As mentioned in our 2022 outlook report, we believe 2022 will be a watershed year for ESG-related capital markets regulation in the US, adding to momentum in Europe and in the Asia Pacific region. Today’s climate disclosure rule proposal from the SEC opens the door for the broadest federally mandated corporate ESG data disclosure requirement ever in the US. This proposal comes amid a backdrop of broad shareholder support for greater and more standardized corporate ESG disclosure as well as a shifting regulatory landscape in the US. However, questions around the scope of any final rule will remain as legal challenges are anticipated.

What happened? The SEC unveiled a landmark proposal for companies to disclose a wide variety of data on their climate-related risks (and opportunities). The proposed rule includes already well disclosed metrics (Scope 1 & 2 GHG emissions), more expansive, less widely-reported Scope 3 emissions (only where material or where companies already have set an emissions target incorporating Scope 3), as well as some qualitative disclosures similar to those codified by the Task Force on Climate-Related Financial Disclosures (TCFD), exceeding our expectations of a more modest Scope 1 & 2-focused framework.

What to watch for? The proposal kicks off a 60-day public comment period during which investors and registrants can offer feedback for the commission. Legal challenges are widely expected. Beyond this proposed rule, additional corporate disclosure requirements around human capital and political spending as well as increased process disclosures for funds labeling themselves as sustainable or ESG are near-term areas of focus for the commission.

Why now? Examining recent ESG-related federal regulatory developments and proxy trends of the past several years, scrutiny on corporate ESG disclosure and performance has continued to grow. We believe the number of and support for shareholder resolutions related to climate, diversity and corporate accountability is poised to increase further in 2022.

Implications for companies and investors. The aim of the proposed rule is to improve the consistency, quality and comparability of company-reported
climate-related risks, enabling investors to more effectively incorporate these risks and opportunities into their fundamental assessments while simplifying and clarifying the reporting expectations for companies. Proposed requirements would also increase transparency accountability of oft-scrutinized corporate GHG emissions targets. While provisions in the rule reduce the near-term disclosure requirements for smaller businesses and provide safe harbor protections for Scope 3 disclosures and forward-looking statements, smaller companies not yet reporting on climate exposure, and businesses with sizable Scope 3 footprints are likely to push back the most on the proposed rule. These rules would represent a higher bar, not only for US companies but foreign issuers listed in the US.

**The latest regulatory developments in the US broadly resemble trends seen in other regions.** However, with the SEC’s latest proposal, there is scope for disclosures to accelerate in the US and potentially narrow gaps with some of APAC’s leading jurisdictions on ESG disclosures (Australia, ASEAN, HK). Outside of the US, ESG fund labeling requirements are also beginning to strengthen, led by Europe’s launch of SFDR, which requires funds sold into and created in Europe to be classified as either ESG (Art. 8 or 9) or non-ESG (Art. 6). These developments impose greater disclosure requirements for ESG-labelled funds via frameworks like the EU Taxonomy to mitigate greenwashing risks. Regulators across APAC are also developing ESG fund labeling requirements (case in point India and Taiwan’s proposal to set specific AUM thresholds tied to “ESG themed stocks”) and are in early stages of developing locally tailored Taxonomies, although the latter are still mostly limited to bond and loan issuance.

**SEC moves to mandate new climate disclosure**

After having begun with a request for comments in March 2021, the SEC on March 21 has formally proposed a new rule on corporate climate disclosure. This proposal comes on the back of a public consultation period that saw 75% of nearly 600 responses submitted in favor of mandatory corporate climate disclosures.

The rule would require foreign and domestic public companies to report on greenhouse gas (GHG) emissions as well as a variety of climate-related financial metrics and qualitative disclosures:

- Oversight and governance of climate-related risks by the registrant’s board and management.
- How identified climate-related risks have or will have a material impact on the business, consolidated financial statements, strategy, business model and outlook.
- The registrant’s process for identifying, assessing and managing these climate-related risks.
- If the registrant has adopted a transition plan as part of its climate-related risk strategy or uses scenario analysis to assess the resilience of its business to climate risk. A description of the plan or scenarios used and parameters, assumptions, analytical choices and financial impacts with relevant metrics.
If the registrant uses an internal carbon price and how it is set.

