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28 February 2022 | 10:39PM AEDT

GS SUSTAIN: APAC ESG Regulation

A new era for ESG in Asia Pacific

ESG regulation in Asia Pacific is accelerating as the need for greater transparency and tightened definitions for sustainable investment products moves with some urgency across the region. The **twofold increase in the number of ESG policies in the region over the past 5 years** has translated into increased **corporate ESG disclosure across most APAC markets, which are now in line with or exceeding the US**. As the policy movement continues, we see **material asset ownership implications** for asset managers (both ESG and non-ESG) and companies as well as **valuation implications for equities.**

In this report, we analyse material ESG regulations across the region, focusing on six emerging themes: Green Taxonomies, TCFD-aligned climate reporting, Carbon pricing schemes, Supply chain due diligence and transparency requirements, Corporate ESG disclosures, and ESG fund requirements. **Three key takeaways from our analysis include:**

1. **Demand for climate reporting is increasing from governments, investors, and consumers.** We believe this will ultimately lead to a similar policy approach taken in Europe, albeit with regional nuances.
2. **We find evidence of a "green" premium for APAC companies highly EU Taxonomy-aligned; this may expand to more sectors as more APAC Taxonomies emerge.** Highly EU-Taxonomy-aligned APAC companies trade at 55% P/E and 64% EV/EBITDA premiums (vs 37% / 37% globally).
3. **Carbon will represent an increasing weighting in asset management decisions which may widen valuation premiums for low carbon emitters.** Low emitting APAC companies trade at 28% P/E and 9% EV/EBITDA sector-relative premiums vs their high emitting peers (vs 33% / 20% globally).

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Executive summary

ESG regulation in Asia Pacific (APAC) is accelerating. It is now an impending reality that all asset managers and corporates must face. Accompanying this are new, material cost considerations and an urgent need for up-skilling by investors and corporates, as well as potential valuation implications for stocks based on levels of alignment with developing ESG standards. **After analysing the different country-level approaches across the region, we highlight the implications of Green Taxonomy development, new TCFD-aligned climate reporting requirements, growing ESG disclosure requirements for corporates and ESG funds, and looming supply chain regulations and carbon pricing initiatives.**

ESG policy development in APAC is following in Europe's footsteps; the result is improved corporate disclosure. APAC ESG policies have doubled in the past 5 years, now contributing 20% of global ESG policy (vs 44% in Western Europe and a much lower 4% in North America) (Exhibit 1). Corporate disclosure has subsequently improved, with average ESG disclosure in most APAC markets now in line with or exceeding that of the US (Exhibit 3). Key policy developments are following European trends, addressing climate/carbon, the supply chain, and ESG disclosures (both corporates and ESG funds).

We analyse regional development across six emerging ESG policy themes
Description of the six types of ESG policies reviewed in this report

CARBON AND CLIMATE		
Theme 1: Green Taxonomies A classification system for "green" economic activities. Can be used to inform disclosures (e.g. green revenue/capex tied to aligned activities) or for sustainable financing purposes (e.g. bonds, loans).	**Theme 2: TCFD-aligned climate reporting** Disclosure requirements aligned with the Task Force for Climate-Related Financial Disclosures (TCFD) recommendations on how climate risks are considered and embedded into firm strategy and processes. Covers areas of Governance, Strategy, Risk Management, Metrics and Targets.	**Theme 3: Carbon pricing schemes** National carbon pricing schemes via Carbon Taxes or Emissions Trading Schemes (ETS). This puts a direct cost on a company's carbon emissions, creating a direct incentive to decarbonise.
SUPPLY CHAIN	**ESG DISCLOSURES**	
Theme 4: Supply chain due diligence and transparency Policies requiring (i) establishing effective supply chain risk management systems and processes, (ii) including ESG risks in supplier due diligence (e.g. human rights violations), and/or (iii) greater transparency and disclosure of risks, processes, and performance.	**Theme 5: Corporate ESG disclosures** Requirements for companies to (i) publish a dedicated ESG or Sustainability report, and/or (ii) report on a specific list of ESG metrics and KPIs.	**Theme 6: ESG fund requirements** ESG-labelled financial products requirements which may mandate specific disclosures (e.g. explaining how ESG is integrated into the investment process or mandating specific metric disclosures) and/or setting investment thresholds (e.g. a min % of AUM invested in "ESG" stocks).

Source: Goldman Sachs Global Investment Research

There is evidence of a widening "green" premium for companies highly-aligned to the EU Taxonomy; this may expand to more sectors as APAC Taxonomies emerge. Using the EU Taxonomy as a proxy for future APAC standards, we find highly-aligned global companies trading at 37% P/E and EV/EBITDA sector-relative premiums (Exhibit 4), with the smaller group of highly-aligned APAC stocks (predominantly China wind and solar) trading at 55% and 64% premiums, respectively. While more APAC Taxonomies are emerging, using the EU Taxonomy as the foundation to build on activity requirements tailored for the nuances of the APAC markets, we find the use-case in the region currently limited to bond and loan issuance. Should the use case expand to a

Mainland China, Japan, South Korea, Malaysia, Indonesia all have Taxonomies for sustainable financing (bonds, loans). New Zealand, Singapore, ASEAN, Thailand, the Phillipines and Hong Kong have Taxonomies in development or under consideration.

broader disclosure requirement, as we have seen in Europe, APAC companies already partly-aligned under the EU regulation will likely benefit from increased ESG fund ownership as more of their activities may be considered green. Key risks to these conclusions include lower market adoption of APAC standards to measure green exposure.

Investors should watch for greater ESG-fund labeling requirements; this could be a catalyst for increasing ESG flows and wider Taxonomy adoption across the region, impacting valuations in a virtuous cycle, as seen in Europe. We see new and emerging ESG fund requirements in Hong Kong, Malaysia, Taiwan, Australia, India, Japan, New Zealand, Singapore, Thailand, and ASEAN requiring asset managers to disclose how ESG is integrated into the investment process and/or setting minimum fund investment thresholds in "ESG" stocks. As a read-across for what may evolve in the APAC market, European ESG funds have benefited from tightened ESG fund requirements, with flows into EU Article 8 & 9 (ESG) funds having significantly outpaced those flowing into Article 6 (non-ESG or 'not stated') despite the latter representing nearly double the number of funds (Exhibit 30) . Regulators may also leverage Green Taxonomies to help structure ESG fund disclosure requirements, providing a catalyst for wider Taxonomy application.

Carbon will likely represent an increasing weighting in asset management decisions which may widen valuation premiums for low carbon emitters, in our view. Incoming TCFD-aligned climate reporting demands in Hong Kong, Singapore, New Zealand, Malaysia, Taiwan, and Japan require senior level discussions on strategy and processes, with a significant level of up-skilling, resourcing, and data tools needed meet reporting demands. This is an immediate pressure point for many asset managers and corporates. As transparency on the carbon impact of businesses and financial products increases, we may see valuation implications. We already find low carbon-emitting companies in the region currently trading at 28% P/E and 9% EV/EBITDA sector-relative premiums (33% and 20% globally, respectively) over their high carbon-emitting peers (Exhibit 6).

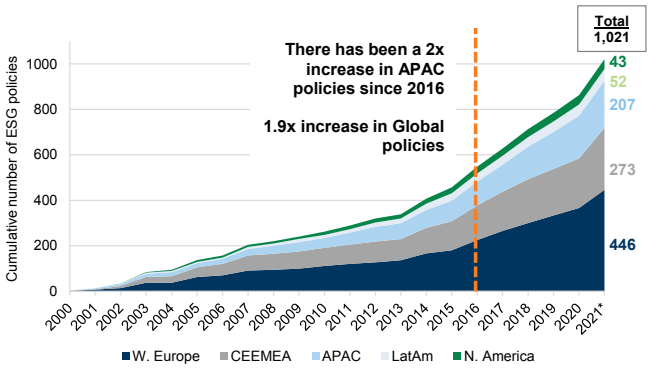
Carbon pricing schemes have been launched, but the early stage of development limits overall impact. Established carbon pricing schemes are found in mainland China, Japan, New Zealand, South Korea, and Singapore, which all vary in terms of application, including the cost per tonne of carbon emitted and the scope of sectors and companies covered. However, the overall impact is limited by the extremely high allocation of free carbon allowances to high carbon-emitting corporates, low carbon prices, limited sector coverage, or a combination of these three. **We expect a tightening of carbon pricing schemes in the medium term, particularly where carbon pricing is a key strategy for achieving national net zero targets.** Europe's incoming carbon border tax will provide further incentive for a tightening of domestic carbon pricing policies, with mainland China, India, and South Korea amongst the most exposed countries to import tariffs on aluminium, cement, electricity, fertilisers, and iron and steel from FY2026.

Performance to trump disclosure as the latter improves. We expect to see **global ESG standards** launch this year, developed by the International Sustainability Standards Board (ISSB), which will continue to improve corporate disclosure across the region. As investors access more ESG data, the focus should be on measuring actual performance rather than disclosure alone. We find consistent links between ESG metrics and return on capital (CROCI), which have a large divergence in outcomes when analysing ESG performance versus disclosure-based scoring approaches. We find top-quintile ESG performers in our GS SUSTAIN ESG framework have generated +157 bps higher CROCI over the bottom quintile, while the top ESG disclosers generated -488 bps lower CROCI vs. the bottom ESG disclosers, since 2011 on average (Exhibit 25, Exhibit 26).

