature-related Financial Disclosures* – The TNFD aims to develop and deliver a risk management and disclosure framework for organizations to report and act on evolving nature-related risks, with the ultimate aim of supporting

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

Tragedy of the horizon: Expression first employed by Mr. Mark Carney, Governor of the Bank of England and Chairman of the Financial Stability Board, in a speech at Lloyd's of London in 2015. It designates the mismatch between the typical time horizon of decision-makers (including business leaders, policy-makers, and "technocratic authorities") and that that would be needed to mitigate climate change (J.P. Morgan based on BIS).

TPI: *Transition Pathway Initiative* – Global initiative led by asset owners and supported by asset managers. Aimed at investors and free to use, it assesses companies' preparedness for the transition to a low-carbon economy, supporting efforts to address climate change (TPI).

TPT: *Transition Plan Taskforce* – Taskforce mandated by the UK Government to develop a gold standard for transition plans. The TPT's work will help to drive decarbonization by ensuring that financial institutions and companies prepare rigorous plans to achieve net zero and support efforts to tackle greenwashing (TPT).

Value chain: Refers to the various business activities and processes involved in creating a product or performing a service. A value chain can consist of multiple stages of a product or service's lifecycle, including research and development, sales, and everything in between (Harvard Business School).

VRF: *Value Reporting Foundation* – A global nonprofit organization that offers a comprehensive suite of resources designed to help businesses and investors develop a shared understanding of enterprise value – how it is created, preserved, or eroded.

WEF: *World Economic Forum* – The World Economic Forum is the International Organization for Public-Private Cooperation.

WRI: *World Resources Institute* – Research center on food, forests, water, ocean, cities, energy and climate. The WRI is a key stakeholder in multiple sustainability initiatives, including the development of the GHG Protocol and SBTI.

WBCSD: *World Business Council For Sustainable Development* – Coalition of 200+ CEOs working to "accelerate the system transformations needed for a net zero, nature positive, and more equitable future" (WBCSD).

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

J.P. Morgan Global ESG Research

Meet our Teams

Leadership

Gloria Kim
Co Head of Global ESG Research & Global Head of Index Research
gloria.m.kim@jpmorgan.com

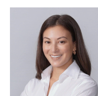
Sophie Warrick
Co Head of Global ESG Research & Head of EMEA Equity Research
sophie.l.warrick@jpmorgan.com

Methodology & Integration

Virginia Martin Heriz
Head of ESG Research Methodology & Integration
virginia.martinheriz@jpmorgan.com

Fundamental

Jean-Xavier Hecker
Head of EMEA Equity ESG & Sustainability Research
Jean-xavier.hecker@jpmorgan.com



Hannah Lee
Head of Asia Pacific ESG Equity Research
hannah.l.lee@jpmorgan.com

Tomohiko Sano
Co-Head of ESG & Sustainability and Machinery Research, Japan
tomohiko.sano@jpmorgan.com

Jason Steed
Head of Equity Research for Australia
jason.h.steed@jpmorgan.com

Danielle Ward
Co Head of ESG Credit Integration
danielle.ward@jpmorgan.com

Mark S. Streeter, CFA
Co Head of ESG Credit Integration
mark.streeter@jpmorgan.com

Noemie de la Gorce, CFA
Senior ESG & Sustainability Research Analyst EMEA
noemie.delagorce@jpmorgan.com

Hugo Dubourg
Senior ESG & Sustainability Research Analyst EMEA
Hugo.dubourg@jpmorgan.com

Paul Xu, CFA, CPA
ESG Research Analyst
Asia Pacific
paul.xu@jpmorgan.com

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Emily Macpherson
Strategy and ESG Equity Research Analyst for Australia
emily.c.macpherson@jpmorgan.com

Quantitative

Khuram Chaudhry
Head of European Quantitative Strategy
khuram.chaudhry@jpmorgan.com

Ayub Hanif, PhD
Global Quantitative & Derivatives Strategy
ayub.hanif@jpmorgan.com

Index

Lydia Harvey
Head of ESG Index Strategy & Integration
Lydia.harvey@jpmorgan.com

Rupert Rink
Senior ESG Index Specialist
Rupert.rink@jpmorgan.com

Ethan Ross
ESG Specialist
Ethan.ross@jpmorgan.com

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Our Content

Table 38: Overview of J.P. Morgan's ESG Research Publications & Products

Fundamental	Quantitative	Index	Macro & Economics
ESG Wire Long View Materiality Matters ESG in Credit ESG Flash Notes ESG Discovery Portal	ESGQ ESGQ Quarterly ESG Research Through a Quantitative Lens	JESG Indices JESG Monitors Product Guides Thematic Research	Thematic Research

Source: J.P. Morgan

Fundamental

The Wire

As a rapidly evolving area with news flow from regulators, governments, investors and corporates, filtering what is important, and identifying how it fits into the bigger picture, is critical. ESG Wire is our weekly newsletter which allows our clients to stay updated on the most important ESG news, content and upcoming investor access from Equity Research they may have missed, and on what's next, in one pass. Read the latest edition here.

