Marketing Communication

RBC BlueBay
Asset Management

RBC Emerging Markets Equity Environmental, Social & Governance Report 2022

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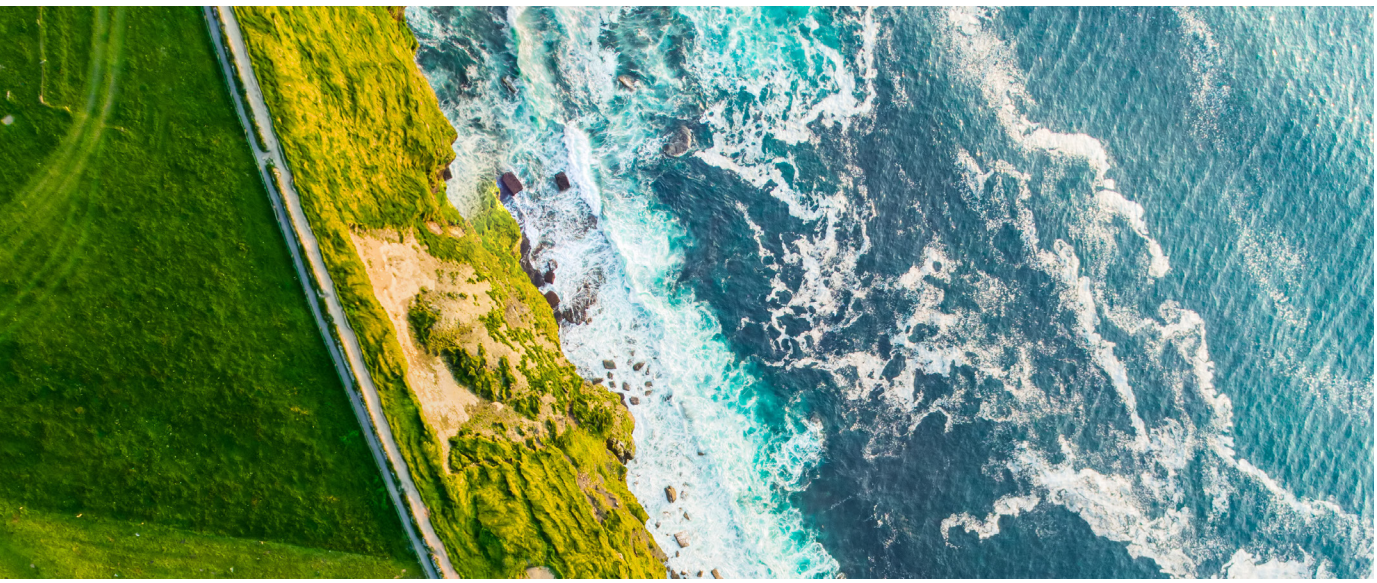


Foreword

This is the RBC Emerging Markets Equity team's seventh annual Emerging Markets Equity Environmental, Social and Governance (ESG) Report.

ESG has been a key part of our philosophy and process since the inception of the RBC Emerging Markets Equity Strategy ("the strategy") and we have always strived to expand our knowledge and efforts in this space. We have looked to invest in management teams that share this ethos, focusing on companies that promote a strong culture of excellence, which look to build strong relationships with all stakeholders and invest for the long term.

"Engagement continues to be a critical part of our investment process."

While we continue to have a significantly lower carbon footprint than the benchmark[1] and many of our peers, this year we engaged with our portfolio companies on the topic of carbon emissions and net-zero. We wanted to understand how management think about net-zero, the emissions they track and the targets they have in place. We have found the quality of third-party climate data to be limited, both within our portfolio and across the emerging markets ("EM") region as a whole. Hence, doing our homework in this space is more important than ever.

Another area of discussion in this year's report is on social factors ("S"). Within ESG, much of the focus historically has been on the environment ("E") and governance ("G"). Social factors have received less attention and have generally been viewed as harder to define and measure. In this year's report, we look at the reasons behind this and why we feel this is likely to change. We also outline how we approach social factors when investing in companies.

This year we spent some time analysing the implications of rising inequality across EM through three key lenses: politics, technology and climate change. We believe that these themes will be key to understanding how inequality will evolve within EM in the coming years.

Engagement continues to be a critical part of our investment process. We provide some highlights of our activities as active owners over the course of the year. We also include case studies on what we consider to be exemplary ESG companies.

We hope that you enjoy these insights into our ESG activities and achievements, and we welcome any feedback on how we can improve our future efforts.

[1] Source: EM Equity team research. The benchmark is the MSCI EM Index.

Defining our approach to sustainable investment

The RBC Emerging Markets Equity team ("the team") takes a long-term approach to investing, through rigorous independent research and thoughtful company engagement. We look for companies with strong ESG practices, whose management teams think strategically and in the interests of all stakeholders: these include minority shareholders, employees, customers, local communities and the environment. We believe that companies that adopt a forward-thinking and proactive approach across a broad range of ESG factors will ultimately achieve industry leadership and sustainable long-term growth.

Our philosophy is to invest in companies that have a high and sustainable return on investment. The majority of our bottom-up research effort goes into assessing the sustainability element of a company's returns and we conduct this assessment in a holistic and comprehensive way. We evaluate ESG factors, along with other factors such as management (ESG itself is an important indication of management quality), barriers to entry, balance sheet strength, cash generation and profitability, when determining the sustainability of a company's returns. This is complemented by long-term thematic and ESG research, in areas such as climate change and social infrastructure.