Many APAC corporates are unprepared for incoming international supply chain due diligence demands, in our view. International ESG policy developments out of Europe and the US relating to supply chain due diligence and transparency will have a significant impact on APAC corporates given (i) the region's unique position as a global supply chain hub, and (ii) the current lack of robust supply chain-related policies in the region. While there are policies across APAC that touch on supply chain disclosures, we find they tend to be relatively high level or lack proper enforcement to incentivise strong compliance. **Further policy intervention and investor engagement is needed, in our view.**

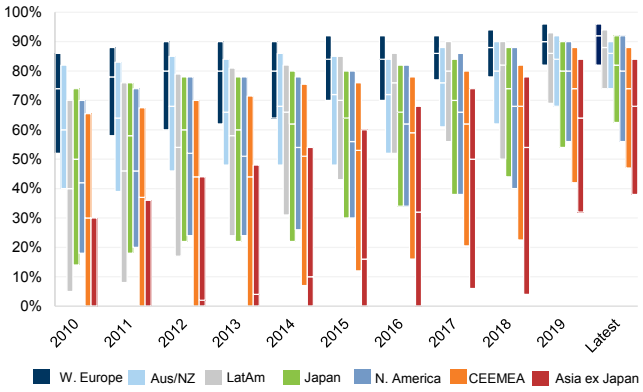
Lower adoption and implementation timelines are key risks. Unlike the European market, countries in APAC do not have an overarching regulatory body to implement and enforce ESG policies. This creates a risk of (i) unharmonised standards being developed, increasing the cost burden for corporates and investors to comply, and (ii) corporates and investors choosing not to adopt standards (e.g. a region's Green Taxonomy definitions) in favour of a more widely used framework (e.g. the EU Taxonomy). Varied adoption timelines (unknown in some cases) for policies within countries and across the region also create challenges in fully assessing the impact of incoming ESG regulation on APAC capital markets. These are key risks to our broader thesis.

Exhibit 1: APAC ESG policies have increased 2x in the past 5 years...
Cumulative capital market ESG regulations and amendments, Jan 2000 to Aug 2021*



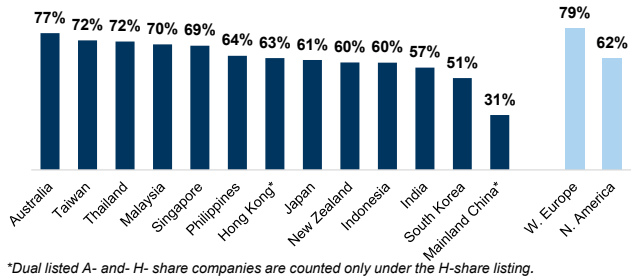
Source: PRI, data compiled by Goldman Sachs Global Investment Research

Exhibit 2: ...which has translated into improved AeJ corporate disclosure over the past 3 years
Distribution of disclosure of the 50 most common E&S numeric and policy metrics, by region; 75th %ile, 50th%ile and 25th %ile



Source: Refinitiv, Goldman Sachs Global Investment Research

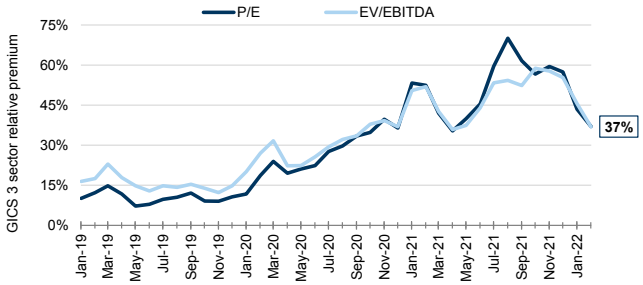
Exhibit 3: ...with disclosure in most APAC markets in line with or above the US
Average corporate operational E&S disclosure rates in the GS SUSTAIN framework across APAC, MSCI ACWI, latest available data



Dual listed A- and- H- share companies are counted only under the H-share listing.

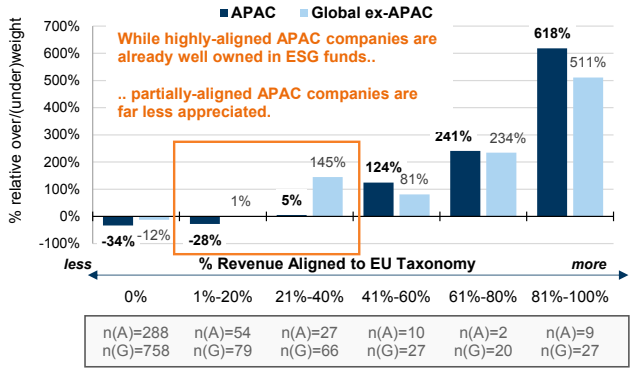
Source: Goldman Sachs Global Investment Research

Exhibit 4: The market is paying a +37% "green" premium for global companies with high exposure to the EU Taxonomy...
Trimmed mean 12m fwd consensus EV/EBITDA and P/E premium vs. GICS 3 peers for companies with 40% or more EU Taxonomy-aligned revenue, MSCI ACWI universe



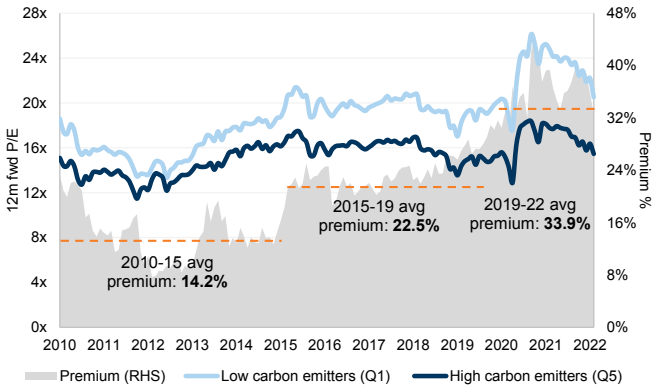
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 5: ...and we expect the underappreciated partly EU Taxonomy-aligned APAC companies to benefit from expanded APAC "green" definitions
ESG funds' relative weight for EU Taxonomy aligned revenue groupings, Oct 2021



Source: Morningstar, Factset, Goldman Sachs Global Investment Research

Exhibit 6: Regulation may also be a catalyst for a further widening of premia for low vs high carbon emitters
Low carbon (Q1) vs. high carbon emitters (Q5) (Total Scope 1 & 2 GHG Emissions / rGFA) 12m-frwd P/E multiples (2010-22), sector realtive, excluding Financials



Source: Refinitiv, FactSet, Bloomberg, Goldman Sachs Global Investment Research

Stock beneficiaries - regulation a catalyst for further ESG fund ownership

We see scope for ESG weightings to increase across multiple companies as more EU-style Taxonomies emerge across the region. While companies that have direct ties to positive E&S impacts (e.g. solar/battery makers) are significantly overweight in ESG funds, our EU Taxonomy alignment toolkit suggests that there's still potential discovery value across multiple companies that indirectly enable a green transition, where impact has historically been underappreciated. As discussed in our recent 2022 ESG Outlook report, we believe a combination of urgency to mitigate climate change, regulations like the EU Green Taxonomy, continued capital flows into ESG funds, and the shift in the ESG life cycle towards the "measurement" phase will together result in a greater willingness of investors to broaden ownership across the Green supply chain to drive impact.

APAC Taxonomy regulation may widen the definition of "green" for those APAC companies currently partly-aligned under Europe's definition. As discussed in our Theme 1 section, many regulators across the region are using Europe as the foundation for their domestic Taxonomy frameworks, which is then further developed to account for nuances across the APAC markets. In our view, this may benefit companies that are currently partly-aligned under Europe's Taxonomy definition as more activities will likely come into scope with regionally-tailored criteria, increasing the markets view of the "greenness" of these stocks. This may have valuation implications where we continue to see a widening "green" premium for companies with high Taxonomy-alignment (Exhibit 4).

Six emerging ESG policy themes across APAC

To understand the current policy landscape across the region, we assessed key developments relating to our six emerging ESG policy themes across eight APAC markets: Australia, mainland China, Hong Kong, India, Japan, New Zealand, Singapore, and South Korea, also noting significant developments from other markets in the region (Exhibit 7). A coloured traffic light has been assigned to signal the stage of development for each policy within the respective market – from **Grey** (policy does not exist and there have been no significant developments), to **Yellow** (policy is under consideration, in development, or there are voluntary guidelines established), to **Light Green** (mandated policies have been established but with more limited application, for example only some elements are mandatory, requirements are on a comply or explain basis, or use case is limited), to **Dark Green** (mandatory policies have been established and there is wide application of the requirements). Where timelines have been provided by the respective regulators, they are noted.

Exhibit 7: Overview of developments relating to six emerging themes of ESG policies across the region (as of February 2022)

No significant developments | Under consideration/ in development/ voluntary guidelines established | Mandatory policies established but with more limited application | Mandatory policies established