The Long View

Many themes or regulatory shifts that are shaping the future landscape of ESG & Sustainability are long-term in nature, several of which are in their infancy today. The Long View provides detailed insights from our ESG analysts on key regulatory developments and thematics in ESG from a long-term perspective, combined with sector and stock-level impacts, leveraging the expertise of our Sector analysts.

Net Zero in Asset Management	Here
Asia ESG: Labor Practices & Norms-based Strategies	Here
Does ESG need a reboot? Survey results	Here
Direct Air Capture: Could it save the world? Will it cost the earth?	Here
ESG & Earth Day: What's Green, what's Brown, what's in between? - and why we love the EU Taxonomy	Here
Materiality Matters: A crucial debate for the future of ESG	Here
What does an ESG fund look like?	Here
Stakeholder Capitalism: Corporate Purpose and Implementation	Here

Materiality Matters

We believe combining in-depth ESG and regulatory knowledge with industry and single-stock context and expertise is increasingly critical when integrating ESG and Sustainability factors into the investment process. Our Materiality Matters publications are created jointly by our ESG Specialists and Sector teams, generating forward-looking and investable ESG insights utilizing a double materiality framework - in order to capture both what is financially material today, as well as what is relevant from a sustainability perspective, which may also be

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

financially relevant tomorrow.

Green Sporting Goods: Just Do It?	Here
European Steel: The Butterfly Effect Trilogy: Decarbonisation, Demand & Defence and the read-across to European Steel	Here
RWE Green Sparks	Here
Building Materials: Innovating Towards More Sustainable Products	Here
Fashion Retail: Caring not (Cost) Sharing	Here
The Conscious Consumer: Deforestation and Biodiversity	Here
Saint Gobain: R&D and Product sustainability sector deep dives reinforces underappreciated ESG status	Here
EMEA Hydrogen: A Revolution in need of realism; separating the opportunity from the optimism	Here
European Tobacco: a deep-dive on Tobacco in the context of ESG	Here

ESG Flash Notes

With ESG news flow increasingly impacting markets in real time, our Flash Notes provide first reactions from our ESG analysts to regulatory or company developments.

Initial Takeaways From The UK's Sustainability Disclosure Requirements	Here
Takeaways from the Inflation Reduction Act	Here
Assessing the risks from charges against humanity from the group's legacy Syrian operations	Here

ESG in Credit

Credit Factor funds, J.P. Morgan's credit smart beta ESG index and 3Q performance update	Here
Oceans Apart: Assessing the ESG Cost of Debt in Global Credit	Here
ESG alpha in DM credit and growing momentum in EM	Here
ESG Ratings Not Ready for Prime Time	Here

ESG Discovery Portal

ESG Discovery is a digital platform, developed to centralize ESG inputs from sector analysts working in fundamental Equity and Credit Research. Discovery has been developed to answer client demand for a more structured, systematic and fundamental ESG view from the Sell Side which looks beyond ratings to underlying drivers and forward-looking analysis, and to make our work in this context searchable in one place through time. Click here to access.

Quantitative

Quarterly ESGQ Updates

Talking the language of the general investor these research notes highlight the valuations, earnings profile, style impact, and country/ sector allocation of ESGQ.

ESGQ: Returns continue to struggle, catalysts supportive of a better H2	Here

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

ESGQ: Short term vulnerabilities, long term opportunities	Here
Solid and consistent returns for ESGQ, concerns about the high correlation to Momentum & Technology	Here
Launching JPM's ESGQ - A Quantitative ESG Metric for stock selection models	Here

ESG Research Through a Quantitative Lens

Creating an 'Innovation Culture Score' using Human Capital Factor data	Here
Using Newsflow Sentiment Data to understand SDGs by country & Sector	Here
Assessing the impact of inflation & carbon intensity on ESG stock selection	Here
What's the best way to invest in ESG?	Here
A Quantitative Perspective of how ESG can Enhance your Portfolio	Here

Index

JESG Monitors

Key regulatory developments and performance metrics for the JESG index suite. Click here to access our latest JESG Quarter in Review – Q3 2022.