Impact of climate-related events and transition activities on the line items of the registrant's consolidated financial statements, including estimates and assumptions.

Scope 1 (direct emissions from owned or controlled sources) and Scope 2 (indirect emissions from purchased electricity, steam, heat and cooling consumed by the reporting company) GHG emissions, broken out by GHG, in the aggregate, and in absolute (not including offsets) and intensity terms.

Scope 3 (all other indirect emissions occurring in a company’s value chain; up & downstream) GHG emissions, only to be disclosed if material, or if the registrant has set a GHG emissions target/goal that includes Scope 3. The proposed rule includes a safe harbor for liability for this disclosure.

If the registrant has a public climate target/goal:

- Scope of activities and emissions included in the target, defined time horizon and any interim targets
- How the registrant intends to meet these targets/goals
- Relevant data indicating where progress is being made and how it has been achieved
- If carbon offsets or renewable energy certificates have been employed as part of any targets/goals, the amount of carbon reduction generated by these tools must be disclosed.

To the extent any disclosure includes forward-looking statements, it would be covered by a forward-looking statement safe harbor pursuant to the Private Securities Litigation Reform Act.

Disclosure are to be included in annual reports and audited financial statements, e.g., in Form 10-K. Accelerated or large accelerated filers must obtain an attestation report from an independent attestation service provider covering, at minimum, Scope 1 & 2 GHG emissions disclosures. Much of this disclosure currently occurs outside company filings.

Large accelerated filers would be expected to report on proposed disclosure above (save Scope 3 emissions) by fiscal year 2023, i.e. filed in 2024. Scope 3 emissions, where required, would need to be reported the following year by large accelerated filers (i.e., fiscal year 2024, filed in 2025). Accelerated and non-accelerated filers would need to report each of these data sets one year after large accelerated filers, respectively. Smaller reporting companies (those with <$250 million in public float) are exempted from Scope 3 disclosures and would be required to report all other climate-data at a further one year lag from accelerated and non-accelerated filers (Exhibit 1). Staggered deadlines based on filer-status would also be in place for assurance requirements on all reported data (Exhibit 2).

1 Consistent with the Commission’s definition of “material” and Supreme Court precedent, a registrant would be required to disclose its Scope 3 emissions if there is a substantial likelihood that a reasonable investor would consider them important when making an investment or voting decision.

2 Large Accelerated Filers have a public float exceeding $700 million; Accelerated Filers have a public float >$250 million and <$700 million
The proposed rule is now subject to a public feedback period (running through May 20, 2022), at which point the SEC can then respond to comments, ask for additional comments or propose a final rule which can then be voted on and adopted. **It is widely expected that there will be legal challenges to the proposed rule.** Several points of push back voiced by Commissioner Hester Peirce in opposition to the rule include that it falls outside the scope of both the SEC’s legal mandate and realm of expertise, may be seen as requiring some companies to disclose non-material information, currently underestimates the costs it would impose on businesses, may undermine the credibility of existing financial statements and obfuscate investor focus from financial performance.

**Climate-related (and broader ESG) disclosures have been growing, but a market cap gulf exists**

As noted by all commissioners during the proposed rule’s vote today, voluntary disclosure of ESG metrics in the United States has steadily trended upward over the last decade. For example, over 70% of S&P 500 companies already report Scope 1 GHG emissions and nearly 75% report on their % of women employees (Exhibit 3). This proposal’s biggest impacts would be in the standardization of corporate climate disclosures and increasing the tail of smaller companies also providing climate disclosures. However, these disclosures could have greater relative costs of compliance for smaller companies where voluntary disclosure is currently much lower — for Russell 2000 companies, for example, there is an approximate 60-point disclosure gap vs. the S&P 500 for many common ESG metrics (Exhibit 4).
Climate disclosure mandate proceeds several recent notable ESG-related regulatory developments in the US

In the past six months, there has been an array of new ESG-related regulatory action at the federal level implying greater consideration of ESG issues in corporate disclosures and investing.