	1) Green Taxonomies	2) TCFD-aligned Climate Reporting	3) Carbon Pricing Scheme	4) Supply Chain Due Diligence and Transparency	5) Corporate ESG Disclosures	6) ESG Fund Requirements
	Classification system for what can be considered a "green" economic activity.	**Disclosures on firm climate-related risks and climate strategy.**	**National carbon pricing schemes via Carbon Taxes or ETS.**	**Requirements to manage social and/or environmental risks in supply chain and provide annual disclosures on progress.**	**Requirements to report on ESG metrics.**	**Disclosure requirements** (e.g. ESG integration process, specific KPIs) **or threshold requirements** (e.g. min % AUM in ESG).
Australia	No significant developments	Encouraged on voluntary basis, debates ongoing re. mandating	No significant developments	Mandatory modern slavery disclosure req.	Mandatory GHG, Energy, Diversity metrics; rest voluntary	Higher level disclosure requirements in fund PDS
Mainland China	Green Taxonomy for green bond use of proceeds (mandatory)	No significant developments	National ETS scheme	Voluntary social disclosures include supply chain mgmt.	Mandatory Env. metrics for high polluters, rest voluntary	Voluntary ESG and Green Guidelines est. by AMAC
Hong Kong	Green Taxonomy being explored by the "Steering Group"	Investors from 2022; Corporates by 2025	Carbon market being explored by "Steering Group"	Supply chain mgmt. disclosures on comply or explain basis	Mandatory G indicators; 12 E&S indicators req. on comply or explain basis	Disclosure and process req. for ESG funds from 2022
India	No significant developments	No significant developments	No significant developments	No significant developments	Mandatory CSR/ ESG reports and KPIs from FY22-23	Min. thresholds for ESG fund investment in consultation
Japan	Transition Taxonomy developed for bond and loan issuance (voluntary)	Mandatory for companies on "Prime Market" launching April 2022	Carbon Tax established; ETS scheme under consideration	Supply chain due diligence guidelines in development, expected to be published Summer 2022.	Board indep., Diversity, and Climate metrics on comply or explain basis	Multiple sources citing ESG fund disclosures on the horizon
New Zealand	Taxonomy for agriculture activities in development (will be voluntary)	Phased in from 2023 for both corporates and investors	National ETS scheme	No significant developments	Corporate governance req. (incl. material ESG) on a comply or explain basis	Guidance on application of "misleading and deceptive" prohibitions to ESG products
Singapore	Green Taxonomy in development	Starting 2022 for both corporates and investors	National Carbon Tax	No significant developments	Diversity mandatory; Core ESG metrics voluntary	Disclosures for Retail ESG funds expected early 2022
South Korea	Green Taxonomy for bond issuance (voluntary), may apply to ESG products in future	Pledged formal support for TCFD in 2021; no established standards yet	National ETS scheme	No significant developments	Phased in mandatory ESG disclosure 2019-2030	No significant developments
Other Develop-ments	Malaysia, Indonesia with Taxonomies for bonds and loans (voluntary). ASEAN, Thailand, the Philippines in development.	Malaysia (from 2024), Taiwan (from 2023)	None identified	Thailand (from 2022)	Malaysia, Thailand, Philippines, Taiwan, Vietnam, Indonesia	Malaysia, Taiwan ASEAN, Thailand
Europe	EU Taxonomy disclosure req. for investors (from 2023) and corporates (from 2022)	CSRD corporate disclosure req's (from 2024) to build on TCFD	EU ETS scheme; incoming carbon border adj'ment tax (from 2026)	Minimum Social Safeguards Taxonomy req.; Supply chain due diligence regulation in development	CSRD to include mandatory ESG disclosures from 2024	SFDR disclosure and process req. for ESG funds
USA	No significant developments	Several initiatives at federal and state level underway	National discussions underway, Regional ETS schemes in operation	California Supply Chain Act; import restrictions from high human rights risk areas; proposed Fashion Supply Chain Act	ESG disclosure rules in development	ESG fund rules under consideration

Source: Goldman Sachs Global Investment Research

General overview of progress

Green Taxonomy development is less advanced, however, in a global context the direction of travel is very positive. Taxonomy instruments globally are still evolving, with many jurisdictions watching and learning from the roll-out of the EU Taxonomy to inform their own domestic framework. While not the most developed policy instrument across APAC, it is positive to see so many jurisdictions in the process of developing Taxonomy frameworks, and we expect there will be greater focus on harmonising standards across jurisdictions (to minimise compliance costs) and on expanding use-cases over the medium term. The current use case of Taxonomies in mainland China, Indonesia, Japan, Malaysia, and South Korea, is for bond issuance and loans.

Significant progress mandating TCFD-aligned reporting positions APAC as a leader globally. While we see increased focus from jurisdictions overseas looking to implement TCFD-aligned reporting requirements, the focus is often channeled towards either investors or corporates (not both). Singapore, Hong Kong, and New Zealand are at the forefront of imposing mandated requirements on both investors and corporates, with Japan, Taiwan and Malaysia also mandating for corporates and/or some financial institutions. We expect greater focus on TCFD-aligned reporting from other regulators across the region in the near term as the global focus on decarbonisation and the climate transition accelerates.

We see a number of different carbon pricing schemes, however, application in some markets limits their impact. While it is positive to see pricing schemes emerging across a number of markets, we see the impact as limited by excessive allocation of free carbon allowances to high carbon-emitting corporates, low prices, or limited sector coverage. This is largely due to the early stage of development across these markets. Carbon taxes also need to be continually reviewed, a process Singapore is currently undergoing, noting planned future carbon tax increases were not sufficient in the current environment and will be revised upwards.

Corporate ESG disclosure requirements remain focused on emissions, energy, and diversity metrics. However, application varies in terms of companies subject to mandatory, comply or explain, or voluntary requirements. APAC corporates should continue to provide material ESG disclosures, in preparation for harmonised global standards being developed by the ISSB.

Greater supply chain risk management, due diligence, and transparency policies are needed, in our view, most importantly to prepare APAC corporates for incoming international pressure. Existing requirements are very high level disclosures lacking insight into due diligence practices, or lack enforcement measures from the regulators to encourage strong corporate compliance.

While currently lacking, we expect policies mandating ESG fund requirements to accelerate as the risk of greenwashing rises and as demand for more product-level transparency increases. While existing and new requirements are emerging in Hong Kong, Malaysia, Taiwan, and Australia, multiple regulators in other markets have noted the importance of ESG fund disclosure and process requirements and have suggested or stated that policies are in development (India, Japan, Singapore, Thailand, ASEAN).

Theme 1: Green Taxonomies

Green Taxonomies aim to create standardisation around what can be considered a "green" economic activity or project, which can be a powerful tool to help incentivise capital and investment into solutions most needed in the transition to a lower carbon economy. In some markets across APAC (Mainland China, Japan, South Korea, ASEAN, Malaysia, Indonesia), a Green Taxonomy is established for sustainable financing purposes, i.e. bond issuance or loans. However, the expanded use case, as seen in Europe but currently absent in APAC, is for a Green Taxonomy framework to be used for mandating standardised corporate and investor reporting and disclosures on green revenue/capex exposures. Greater adoption of ESG fund requirements (Theme 6) may be a future catalyst for expanding the Taxonomy use case in APAC to become a disclosure requirement.

We provide an overview of the EU Taxonomy in the following grey box.

Based on Europe's framework, which is increasingly cited as the foundation for Taxonomy developments in APAC, **we find evidence of an expanding "green" premium being paid for high EU Taxonomy-aligned companies (Exhibit 9).** In our view, **the opportunity in APAC is in the currently underappreciated partly-aligned companies, which will likely benefit from more regionally tailored criteria for "green" activities as APAC Taxonomies become more established (Exhibit 12).** Asset managers today can leverage the EU Taxonomy framework as a proxy for future standards in the region.

Exhibit 8: A number of markets have adopted Green Taxonomies for sustainable financing purposes, potentially expanding into a broader disclosure requirement for corporates and investors in the coming years.
Green Taxonomy development progress across APAC markets, as at Feb 2022

Mandatory policies established	**No APAC markets** currently leverage the Taxonomy for broader corporate or investor disclosure requirements.
Mandatory policies established but with more limited application	**Mainland China** has a Taxonomy for sustainable financing (bonds, loans).
Under consideration / in development / voluntary guidelines established	**Japan, South Korea, Malaysia, Indonesia** have Taxonomies for sustainable financing that can be referenced on a voluntary basis. **Singapore, ASEAN, Thailand, Philippines** all have Taxonomies in development. **New Zealand** has a voluntary Taxonomy for agriculture in development. **Hong Kong** has a Taxonomy under consideration.
No significant developments	**India, Australia, New Zealand**

Source: PBOC, Bank Negara Malaysia, OJK, Japan METI, Korea ME, MAS, ASEAN, Bank of Thailand, Philippines Department of Finance, The Aotearoa Circle, HKMA, Data compiled by Goldman Sachs Global Investment Research

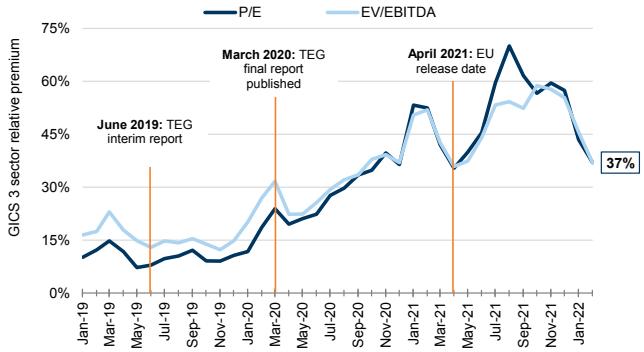
We find an expanding "green" premium for companies highly-aligned with the EU Taxonomy... Our analysis suggests global companies with 40% or more revenue aligned with the EU Taxonomy currently trade at +37% P/E and EV/EBITDA GICS 3 sector relative premiums (Exhibit 9). These premiums have more than doubled over the past 2 years, following the EU Taxonomy's progression from drafting stages through to being a more finalised framework now used by investors to assess company and portfolio alignment. Notably, we see the largest premiums for companies in APAC (55% P/E; 64% EV/EBITDA), followed by EMEA (35% P/E; 14% EV/EBITDA), and the Americas (18% P/E; 50% EV/EBITDA). Observations within each region include:-

- **APAC:** Higher premiums reflect the high concentration of EV/Battery related stocks as well as upstream solar equipment manufacturers that trade at significant premiums vs. GICS 3 peers. While premiums for climate-related enablers still exist, valuations have been contracting in recent months across the region more broadly.
- **EMEA*:*** We find a relatively more diverse mix of industries with high revenue alignment, many of which are industrial, machinery and equipment manufacturers. This is likely due to (i) European companies having more granular revenue disclosures aligned with EU Taxonomy activities and (ii) companies operating in the European economy for which the Taxonomy was designed for, therefore having more activities captured. We also note that the composition of industries are relatively more mature vs APAC (e.g. Utilities, Steel, Capital Goods, Building Materials, Conglomerates) which may partly explain why premium expansion rates have remained more modest and less volatile than in other regions.
- **Americas:** Similar to APAC, Americas has a relatively high exposure to clean energy component manufacturers (e.g. inverters), as well as Software companies that enable resource efficiency. Premiums have generally expanded through 2020-2021, partly driven by potential high-growth green technology segments such as Hydrogen (Plug Power) and NEVs (Tesla).