Product Guides

Introduction and primers to our JESG index products.

Introducing the J.P. Morgan EM Green Bond Diversified Indices - The first diversified benchmark focused on Emerging Markets green bonds	Here
Introducing the J.P. Morgan ESG Global Corporate Index | The JESG GCI is a comprehensive ESG benchmark encompassing global investment grade and high yield corporate debt	Here
Introducing the JESG JACI – A first of its kind ESG benchmark aligned to Asia Credit	Here

Thematic

Thematic research reports covering key topics such as climate change and sovereign ESG.

Climate-related investment in EM sovereign debt is modest and has significant growth potential	Here
Carbon Footprints of Flagship Corporate Debt Benchmarks	Here
Carbon Footprints of Flagship Sovereign Debt Benchmarks	Here
A New Dawn: Rethinking Sovereign ESG	Here
Navigating Greenhouse Gas Emissions Data: Investing within our planetary boundaries	Here
Hurdles for EM Sovereign ESG Strategies: Concepts and misconceptions in an uncharted world	Here

Macro & Economics

Insights from our Rates, Commodities and Emerging Markets teams on a variety of

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

ESG topics.

EM Strategy: Stocks Ideas for Sustainable Agriculture	Here
ESG in the USA: Realpolitik and Climate Realism	Here
Australian Elections: For Whom the Bell 'Teals'	Here
ESG in the Cycle: Why facing an identity crisis could make ESG stronger	Here
Advancing Climate Innovation – The Road to 2050	Here
ESG Investing and Development Finance in Emerging Markets: ESG and SDG frameworks increasingly overlap in EM	Here
Risky Business: the climate and the macroeconomy	Here
EM Strategies: The 2.0 case for growing ESG investing	Here
Takeaways from the Inflation Reduction Act	Here
Assessing the risks from charges against humanity from the group's legacy Syrian operations	Here

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

We would like to thank the analysts from J.P. Morgan Global Research who contributed to this report, including:

- Christyan Malek, Global Head of Energy Strategy & and Head of European Oil & Gas Equity Research
- Matthew Lofting, CFA, Executive Director, European Oil & Gas Equity Research
- Javier Garrido, Head of the European Utilities Equity Research
- Vincent Ayral, Executive Director, European Utilities Equity Research
- Patrick Jones, European Hydrogen, Mining & Steel Equity Analyst
- David H Perry, CFA, Head of European, Aerospace & Defense Equity Research
- Jainik Mody, CFA, Research Analyst, Emerging Markets Equity Strategy
- Jared Dinges, European Tobacco Equity Analyst

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Disclosures

Analyst Certification: The Research Analyst(s) denoted by an "AC" on the cover of this report certifies (or, where multiple Research Analysts are primarily responsible for this report, the Research Analyst denoted by an "AC" on the cover or within the document individually certifies, with respect to each security or issuer that the Research Analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the Research Analyst's personal views about any and all of the subject securities or issuers; and (2) no part of any of the Research Analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the Research Analyst(s) in this report. For all Korea-based Research Analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that the Research Analyst's analysis was made in good faith and that the views reflect the Research Analyst's own opinion, without undue influence or intervention.

All authors named within this report are Research Analysts who produce independent research unless otherwise specified. In Europe, Sector Specialists (Sales and Trading) may be shown on this report as contacts but are not authors of the report or part of the Research Department.

Important Disclosures

This report is a product of the research department's Global Quantitative and Derivatives Strategy group. Views expressed may differ from the views of the research analysts covering stocks or sectors mentioned in this report. Structured securities, options, futures and other derivatives are complex instruments, may involve a high degree of risk, and may be appropriate investments only for sophisticated investors who are capable of understanding and assuming the risks involved. Because of the importance of tax considerations to many option transactions, investors considering options should consult with their tax advisor as to how taxes affect the outcome of contemplated option transactions.

- MSCI: The MSCI sourced information is the exclusive property of MSCI. Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, redisseminated or used to create any financial products, including any indices. This information is provided on an 'as is' basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI and the MSCI indexes are services marks of MSCI and its affiliates.

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan–covered companies, and certain non-covered companies, by visiting https://www.jpmm.com/research/disclosures, calling 1-800-477-0406, or e-mailing research.disclosure.inquiries@jpmorgan.com with your request.

Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:
J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap equity research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst's coverage universe can be found on J.P. Morgan's research website, https://www.jpmorganmarkets.com.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

J.P. Morgan Equity Research Ratings Distribution, as of January 01, 2023

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage*	48%	37%	14%
IB clients**	47%	45%	35%
JPMS Equity Research Coverage*	47%	40%	13%
IB clients**	65%	66%	55%

*Please note that the percentages might not add to 100% because of rounding.
**Percentage of subject companies within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided investment banking services within the previous 12 months.
For purposes only of FINRA ratings distribution rules, our Overweight rating falls into a buy rating category; our Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at http://www.jpmorganmarkets.com, contact the primary analyst or your J.P. Morgan representative, or email research.disclosure.inquiries@jpmorgan.com. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, http://www.jpmorganmarkets.com. This report also sets out within it the material underlying assumptions used.

A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research & Commentary page of http://www.jpmorganmarkets.com where you can also search by analyst name, sector or financial instrument.

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Registration of non-US Analysts: Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

UK MIFID FICC research unbundling exemption: UK clients should refer to UK MIFID Research Unbundling exemption for details of JPMorgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

All research material made available to clients are simultaneously available on our client website, J.P. Morgan Markets, unless specifically permitted by relevant laws. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research material available on a particular stock, please contact your sales representative.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

J.P. Morgan Research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Any digital or crypto assets discussed in this research report are subject to a rapidly changing regulatory landscape. For relevant regulatory advisories on crypto assets, including bitcoin and ether, please see https://www.jpmorgan.com/disclosures/cryptoasset-disclosure.

The author(s) of this research report may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so.

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Exchange-Traded Funds (ETFs): J.P. Morgan Securities LLC ("JPMS") acts as authorized participant for substantially all U.S.-listed ETFs. To the extent that any ETFs are mentioned in this report, JPMS may earn commissions and transaction-based compensation in connection with the distribution of those ETF shares and may earn fees for performing other trade-related services, such as securities lending to short sellers of the ETF shares. JPMS may also perform services for the ETFs themselves, including acting as a broker or dealer to the ETFs. In addition, affiliates of JPMS may perform services for the ETFs, including trust, custodial, administration, lending, index calculation and/or maintenance and other services.

Options and Futures related research: If the information contained herein regards options- or futures-related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit https://www.theocc.com/components/docs/riskstoc.pdf for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or http://www.finra.org/sites/default/files/Security_Futures_Risk_Disclosure_Statement_2018.pdf for a copy of the Security Futures Risk Disclosure Statement.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: https://www.jpmorgan.com/global/disclosures/interbank_offered_rates

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

Legal Entities Disclosures and Country-/Region-Specific Disclosures:
Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). **Australia:** J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. **Brazil**: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. **Canada**: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. **Chile:** Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. **China:** J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. **Dubai International Financial Centre (DIFC)**: JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. **European Economic Area (EEA):** Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan SE ("JPM SE"), which is subject to prudential supervision by the European Central Bank ("ECB") in cooperation with BaFin and Deutsche Bundesbank in Germany. JPM SE is a company headquartered in Frankfurt with registered address at TaunusTurm, Taunustor 1, Frankfurt am Main, 60310, Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. **Hong Kong**: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong Branch (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission, is organized under the laws of the United States with limited liability. Where the distribution of this material is a regulated activity in Hong Kong, the material is distributed in Hong Kong by or through J.P. Morgan Securities (Asia Pacific) Limited and/or J.P. Morgan Broking (Hong Kong) Limited. **India**: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai – 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number – INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: http://www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL : IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. **Indonesia**: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is registered and supervised by the Otoritas Jasa Keuangan (OJK). **Korea**: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. **Japan**: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. **Malaysia**: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. **Mexico**: J.P. Morgan Casa de Bolsa, S.A. de C.V.and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. **New Zealand**: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Markets Conduct Act 2013). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. **Pakistan**: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. **Philippines**: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. **Russia**: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. **Singapore**: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 060/08/2022 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore), both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. **South Africa**: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. **Taiwan**: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. **Thailand**: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. **UK:** Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or

This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.

Hannah L Lee
(852) 2800-8886
hannah.l.lee@jpmorgan.com

Paul Xu, CFA, CPA
(86-21) 6106 6152
paul.xu@jpmorgan.com

(c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy. **U.S.**: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its content.

General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. There may be data discrepancy in this material as a result of calculations, adjustments and/or translations to different languages, as applicable. J.P. Morgan accepts no liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

"Other Disclosures" last revised January 01, 2023.

Copyright 2023 J.P. Morgan Securities (China) Company Limited and JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.

Completed 17 Jan 2023 11:11 AM HKT Disseminated 17 Jan 2023 11:38 AM HKT
This document is being provided for the exclusive use of LEE BINGLE at JPMorgan Chase & Co. and clients of J.P. Morgan.