**Strengthening American Cybersecurity Act (March 2022):** This act, requires critical infrastructure companies, including those in the communications, defense, and financial services sectors, to report all significant cyber-incidents and ransom payments to the Department of Homeland Security’s Cybersecurity and Infrastructure Security Agency (CISA).

**SEC No Action Process Interpretation (November 2021):** Under the current administration, the SEC has made a shift toward stricter acceptances of no action letters. No action requests allow companies to petition the SEC for permission to exclude proxy proposals, particularly those relating to ESG issues, such as emissions reduction targets.

**Universal Proxy Rules for Director Elections (November 2021):** The SEC now
requires the use of universal proxy cards for contested director elections, which list all director candidates, regardless of whether the candidates were nominated by management or shareholders. Previously, shareholders voting by proxy were unable to vote for a combination of directors from competing slates.

**Uyghur Forced Labor Prevention Act (December 2021):** The UFLPA imposes a preemptive prohibition on all imports from China’s Xinjiang Uyghur Autonomous Region (XUAR) to combat the forced labor of Uyghurs and other minority groups.

**Prudence and Loyalty in Selecting Plan Investments and Exercising Shareholder Rights (October 2021):** The proposed rule clarifies the permissibility of ESG factors in investment decisions for ERISA fiduciaries by accepting that a fiduciary’s duty of prudence may include climate-change or other environmental, social and governance factors, in addition to typical risk and return factors. If adopted as proposed, this would be a marked shift from prior Department of Labor Guidance which has been more conservative about the incorporation of ESG considerations in ERISA investing.

**What’s next?**

Beyond the above highlighted regulations, other key ESG-related areas of interest recently discussed by the SEC include broader ESG data disclosures (namely around diversity and political spending) and greenwashing.

**Broader ESG disclosures.** The ESG Disclosure Simplification Act (H.R. 1187), approved in the US House of Representatives in June 2021, requires the SEC to define exact ESG disclosure standards for the purposes of disclosures. Although the Act does not specify where these disclosures must be made, the SEC is authorized to require companies to disclose ESG metrics regarding corporate political spending, worker pay, CEO compensation, board diversity, climate risk and country-by-country tax reporting in filings that require audited financial statements. The Act also requires public filers to disclose the registrant’s views on ESG metrics and description of the registrant’s method in determining the impact of ESG metrics, relative to the registrant’s long-term business strategy. H.R. 1187 has now moved to the US Senate where it faces a more uncertain path to passage.

**ESG fund classification (“greenwashing”)** The Division of Examinations at the SEC has identified tackling ‘greenwashing’ as one of its priorities, creating a Climate and ESG Taskforce to pursue instances of ESG-related misconduct. The SEC Division of Examinations issued a Risk Alert in April 2021 that detailed instances of deficiencies and weaknesses of investment advisors and funds in ESG investing. This alert highlighted the types of compliance issues identified and under scope for review by the SEC, including the following:

1. Lack of adherence to ESG frameworks despite claims of adherence.
2. Lack of adequate controls around implementation and monitoring of negative screens and other ESG-related directives.
3. Proxy voting inconsistent with advisors’ stated approaches.
4. Misleading and unsubstantiated claims regarding ESG approaches.
5. Inadequate controls to ensure ESG disclosures and marketing match the firm’s practices.

6. Lack of knowledge by compliance professionals regarding ESG investments, disclosures and marketing, and compliance programs that do not adequately address relevant ESG issues.

The Names Rule, introduced in 2001, requires funds to invest at least 80% of assets in the manner suggested by its name. As it exists now, the rule does not apply to fund names that describe a fund’s investment objective, strategy or policies. However, under direction of Chair Gary Gensler, the SEC is in the process of creating formal guidance that builds upon naming rules and conventions such as the Names Rule and considering recommendations on whether fund managers should disclose the criteria and underlying data they use in their ESG process.

Effective practices identified by the same SEC risk alert included clear disclosures around approaches to ESG investing, especially in instances where ESG factors are considered alongside other metrics and considerations; detailed policies that address written procedures and due diligence for ESG investing; and educated compliance departments and personnel that are integrated into firms’ ESG-related processes.