...with partly-aligned APAC companies the underappreciated opportunity, as Taxonomy development in the region may expand the number of activities considered "green" and boost alignment for these companies, in our view. APAC companies well-aligned with Europe's definition of "green" tend to be thematic winners (e.g. EV/Battery and upstream solar equipment manufacturers) that are already well-owned and appreciated by ESG investors. For example, APAC companies with 81-100% EU Taxonomy-aligned revenue are predominantly Clean Energy companies that are +618% overweight on average in ESG funds vs +511% global ex-APAC (Exhibit 12). However, the EU Taxonomy is designed with a focus on key sectors and activities in Europe's economy, and we expect activity classification systems in APAC to address activity and economy exposures relevant to the region. This will likely widen the number of activities that can be considered "green," and expand alignment for many APAC corporates that are only currently partly-aligned under Europe's framework.

Lower adoption of Taxonomies across the region the key risk to our thesis. Should we see less development of Taxonomies or a lack of expanding the use case to disclosure requirements for corporate and investors across APAC, then we may not see a material impact on capital moving towards more aligned companies within APAC "green" definitions. In this case investors will likely continue to use and cite the European framework as the baseline for measuring company exposure to green activities.

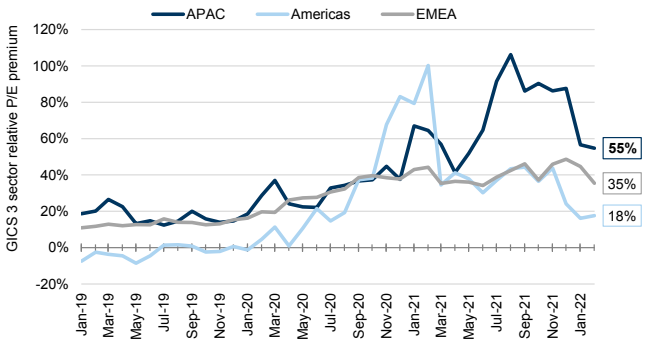
Exhibit 9: The market is paying a +37% "green" premium for global companies with high exposure to the EU Taxonomy...
Trimmed mean 12m fwd consensus EV/EBITDA and P/E premium vs. GICS 3 peers for companies with 40% or more EU Taxonomy-aligned revenue, MSCI ACWI universe



Dates highlighted relate only to the Climate Change Mitigation and Climate Change Adaptation activities under the EU Taxonomy. The Technical Expert Group (TEG) were the task force advising the EU on science-based criteria to include in the EU Taxonomy.

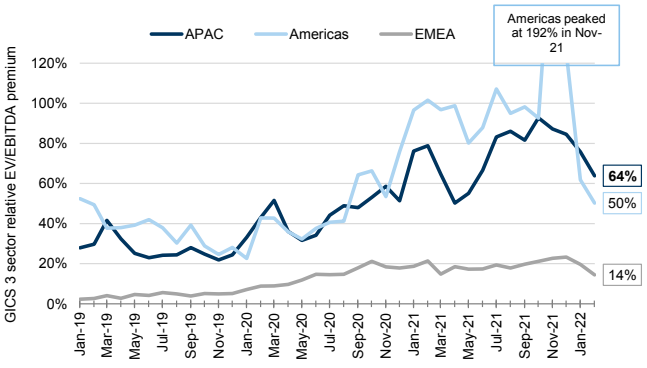
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 10: APAC companies, largely due to the high concentration of EV/battery and upstream solar equipment manufacturers, lead on P/E premiums..
Regional split of trimmed mean 12m fwd consensus P/E premium vs. GICS 3 peers for companies with 40% or more EU Taxonomy-aligned revenue, MSCI ACWI universe



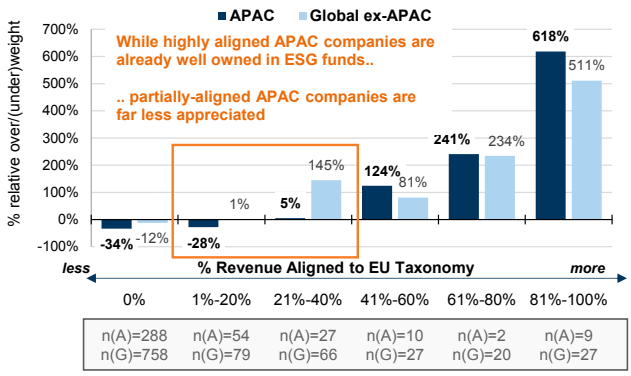
Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 11: ...as well as on EV/EBITDA
Regional split of trimmed mean 12m fwd consensus EV/EBITDA premium vs. GICS 3 peers for companies with 40% or more EU Taxonomy-aligned revenue, MSCI ACWI universe



Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 12: We expect the underappreciated partly-aligned APAC companies to benefit from expanded APAC "green" definitions
ESG funds' relative weight for EU Taxonomy aligned revenue groupings, Oct 2021



Source: Morningstar, Factset, Goldman Sachs Global Investment Research

An overview of the EU Green Taxonomy

The European Taxonomy covers activities that have been deemed by the EU to substantially contribute to one of the EU Taxonomy's six environmental objectives (Exhibit 13). To date, only activities relating to the first two objectives – climate change mitigation and climate change adaptation – have been finalised, with the remaining four objectives expected to be finalised in 2022.

Assessment under the EU Taxonomy requires (1) determining the % of companies' revenue/capex tied to activities covered in the EU Taxonomy, or that are **eligible**, and (2) assessing performance of the relevant activities against the EU Taxonomy's (i) technical screening, (ii) do no significant harm, and (iii) minimum social safeguards criteria to determine **alignment**. EU corporates will be required to report the % of their eligible and aligned revenue/capex, while **all ESG funds based or sold into Europe will be required to report the weighted average of % eligible and aligned revenue/capex for all global holdings in their portfolios**.

Exhibit 13: The six EU Taxonomy Environmental Objectives

	Environmental Objectives	Status
1	**Climate Change Mitigation**	**Activities currently finalised**
2	**Climate Change Adaptation**	
3	Sustainable Use and Protection of Water and Marine Resources	**Activities to be finalised in 2022 est.**
4	Transition to a Circular Economy, Waste Prevention and Recycling	
5	Pollution Prevention and Control	
6	Protection of Healthy Ecosystems	

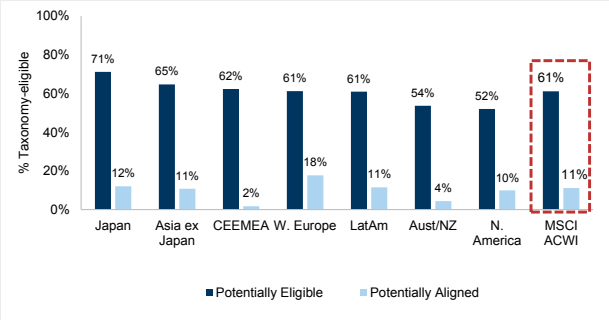
Source: EU Commission

APAC corporates can expect investor pressure to report in line with the EU Taxonomy, while asset managers selling ESG funds into Europe will also have mandated EU Taxonomy disclosure requirements. With European investor disclosure requirements being phased in from this year, APAC corporates can expect to see more engagement from their European investor base to provide EU Taxonomy aligned disclosures. For APAC investors, those marketing or selling ESG funds into Europe will also be required to provide EU Taxonomy-compliant disclosures, which will also impact corporates in the region.

Where could Taxonomies across APAC potentially differ? The EU Taxonomy was designed to cover the major economic exposures and emitting sectors in the European market, which may not be the most relevant to APAC markets. The technical standards that have been set by the EU also leverage other EU regulation and targets, which would need to be adjusted to reflect nuances in the APAC markets. For example, the technical criteria for activities to be aligned (e.g. carbon intensity requirements) are determined based on the performance of the top 10% performing installations in Europe (e.g. the least carbon intensive facilities), which would be a very different threshold based on the top performing assets in the APAC markets. Finally, the classification system used to define European activities, known as NACE, is less used or known outside of Europe. Taxonomies developed across the APAC region will need to use a more relevant activity classification system for the regional market, which stresses the importance of the work of the International Platform on Sustainable Finance to ensure there is a level of harmonisation across international standards to reduce the reporting cost burden on both corporates and investors.

Exhibit 14: Japan has the greatest percentage of public companies exposed to EU Taxonomy eligible activities and W. Europe to aligned activities

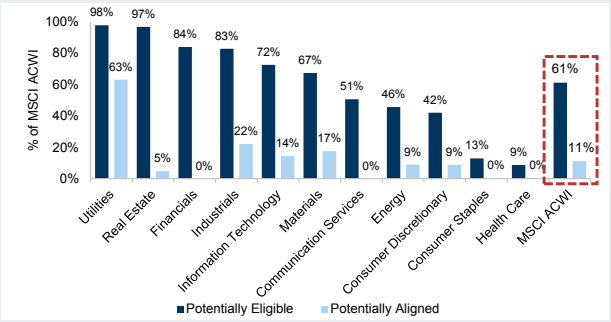
Exposure % of MSCI ACWI companies by region with >5% revenue potentially eligible and potentially aligned revenues under the EU Taxonomy



Source: European Commission, FactSet, Goldman Sachs Global Investment Research

Exhibit 15: Strict thresholds for "green" under the EU's definition results in only 11% of global companies having aligned revenue

Exposure % of MSCI ACWI companies by GICS 1 sector with >5% revenue potentially eligible and potentially aligned



Source: European Commission, FactSet, Goldman Sachs Global Investment Research

Theme 2: TCFD-aligned climate-related disclosures

As decarbonisation commitments from both asset managers and corporates continue to accelerate, **there remains a glaring information gap in financial markets around how climate-related risks are factored into firm strategies.** For example, a study by the Carbon Tracker found that over 70% of the world's largest emitting corporates failed to disclose the impact of climate risk in their 2020 financial statements, and 80% of their auditors did not appear to assess for climate-related risks. **To help address this gap, regulators across the region are stepping up requirements on both corporates and investors (including non-ESG) to provide TCFD-aligned climate-related disclosures as part of their annual reporting.**

See The Net Zero Guide: Transition tools for corporates and investors for more details and case studies on TCFD disclosures.

The recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) have become the market and regulator preferred framework for assessing and disclosing climate-related financial risks, addressing areas of Governance, Strategy, Risk Management, and Metrics and Targets (we outline the recommended disclosures in Exhibit 19). **APAC has been at the forefront of global markets mandating TCFD-aligned reporting**, notably in Singapore (investors and corporates disclosure to begin from 2022), Hong Kong (investors 2022; corporates 2025), Taiwan (corporates, banks, insurers 2023), New Zealand (investors and corporates 2023 at the earliest), Malaysia (financial institutions 2024), and Japan (issuers on 'Prime Market' from 2022). **Based on our conversations, preparing for these incoming requirements is the more immediate pressure point for many asset managers and corporates in the region,** as it requires senior level discussions on strategy and processes, with a significant level of up-skilling, resourcing, and tools needed to develop the in-house expertise to run climate analysis and to meet reporting demands.

Exhibit 16: Incoming reporting requirements will help address the current climate information gap in financial markets

TCFD-aligned climate reporting requirements progress across APAC markets, as at Feb 2022

Mandatory policies established	**Singapore** (investors & corporates 2022), **Hong Kong** (investors 2022; corporates 2025), **Taiwan** (corporates, banks, insurers 2023), **New Zealand** (investors & corporates 2023 earliest), **Malaysia** (financial institutions 2024).
Mandatory policies established but with more limited application	**Japan** will require issuers listed on the new Prime Market launching in April 2022 on a comply or explain basis
Under consideration / in development / voluntary guidelines established	**Australia** encourages TCFD reporting on a voluntary basis. **South Korea** formally pledged support for TCFD in 2021 but have not mandated standards at this stage.
No significant developments	**Mainland China, India**

Source: MAS, SGX, HKMA, HKEX, Taiwan FSC, New Zealand Government, Bank Negara Malaysia, JPX, ASIC, South Korea FSC, Data compiled by Goldman Sachs Global Investment Research

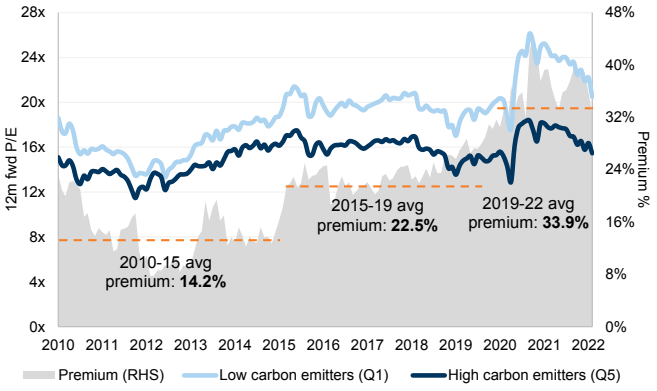
Expect to see carbon emissions become a more prominent consideration in investment decisions... As mandated disclosures begin to come into effect in some markets from mid-2022, there will be increased transparency around the carbon impact and strategy of financial products (including non-ESG products). For example, all large fund managers in Hong Kong with HK$8bn or more in AUM must disclose the portfolio

carbon footprint at the fund level. This may gradually lead to investors having greater focus on the carbon footprint of investments in decision making, even where decarbonisation is not an objective of the fund, as it may become difficult to market high carbon products in a financial environment increasingly bound by net zero targets and objectives.

...which may have implications for valuations in the longer term. Our analysis suggests that the market is already rewarding low emitting companies with 33% P/E and 20% on EV/EBITDA sector-relative premiums over their high emitting peers, which are widening through time. Wider adoption of TCFD-aligned reporting and carbon disclosures by corporates in the region may be a catalyst for this premium to accelerate, **or may lead to greater appreciation and investment in higher emitting companies that can articulate a robust transition plan** via TCFD-aligned reporting.

Companies can expect increased engagement from investors to provide TCFD-aligned disclosures, even where they are not subject to mandated requirements. Climate-focused investors are already pushing corporates through engagement to provide TCFD-aligned disclosures. For example, the Climate Action 100+ investor group, comprising 615 investors with >US$65tn in AUM, have TCFD-aligned reporting as one of their three direct asks when engaging with the world's largest emitting companies. As requirements of investors expand to both ESG and non-ESG funds, we expect corporate engagement specifically around TCFD-aligned reporting to rise to support reporting needs at the fund level.

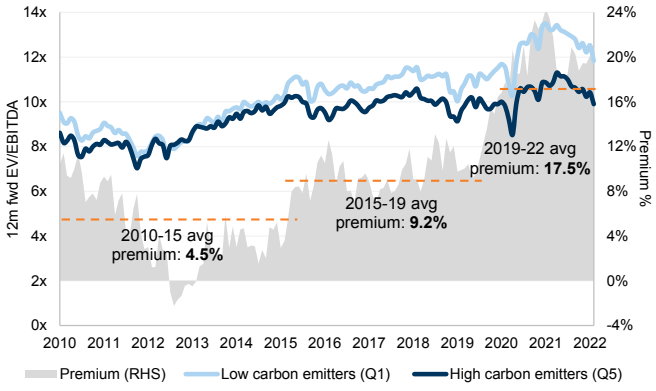
Exhibit 17: We find an expanding premium for low versus high carbon emitters on P/E...
Low carbon (Q1) vs. high carbon emitters (Q5) (Total Scope 1 & 2 GHG Emissions / rGFA) 12-month-forward P/E multiples (2010 - 2022), sector relative, excluding Financials



We caveat that some valuation divergence within GICS 3 sectors will be due to differences in business models.

Source: Refinitiv, FactSet, Bloomberg, Goldman Sachs Global Investment Research

Exhibit 18: ...and on EV/EBITDA
Low carbon (Q1) vs. high carbon emitters (Q5) (Total Scope 1 & 2 GHG Emissions / rGFA) 12-month-forward EV/EBITDA multiples (2010 - 2022), sector relative, excluding Financials



We caveat that some valuation divergence within GICS 3 sectors will be due to differences in business models.

Source: Refinitiv, FactSet, Bloomberg, Goldman Sachs Global Investment Research

What are the recommended TCFD climate-related disclosures?

The four core pillars of the TCFD framework – Governance, Strategy, Risk Management, and Metrics and Targets – are intended to be interconnected and part of a more holistic assessment of the climate-related risks and opportunities across an organisation.

While the framework serves as a guide for all sectors, the TCFD has also provided supplementary guidance for both the financial and some non-financial industry groups reflecting those deemed to be most exposed to climate-related financial impacts.

Exhibit 19: The four core pillars of the TCFD framework and eleven recommended disclosures

FOUR CORE PILLARS			
GOVERNANCE **Disclose the organization's governance around climate-related risks and opportunities.**	**STRATEGY** **Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.**	**RISK MANAGEMENT** **Disclose how the organization identifies, assesses, and manages climate-related risks.**	**METRICS & TARGETS** **Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.**
RECOMMENDED DISCLOSURES			
a) Describe the **board's oversight** of climate-related risks and opportunities. **b)** Describe **management's role** in assessing and managing climate-related risks and opportunities.	**a)** Describe the **climate-related risks and opportunities** the organization has identified over the short, medium, and long term. **b)** Describe the **impact of climate-related risks and opportunities** on the organization's businesses, strategy, and financial planning. **c)** Describe the resilience of the organization's strategy, taking into consideration different **climate-related scenarios**, including a 2°C or lower scenario.	**a)** Describe the organization's **processes for identifying and assessing** climate-related risks. **b)** Describe the organization's **processes for managing** climate-related risks. **c)** Describe how processes for identifying, assessing, and managing climate-related risks are **integrated into the organization's overall risk management**.	**a)** Disclose the **metrics used** by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. **b)** Disclose **Scope 1, Scope 2**, and, if appropriate, **Scope 3** greenhouse gas (GHG) emissions, and the related risks. **c)** Describe the **targets** used by the organization to manage climate-related risks and opportunities and performance against targets.

Source: TCFD

Additional resources:

- TCFD's publications including the latest Status Report, Guidance, and Implementation of TCFD Disclosures documents
- TCFD online courses
- TCFD (free) Downloadable Training Pack

Theme 3: Carbon pricing schemes

Carbon pricing schemes in the form of a **carbon tax** or via an **emissions trading scheme (ETS)** are key tools governments can use to incentivise high emitting companies to decarbonise and to drive greater investment into lower or zero carbon technologies and solutions. Across APAC, we see established carbon pricing schemes in Mainland China, South Korea, New Zealand, Japan, and Singapore, which all vary in terms of application, including the cost per tonne of carbon emitted and the scope of sectors and companies covered. However, we see the impact of these schemes as limited by extremely high allocation of free carbon allowances to high emitting corporates, low carbon prices, limited sector coverage, or a combination of these three. **We expect tightening of carbon pricing schemes in the medium term, particularly where it is a key strategy for achieving national net zero targets.**

- **Carbon Tax:** A carbon tax defines a tax rate for corporates which is applied on the basis of a company's greenhouse gas emissions or on the carbon content of fossil fuels used.
- **Emissions Trading Scheme (ETS):** An ETS is a cap-and-trade system whereby a cap is placed on the total amount of permitted emissions in the system, and those emissions are then allocated out to companies across different sectors. Companies that do not exceed their freely allocated cap are able to sell their unused emissions allowances to higher emitting corporates, who must purchase additional allowances for emissions in excess of their allocated free allowance. This creates a market price for GHG emissions. The total cap on permitted emissions is reduced over time to decarbonise the system.