**US proxy voting: Increased support across ESG topics highlights greater investor scrutiny and growing demand for corporate disclosure**

As the most active market for shareholder resolutions, the US is a global bellwether for engagement. While the volume of resolutions in other geographies has ramped in recent years, the US still made up 1/3 of the global total in 2021. Increasing support for environmental & social resolutions has been the standout proxy voting dynamic in the past decade, including a further upward inflection in 2021. Average support for environmental & social resolutions among S&P 500 companies is now equal to governance at about 35% (Exhibit 5). Standout categories of momentum include climate action; diversity, equity & inclusion; and ESG accountability (including ESG-linked compensation and say-on-climate proposals) (Exhibit 6 and Exhibit 7).

**Rising corporate scrutiny appearing in director elections.** While it remains exceptionally rare for a director to not receive majority support (only 4 directors among S&P 500 companies in 2021), pressure applied directly to boards is on the rise. 91% of S&P 500 directors received >90% support in 2021, on a downward trend from 94% three years prior (Exhibit 8).

**GHG emissions still garnering a lot of attention.** As of the end of February 2022, there have been 145 shareholder proposals about the environment, up from 91 at the same point in 2021. Of the 110 climate change resolutions, 92% are focused on GHG emissions, specifically proposing a transition to net-zero by 2050. Environmental footprint management proposals are also on the rise, with most focusing on plastic usage, as well as the concept of “right to repair,” which enables customers to more easily repair equipment and thus reduce waste. The latter is the topic of a pending proposal at Alphabet.
A broad range of social issues are seeing greater focus. This year has seen a surge of filings across corporate political influence, decent work, and human rights. Many proposals seek to understand which issues are supported by company money and how company policies align with political lobbying and election campaign funding. The 65 decent work proposals address discriminatory pay gaps, disclosure about working conditions, and worker safety and benefits. Accounting for the surge in filings was a 40% increase related to human rights, and specifically, racial justice. Proposals include commitments to representation, addressing systemic racism, and discussing environmental justice.

E&S resolutions have seen the greatest success of late in natural resource-intensive sectors. In 2021, Materials, Industrials, and Energy led the S&P500 in average support for E&S proposals, with over 50% voting in favor in each sector. Energy also has the highest relative number of resolutions proposed, with roughly one E&S resolution (.95) being filed per company in the index in 2021. Consumer Staples stands out as the sector with the most proposals withdrawn prior to the vote, generally an indication of an agreement between the company and shareholders (Exhibit 9).
Implications for companies - questions on cost and liability remain

The SEC’s proposed climate-disclosure rule was framed by commissioners as an effort to standardize costs in reporting of climate-related metrics and targets, all while improving consistency, comparability and ease of access for investors. Staggered phase in periods for both reporting and assurance requirements could alleviate near-term pressure on any issuers who have yet to disclose any climate-related information, particularly for smaller companies. Similarly, safe harbor protections may alleviate concern from some issuers around increased liability from including these disclosures in audited financial statements.

However, questions remain around the extent of coverage existing safe harbor provisions would provide to companies, namely that all disclosures are made with “reasonable basis” and “in good faith.” Additionally, the most significant condition requiring Scope 3 GHG emissions to be disclosed, “if material [for an issuer],” leaves considerable room for interpretation as to where that threshold of materiality lies and will certainly be a point both investors and corporates demand greater clarity on. Companies already disclosing robust climate-related data, particularly those with assured emissions figures (employing Greenhouse Gas Protocol standards) and/or TCFD reports are least likely to see any increased reporting cost burden should this proposed rule be adopted by the SEC.
Disclosure Appendix

Reg AC

We, Derek R. Bingham, Brendan Corbett, Brian Singer, CFA, Evan Tylenda, CFA, Sharmini Chetwode, Ph.D., Keebum Kim and Emma Jones, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs’ Global Investment Research division.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our coverage universe) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock’s forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. Financial Returns is based on a stock’s forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. Multiple is based on a stock’s forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The Integrated percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics). For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Quantum

Quantum is Goldman Sachs’ proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