Exhibit 20: A number of pricing schemes are in place across APAC, however, scope and impact of application varies
Carbon Tax or ETS status across APAC markets, as at Feb 2022

Mandatory policies established	**Mainland China, South Korea, New Zealand** have established National ETS schemes. **Japan** and **Singapore** have a Carbon Tax. Japan is also considering a compliance ETS scheme.
Mandatory policies established but with more limited application	Nil
Under consideration / in development / voluntary guidelines established	**Hong Kong** has signalled the intention to establish a carbon market mechanism.
No significant developments	**Australia, India**

Source: China MEE, South Korea ME, New Zealand Ministry for the Environment, Japan MOE, Singapore Ministry of Finance, HKMA, Data compiled by Goldman Sachs Global Investment Research

Carbon pricing has direct cost implications; companies' ability to mitigate exposure (through decarbonising) or to pass through costs to consumers can have a material impact on valuations if not managed. As we continue to see pricing schemes evolve, expanding coverage and tightening free allowance thresholds, companies will need to ensure they have an appropriate strategy in place to decarbonise and mitigate cost exposure. **Using our GS SUSTAIN Carbon Value at Risk (VAR)**

metric, we find that companies in Indonesia, Thailand, India, Malaysia, and the Philippines have earnings most exposed to an incremental increase in carbon pricing (Exhibit 21), while also lacking any carbon pricing schemes holding companies accountable at this stage.

- *Our GS SUSTAIN Carbon VAR metric calculates the earnings exposure of an incremental increase in carbon pricing. For companies, it is measured as Tonnes of Direct Scope 1 CO2 multiplied by a US$30/t carbon price, shown as a % of US$ EBITDA. For our country-level analysis, we calculated both a 20% trimmed mean and median values, which had consistent conclusions of countries with the highest earnings risks.*

Lack of domestic carbon pricing in some countries may put companies at greater risk of incurring a carbon tax when exporting to overseas markets. As part of Europe's strategy to protect domestic production while tightening their own carbon mitigation policies, the EU has introduced a new Carbon Border Adjustment Mechanism (CBAM) which will effectively tax certain goods being imported into Europe from jurisdictions with lax carbon policies (we discuss the CBAM further in the following grey box). Should we see further interest in other overseas markets looking to implement a carbon border tax (e.g. in the US), this could have major cost implications for companies in APAC.

Exhibit 21: Indonesian companies have the most at risk earnings of an incremental increase in carbon prices, while also lacking a domestic carbon pricing scheme
Overview of carbon pricing markets and GS SUSTAIN Carbon Value At Risk performance across APAC markets, MSCI ACWI universe

Region	Carbon price (US$/t)	Carbon pricing scheme	Trimmean VAR%	Median VAR %
Indonesia	n.a.	n.a.	23%	6%
Thailand	n.a.	n.a.	8%	1%
India	n.a.	n.a.	7%	1%
Malaysia	n.a.	n.a.	6%	2%
Philippines	n.a.	n.a.	5%	1%
South Korea	$25-30	ETS	2%	0%
Hong Kong	n.a.	n.a.	2%	0%
Australia	n.a.	n.a.	1%	0%
Singapore	$3.7	Carbon tax	1%	0%
Mainland China	$9-10	ETS	1%	0%
Japan	$2.5	Carbon tax	0%	0%
New Zealand	$45.6	ETS	0%	0%
Taiwan	n.a.	n.a.	0%	0%
EU	$93-108	ETS	1%	0%
US	$13-28	ETS (CaT, RGGI)	1%	0%

Carbon prices for ETS schemes are based on price ranges between Jan-Feb 2022 or based on latest auctions in 4Q21

Source: Bloomberg, Refinitiv Eikon, World Bank, Japan ME, Goldman Sachs Global Investment Research

Europe's Carbon Border Adjustment Mechanism (CBAM) introduces a tax on imports of carbon intensive goods into Europe

As the European regulatory environment relating to curbing carbon emissions continues to intensify, the EU Commission announced in July 2021 a new Carbon Border Adjustment Mechanism (CBAM) to reduce the risk of 'carbon leakage' - that is the risk of European producers shifting production to other jurisdictions with more lax carbon policy measures than Europe in order to reduce costs. In a bid to protect the European industry while still increasing the incentive for Europe to decarbonise through the tightening of carbon policy, there will be a phasing out of subsidies and free carbon allowance permits for European production and firms will be required to purchase pollution certificates when importing goods from other countries without strong carbon mitigation and environmental policies. Sectors expected to be affected once the CBAM is phased in from FY2026, include electricity, aluminium, cement, fertilisers, and iron and steel.

What are the potential implications for APAC? The key sectors affected by the CBAM are industries dominated by APAC exporters, which will ultimately increase the cost for companies to trade with Europe or may cause displacement effects in markets across the broader APAC region as exports are redirected away from Europe, impacting supply and demand dynamics within the relevant markets. Multiple studies have found Mainland China, India, and South Korea among the most exposed countries across APAC based on products covered by the CBAM (here and here). The CBAM may also provide further incentive for regulators across APAC jurisdictions to tighten climate mitigation policies, as exporting countries within the region with more lax standards will be most affected by the tariffs.

Theme 4: Supply chain due diligence and transparency

As highlighted in our 2022 outlook report, we expect greater focus on supply chain risks from both the regulators and investors, putting pressure on companies to increase the quality of reporting and of governance practices around protecting human rights and mitigating environmental impacts throughout operations and the supply chain. **Significant developments in supply chain due diligence policies across Europe and the US emphasise the need for more robust practices by APAC corporates, given both the region's unique position as a global supply chain hub and its high exposure to social and environmental risks**. While we see a number of supply chain-related policy developments across the APAC region, we find the impact limited by (i) a lack of substantial enforcement measures to incentivise stronger compliance, as is the case in Australia, and (ii) policies relating to higher level supply chain disclosures that do not provide granular enough insight to assess the robustness of due diligence and risk mitigation practices. **As international pressure for better transparency continues to rise, we expect APAC regulators to tighten existing or develop new supply chain due diligence and transparency laws.**

Exhibit 22: While there are a number of supply chain-related policies in various development stages across the region, we find the lack of depth in requirements or enforcement measures limits the impact.
Supply chain due diligence and transparency regulation status across APAC markets, as at Feb 2022

Mandatory policies established	**Australia** requires companies to report on Modern Slavery exposures. **Thailand's** new "One Report" will require supply chain risk disclosures from 2022
Mandatory policies established but with more limited application	**Hong Kong** has dedicated supply chain disclosures on a comply or explain basis.
Under consideration / in development / voluntary guidelines established	**Mainland China** promotes voluntary social disclosures capturing the supply chain. **Japan** is developing supply chain due diligence guidelines.
No significant developments	**India, New Zealand, Singapore, South Korea**

Source: Australian Government, Thailand SEC, HKEX, CSRC, Bloomberg, Data compiled by Goldman Sachs Global Investment Research

APAC is highly exposed to human rights abuses and faces significant environmental risk. The International Labour Organization (ILO) estimates that as of 2020, there are 160 million children (aged 5-17) subject to labour globally, of which 38% are based in APAC. Similarly, the ILO estimates that APAC accounted for 62% of the 40mn persons deemed to be in modern day slavery globally as of 2016. Meanwhile, a study by Verisk Maplecroft ranking the world's largest 576 urban cities on their exposure to a range of environmental- and climate-related threats found that 99 of the top 100 cities most at risk are based in Asia, including 37 in mainland China and 43 in India. APAC also contributes a significant potion of global emissions, with the largest carbon emitters in the region being mainland China (c.30% of global emissions), India (c.7%), and Japan (c.3%).

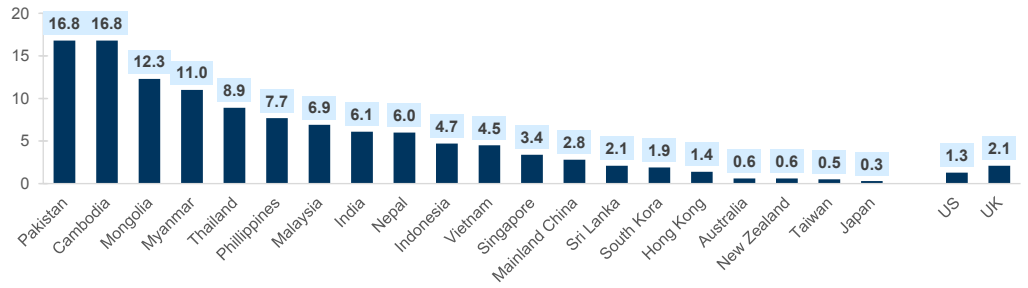
Downstream companies are now being held more accountable for these social and environmental risks throughout their supply chains by consumers (e.g. reputational damage for controversies emerging through supply chains), investors (e.g.

exclusions based on violations of human rights in supply chains), and regulators (e.g. through the growing body of supply chain due diligence and transparency regulations globally, outlined in the following grey box). As companies also continue to pledge net zero targets encompassing Scope 3 emissions (includes supply chain), they are under additional pressure to work with suppliers to drive down emissions. **This pressure is mounting in an environment which severely lacks supply chain data.** For example, we find only 7% of companies in the MSCI ACWI global index report the number or percentage of their suppliers that have been audited.

Examples are emerging of how downstream pressures are changing industry dynamics to manage ESG risks. For example, Apple's net zero ambitions will effectively push all of its global suppliers to use 100% renewable energy for Apple-related products by 2030, which may potentially have significant cost implications for energy-intensive segments within the supply chain such as semiconductors/PCB manufacturers. Supply chain engagement and monitoring will be critical drivers of Apple's broader long-term ESG agenda, since suppliers account for 70-80% of its products' carbon footprint (e.g. iPhone 13, MacBook Pro). As the sustainability attributes of end-products become increasingly more important for end customers, downstream brands and OEMs may further strengthen supply chain initiatives in order to manage ESG externalities across the value chain.