Disclosures

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures required above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: Ownership and material conflicts of interest: Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst’s area of coverage. Analyst as officer or director: Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst’s area of coverage. Non-U.S. Analysts: Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

Distribution of ratings: See the distribution of ratings disclosure above. Price chart: See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the Goldman Sachs website at https://www.gs.com/research/hedge.html.
Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. Goldman Sachs, Goldman Sachs Australia Pty Ltd, and its affiliates are not authorized deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for “wholesale clients” within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may or may not be paid for by the relevant company. In Australia, the costs of such site visits or meetings may or may not be paid for by the relevant company. In certain other circumstances, the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs considers it appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client’s objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client’s own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs’ Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/discoveries/australia-and-new-zealand/index.html. Brazil: Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/agir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first name added at the beginning of this report, unless indicated otherwise at the end of the text.

Canada: This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchases of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer.

Hong Kong: Further information on the securities of covered companies referred to in this report may be obtained on request from Goldman Sachs (Asia) L.L.C. India: Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74114MH2006FCT160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Japan: See below. Korea: This research, and any access to it, is intended only for “professional clients” within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research report may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. New Zealand: Goldman Sachs New Zealand Limited and its affiliates are neither “registered banks” nor “deposit takers” (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for “wholesale clients” (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/discoveries/australia-new-zealand/index.html. Russia: Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analyses not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, and are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. Singapore: Goldman Sachs (Singapore) Pte. (Company Number: 198602185W), which is regulated by the Monetary Authority of Singapore, accepts responsibility for this research, and should be contacted with any matters arising from, or in connection with, this research. Taiwan: This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. United Kingdom: Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom’s departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 63, with membership in the Japan Securities Dealers Association, Financial Instruments Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Ratings, coverage universe and related definitions

Buy (B), Neutral (N), Sell (S) Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. When assigning a Buy or Sell on an Investment List is determined by a stock’s total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Coverage Suspended or Not Covered), is deemed Neutral. Each region’s Investment Review Committee manages Regional Conviction lists, which represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction lists do not represent a change in the analysts’ investment rating for such stocks.

Total return potential represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

Coverage Universe: A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at https://www.gs.com/research/hedge.html.

Not Rated (NR). The investment rating, target price and earnings estimates (where relevant) have been suspended pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or in a strategic transaction involving this company, when there are legal, regulatory or policy constraints due to Goldman Sachs’ involvement in a transaction, and in certain other circumstances. Rating Suspended (RS). Goldman Sachs has suspended the investment rating and price target for this stock. Because there is not a sufficient fundamental basis for determining an investment rating or target price. The previous investment rating and target price, if any, are no longer in effect for this stock and should not be relied upon. Coverage Suspended (CS). Goldman Sachs has suspended coverage of this company. Not Covered (NC). Goldman Sachs does
Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomic, currency, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 8am to 6pm, Channel de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira a sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165V); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Effective from the date of the United Kingdom’s departure from the European Union and the European Economic Area (“Brexit Day”) the following information with respect to distributing entities will apply:

Goldman Sachs International (“GSI”), authorised by the Prudential Regulation Authority (“PRA”) and regulated by the Financial Conduct Authority (“FCA”) and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland, the Republic of Cyprus and the Republic of Ireland; GS Sucursales de París (Paris branch) which, from Brexit Day, will be authorised by the French Autorité de contrôle prudentiel et de résolution (“ACPR”) and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers (“AMF”) disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorised by the SFSA as a “third country branch” in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:128) om värdepappersmarknad) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE (“GSBE”) is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d’Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa “Consob”) disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinspektionen) disseminates research in the Kingdom of Sweden.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it as accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst’s judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org/).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks. It reflects opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst’s published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst’s fundamental equity rating for such stocks, which rating reflects a stock’s return potential relative to its coverage universe as described herein.

We and our affiliates, officers, directors, and employees, excluding equity and credit analysts, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.sipc.org/ or https://www.finra.org/about/regulatory-disclosures (FIA Uniform Futures and Options on Futures Risk Disclosures—Booklet-PDF-Version-2018). Futures transactions may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation
will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2022 Goldman Sachs.

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.