The existing policy environment in APAC is leaving many corporates unprepared for the impacts of international developments, in our view. While there are policies across the region that touch on supply chain disclosures, we find they tend to be relatively high level disclosures or lack proper enforcement to incentivise strong compliance. For example, a study by the Australian Council of Superannuation Investors (ACSI) found that ~33% of 151 companies in the ASX200 published mandatory modern slavery statements which are potentially non-compliant with one or more of the reporting requirements under Australia's Modern Slavery Act, and that most statements lack details on how mitigation measures are implemented (e.g. ensuring grievance mechanisms are put in place, developing standards to measure the effectiveness of mitigation measures, reporting actual modern slavery incidents). In addition, only 5% of companies clearly articulated their potential involvement in modern slavery risks (i.e. causing, contributing to or being directly linked) by using UN Guiding Principles on Business and Human Rights (UNGPs) or equivalent frameworks. This leaves companies in the region unprepared to answer to future pressures from downstream customers as the global focus on managing supply chain risk intensifies. **Regulators across the region may respond with tightened requirements in the medium term.**

Exhibit 23: Countries across APAC are amongst the highest exposed globally to modern slavery risks Estimated modern slavery victims per 1,000 population, by country



The higher the value, the greater the prevalence the country has with respect to modern slavery

Source: Global Slavery Index, compiled by Goldman Sachs Global Investment Research

Examples of international supply chain due diligence laws

The US's approach targets sectors or areas of higher perceived risks exposure. California's Transparency in Supply Chains Act requires companies with annual gross receipts >US$100mn to report on their efforts to address slavery and human trafficking in supply chains to inform consumer purchasing decisions. New York State's proposed Fashion Sustainability and Social Accountability Act will impose significant reporting requirements on fashion retailers and manufacturers doing business in New York State, including requirements to map at least 50% of suppliers by volume across all tiers of production, produce a sustainability report outlining key business risks, informed by the UN and ILO principles, provide disclosures around GHG emissions (which must be verified) and median wages of workers of suppliers vs local minimum wages. Additionally, at the federal level, the Uyghur Forced Labor Prevention Act prevents imports from certain regions in mainland China on the rebuttable presumption that any (even partial) goods from the region have been subject to forced labour.

- *We note there remains ongoing debate within the US Securities and Exchange Commission (SEC) around the level of climate information companies can be forced to report, specifically as it relates to Scope 3 emissions (includes emissions from upstream suppliers and downstream customers). The dispute relates to the definition of "materiality" and whether a lawsuit could be brought against the SEC on grounds that Scope 3 disclosures fall outside of the materiality principle as it relates to emissions outside the operational boundary and control of a company.*

Germany's Supply Chain Due Diligence Act will require companies to identify, mitigate, address, and report annually on human rights and environmental risks in both their direct operations and throughout their supply chains from 2023 (companies with >3,000 employees) and 2024 (companies with >1,000 employees). Covered risks relate to forced labour, child labour, discrimination, freedom of association violations, unethical employment, unsafe working conditions, and environmental degradation. Fines of up to 2% of annual global turnover can be imposed, as well as exclusion from winning public contracts in Germany for up to 3 years.

Norway's Transparency Act will require large companies domiciled or selling products into Norway that meet two of three criteria – (i) 50 full-time employees, (ii) annual turnover of NOK70 mn or more, or (iii) a balance sheet total of NOK35mn or more) – to comply with mandatory human rights due diligence

obligations and report on findings and remedies. There will be a citizen right-to-know provision, where information can be requested from members of the public relating to due diligence processes in the supply chain, with companies facing injunctions or fines for non-compliance. Notably, the law does not cover environmental risks.

Europe's proposed mandatory due diligence legislation has been delayed into 2022, but will be the first instrument at the European level requiring companies to take action to ensure human rights and environmental risks in the supply chain are managed and mitigated. Despite delays to the EU regulation, we note that many member states are enacting regulations to similar effect (e.g. Germany and Norway). Additionally, the **EU Taxonomy requires assessment of social standards in companies' operations and supply chains to ensure that minimum standards are met** before revenue/capex can be considered aligned with the Green Taxonomy.

Proposed updates to the existing UK's Modern Slavery Act will tighten compliance obligations and impose potential civil or financial penalties for organisations that fail to file their modern slavery statements (in addition to fines imposed for engaging in modern slavery). Statements will require businesses to report on actions taken to identify, mitigate, and address modern slavery across their supply chains and will be published on a new Government modern slavery statement registry.

Theme 5: Corporate ESG disclosures

Our GS SUSTAIN ESG framework covering ~7,000 global companies is available upon request.

Corporate disclosures across APAC markets have historically lagged other regions, however increased disclosure requirements and investor engagement, leveraging frameworks such as the (former) Sustainability Accounting Standards Board or SASB (now Value Reporting Foundation) and the TCFD, has significantly helped to narrow the disclosure gap (Exhibit 27). We find **APAC E&S corporate disclosure rates across most countries are now in line or better than North American companies (Exhibit 28)**, with Mainland China the notable outlier. While we see fragmented mandatory disclosures across the region, global ESG standards being developed by the International Sustainability Standards Board (ISSB) will improve standardisation by providing baseline disclosures, which APAC regulators can build on.

Exhibit 24: There has been material progress in mandating ESG disclosures in recent years, with broader disclosures to be bolstered by incoming global ESG standards.
Corporate ESG disclosure requirement status across APAC markets, as at Feb 2022

Mandatory policies established	**India** will have mandatory CSR/ESG reports from FY22. **South Korea** will phase in mandatory disclosure requirements by 2030. **Malaysia, Thailand,** the **Philippines, Taiwan, Vietnam,** and **Indonesia** all have requirements for companies to provide sustainability disclosures/reports.
Mandatory policies established but with more limited application	**Mainland China** will impose mandatory E disclosures on high emitting corporates from 2022. **Hong Kong** requires disclosure of 12 E&S indicators on a comply or explain basis. **Australia** has mandatory GHG, energy, and diversity disclosures, rest are voluntary. **Japan** mandated board independence, diversity, and climate metrics on a comply or explain basis. **New Zealand** has corporate governance disclosure requirements including material ESG factors on a comply or explain basis. **Singapore** has mandatory diversity disclosures and a core list of 27 voluntary E&S metrics.
Under consideration / in development / voluntary guidelines established	Nil
No significant developments	Nil

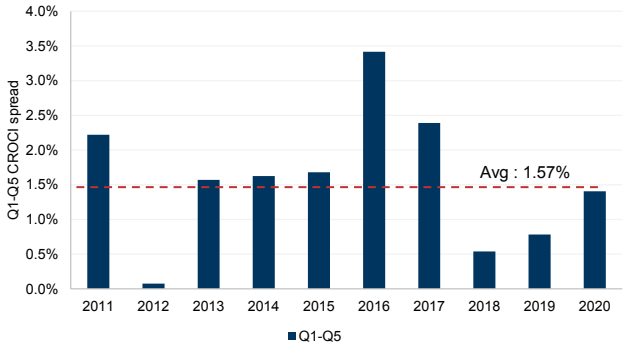
Source: SEBI, South Korea FSC, Securities Commission Malaysia, Thailand SEC, Philippines SEC, Taiwan FSC, Vietnam SSC, Indonesia FSA, CSRC, HKEX, Australian Government, Japan FSA, NZX, SGX, compiled by Goldman Sachs Global Investment Research

While we see a mix of mandated metrics across the region, incoming global ESG standards will help standardise a baseline level of corporate reporting. This will likely have a profound impact particularly for Mainland China companies, where disclosure is still significantly lacking (Exhibit 28). Notably, companies without adequate disclosure are likely being penalised by popular third-party ESG ratings providers that tend to be punitive on non-disclosure, which may affect stock ownership where some investors are using third-party ESG ratings as an exclusion screen on their investable

universe (e.g. to screen out bottom ESG performers).

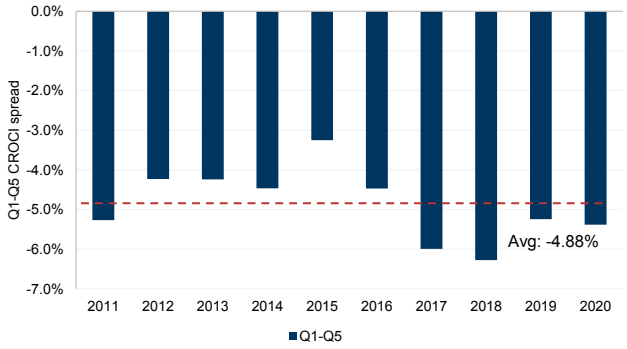
Investor focus should be on using ESG data to measure performance rather than mere disclosure alone, as it leads to higher returns and is a better signal for quality. ESG performance, if measured correctly, can serve as a flag for operational excellence, culture and risk that manifests into financial outcomes and provides a signal of more resilient business models, in our view. We find consistent links between ESG and return on capital (CROCI), which have a large divergence in outcomes when analyzing ESG performance over disclosure-based scoring approaches. **Top-quintile ESG performers generated +157 bps higher CROCI over the bottom quintile, while top ESG disclosers generated 488 bps lower CROCI vs. bottom disclosers, since 2011 on average.** This suggests that emphasizing ESG disclosure over ESG performance can be detrimental to an investment strategy aimed at identifying higher quality companies.

Exhibit 25: Top (Q1) ESG performers generate 157bps higher CROCI on average than bottom (Q5) performers
Difference in CROCI between top and bottom quintile GS SUSTAIN E&S scores, trimmed mean (10%)



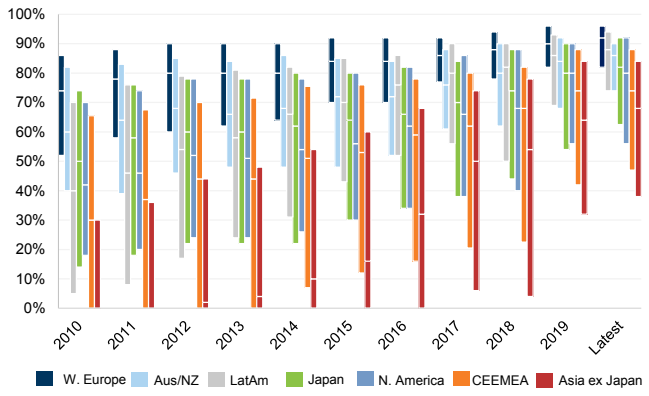
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 26: Top (Q1) ESG disclosers have significantly lower returns than bottom (Q5) peers, generating 488bps lower returns on average since 2011
Difference in CROCI between top and bottom-quintile Bloomberg ESG disclosure scores, trimmed mean (10%)



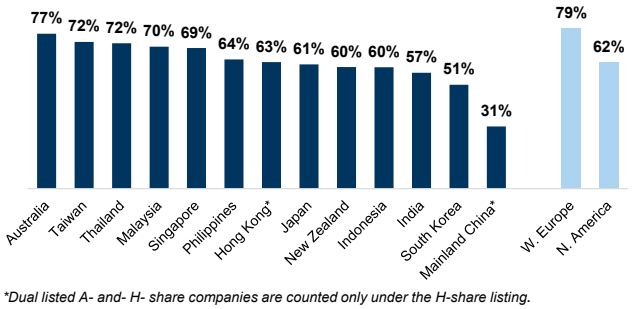
Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 27: Corporate disclosure across AeJ has rapidly increased over the past 3 years
Distribution of disclosure of the 50 most common E&S numeric and policy metrics, by region; 75th %ile, 50th%ile and 25th %ile



Source: Refinitiv, Goldman Sachs Global Investment Research

Exhibit 28: ... however, this is largely driven by mainland China, with other markets' disclosure in line with N. America or better;
average corporate operational E&S disclosure rates in the GS SUSTAIN framework across APAC, MSCI ACWI, latest available data



Dual listed A- and- H- share companies are counted only under the H-share listing.

Source: Goldman Sachs Global Investment Research

Global ESG standards are coming with the establishment of the ISSB

The International Sustainability Standards Board (ISSB) was officially established at COP26, to develop comprehensive global sustainability reporting standards. ISSB, governed by the IFRS Foundation, will consolidate with the Value Reporting Foundation (VRF – formerly SASB and IIRC) and the Climate Disclosure Standards Board (CDSB) **by June 2022**, aggregating expertise and other resources. 38 jurisdictions covering ~70% of the world's GDP, including the UK, US, China, among others, are supportive of the initiative. **The International Organization of Securities Commissions (IOSCO), the trade association for global stock exchanges could then become a key catalyst for pushing any finalized standards down to the 140 jurisdictions covered by its network of stock exchanges**, including in the US.

Recognizing the urgency of climate-reporting needs, the Technical Readiness Working Group (TRWG), consisting of representatives from the CDSB, TCFD, International Accounting Standards Board (IASB), VRF and the World Economic Forum, was formed and tasked with developing the ISSB's 'climate-first' reporting standards, followed by industry-specific standards. The group published two prototype documents:

- *Climate-related Disclosures Prototype*
- *General Requirements for Disclosure of Sustainability-related Financial Information Prototype*

Theme 6: ESG fund requirements

The rise of ESG assets in recent years has been met with greater scrutiny around "green"or "sustainability" claims made by financial products. **In a bid to reduce the risk of greenwashing, regulators are focusing on standardising ESG fund disclosures and requiring greater transparency on how ESG is integrated into investment strategies**. Europe has again been at the forefront of this type of regulation, with the Sustainable Finance Disclosure Regulation (SFDR) requiring all funds within Europe to label themselves as either ESG (Article 8 or 9), or non-ESG (Article 6), with specific disclosure requirements imposed for ESG (Article 8 or 9) funds. Notably, Article 8 and 9 funds are also required to report product alignment with the EU Taxonomy regulation, providing a further catalyst for EU Taxonomy adoption across Europe. **In APAC, we see a positive trend emerging with the regulators looking to impose ESG fund requirements, which may lead to accelerating ESG fund flows and become a catalyst for wider adoption of APAC Taxonomies in development across the region** (Theme 1).

Exhibit 29: Greater adoption of ESG fund requirements will help reduce greenwashing risks across financial products, as well as be a potential catalyst for Taxonomy adoption (Theme 1).
ESG fund requirement status across APAC markets, as at Feb 2022

Mandatory policies established	**Malaysia** has implemented minimum disclosure requirements for SRI funds since 2017. **Taiwan** implemented ESG fund requirements in 2021, including a minimum threshold req. of 60% of NAV to be invested in ESG assets. **Hong Kong** is implementing ESG fund disclosure and process requirements from 2022, similar to the EU's SFDR.
Mandatory policies established but with more limited application	**Australia** requires higher level disclosures in the PDS for sustainable investment products.
Under consideration / in development / voluntary guidelines established	**India** has launched a consultation proposing to set a minimum threshold req. of 80% of AUM to be invested in "ESG-themed" stocks. **Thailand** launched a consultation in 2021 of proposed SRI fund disclosures. **ASEAN** launched a consultation for ESG fund requirements in Feb 2022. **Singapore** will announce disclosure requirements for retail ESG funds in early 2022. **Mainland China** has voluntary guidelines for integrating ESG and green factors. **New Zealand** provides guidance on application of misleading and deceptive prohibitions to ESG products. **Japan** is considering implementing ESG-labelled fund disclosures.
No significant developments	**South Korea**

Source: Securities Commission Malaysia, Taiwan FSC, Hong Kong SFC, ASIC, SEBI, Thailand SEC, Philippines SEC, MAS, AMAC, New Zealand FMA, Bloomberg, Data compiled by Goldman Sachs Global Investment Research

ESG integration strategies in the APAC region will be under greater scrutiny as transparency into fund objectives and processes increases. We see two types of requirements emerging putting pressure on asset managers to ensure they have robust strategies in place: (1) disclosure requirements on how a fund's ESG objectives are achieved through the investment strategy, including specific metric or KPI disclosures in

some instances, and (2) threshold requirements on the % of AUM that must be invested in ESG investments. An example of (1) includes Hong Kong's disclosure requirements requiring disclosure of (a) the ESG focus of the fund, (b) the ESG investment strategy, (c) asset allocation (the expected minimum proportion of net asset value of the fund that aligns with the ESG focus), (d) the reference benchmark, (e) where to find additional information, and (f) risks. While an example of (2) includes Taiwan's requirement for ESG funds to have a minimum of 60% of net asset value invested in ESG assets.

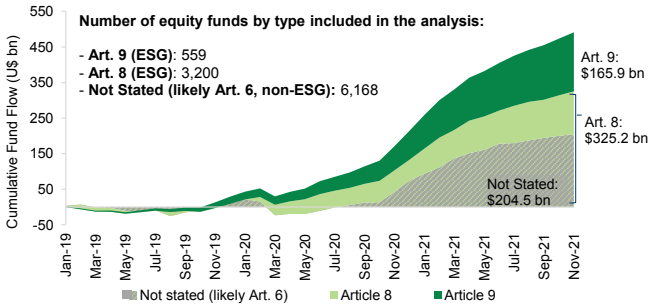
EU Article 8 ('light' green) funds have E or S characteristics, but not objectives. Article 9 ('dark' green) funds have E or S factors at the heart of the funds' objectives.

ESG fund requirements may be a future catalyst for Taxonomy adoption and application across the region. As we see more ESG fund requirements emerge across the region, we may also see a bundled requirement to report exposure to activities classified under Green Taxonomies within the respective region. In Europe, the SFDR is married with the EU Taxonomy in that funds labelled Article 8 or 9 (ESG) must report their funds' EU Taxonomy-aligned revenue/capex.

Markets without formal policies in place (or in development) are increasingly monitoring greenwashing claims of financial products. While we don't see formal developments on ESG fund requirements across all key APAC markets, we do see commentary from many regulators that "ESG" or "sustainability" claims made by financial products are increasingly under the microscope. For example, in July 2021, the Australian Securities and Investment Commission (ASIC) launched a review to assess "green" and "ESG" claims made by managed funds and superannuation funds to ensure that the practices of those funds were consistent with claims made. While in South Korea, local media (The Bell, Jun 2021) reported various asset managers had received verbal warnings by local regulators, such as the Financial Services Commission, that funds claiming to be ESG oriented must have legitimate basis or else it may lead to investigations.

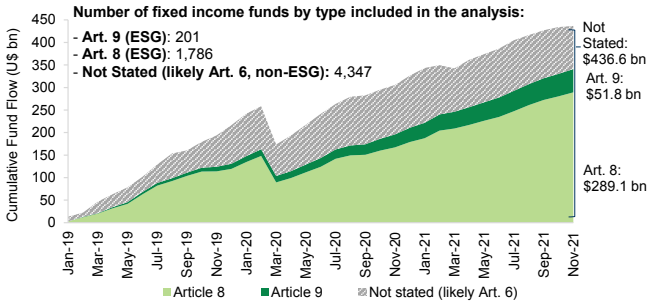
Trends seen in Europe suggest tighter requirements may help advance ESG fund flows and encourage ESG-labelled fund launches, despite the additional compliance requirements. There is a risk that in some markets, the increased costs to comply with additional disclosure and process requirements may deter asset managers from labelling funds as "ESG". However, trends observed in Europe suggest the contrary, with **flows into European Article 8 & 9 (ESG) funds having significantly outpaced those flowing into Article 6 (non-ESG or 'not stated') despite the latter representing nearly 2x the number of funds** (Exhibit 30). This sends a clear market signal for asset managers to launch and/or relabel funds as ESG to attract flows, easing concerns that increased requirements may deter ESG fund launches.

Exhibit 30: Cumulative fund flow of Article 8 & 9 Equity funds have rapidly outgrown non-ESG counterparts
Cumulative fund flow of European Equity funds by type (US$bn)



Source: Morningstar, Goldman Sachs Global Investment Research

Exhibit 31: Article 8 & 9 Fixed Income cumulative flows have grown since '19, albeit to a lesser degree than non-ESG peers
Cumulative fund flow of European Fixed Income funds by type (US$bn)



Source: Morningstar, Goldman Sachs Global Investment Research

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Reg AC

We, Emma Jones, Keebum Kim, Sharmini Chetwode, Ph.D., Evan Tylenda, CFA, Brian Singer, CFA, Derek R. Bingham, Grace Chen, Brendan Corbett, Madeline Meyer, Rachit Aggarwal, Enrico Chinello, Ph.D. and Michael Hao Wu, CFA, 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.

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