Assessing the quality and materiality of ESG factors can be challenging because ESG opportunities and risks vary significantly between companies, industries and regions. Given the complexity of the matter, relying solely on third-party providers is insufficient in our view, and can at times be misleading; indeed, our analysis shows limited correlation and coverage between the ESG ratings of leading third-party providers. We therefore conduct our ESG research independently, with all team members responsible for ESG-related analysis from both a bottom-up and top-down perspective. This structure allows us to better assess materiality and engage with the companies in which we invest.

We acknowledge that there is always room for improvement, both in terms of our own approach to sustainable investment but also amongst our investee companies. We have made refinements and innovations to our investment process over the years, and have asked the same from our investee companies in order to instigate positive change. Focus areas of such engagement have extended across a broad range of ESG factors, from plastics and climate change, to diversity and supply chain integrity.

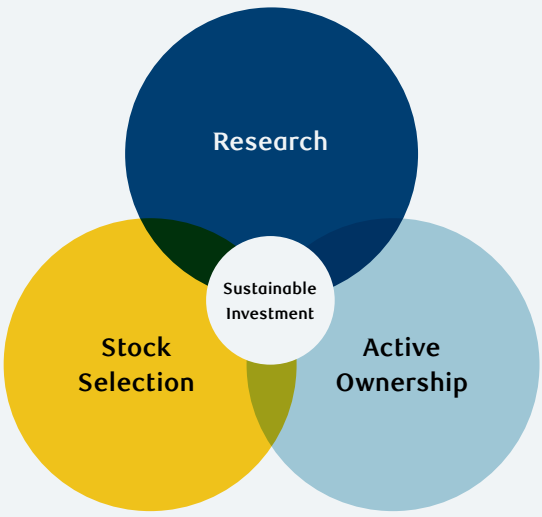
RBC Global Asset Management ("RBC GAM") is a signatory to the UN Principles for Responsible Investment ("UN PRI"), and we have been integrating the six UN PRI principles into our investment process since the inception of the strategy in April 2010. RBC GAM recognises that advocating for regulatory and legal reform can be more effective when market participants work together and seek to collaborate with regulatory bodies, policymakers and like-minded investors.

Exhibit 1: The three pillars of our sustainable investment approach

Stock Selection
- Focus on best-in-class ESG companies
- ESG is fully embedded in the investment process
- Independent ESG analysis conducted by team members

Research
- Long-term thematic & ESG research; annual ESG report
- Climate change risks and opportunities
- Investing in future leaders

Active ownership
- Targeting positive change through ongoing engagement and proxy voting
- Focus areas to supplement company-specific engagement
- Monitoring engagement outcomes



Source: RBC GAM.

Active ownership

Engagement has always formed a critical component of our investment philosophy and process.

Our approach is to encourage in-depth and ongoing private dialogues with the companies in which we invest, and to establish strong, long-term relationships with management. We are patient with companies and try to give them time to change on their own terms. This is in line with our investment philosophy where we position ourselves as owners of a company rather than short-term investors. We believe that engagement is much more likely to have a positive impact when approached in this manner.

"We are patient with companies and try to give them time to change on their own terms."

Additionally, one aspect that we believe differentiates us from our peers is that we rarely second-guess management when it comes to strategic decisions, such as the launch of a new product or expansion into new markets. We believe that in the majority of cases management is best equipped to make those types of strategic calls. Our investment process places a lot of emphasis on management and assessing its talent and capabilities.

We meet regularly with the companies in which we invest to discuss risks and opportunities relating to ESG. This allows us to share our philosophy on responsible investment, and also to better understand a company's approach to ESG and how this is incorporated into its business practices and management structures. We engage on a case-by-case basis, with portfolio managers filtering ESG information and considering ESG priorities specific to each company.

We supplement our company-specific engagement activities with a targeted approach, focused on select areas where we have built expertise and where we feel we can drive positive change. Examples of focus areas include board diversity, executive remuneration, ESG disclosure, supply chain integrity and climate change. We monitor our engagement efforts through a proprietary engagement tracker.

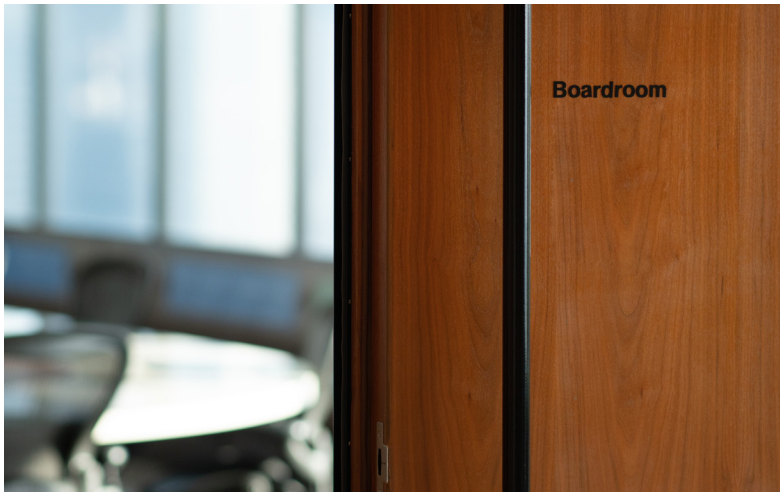
Alongside engaging with companies, we also actively vote our shares across all markets. We work together as a team to discuss and vote proxies carefully. The process includes taking voting action against companies where ESG-related policies or practices have been – and remain – unsatisfactory, or where significant controversies have arisen.

Proxy voting

Our active ownership approach involves engaging in regular dialogue with portfolio companies to ensure that they are delivering positive, long-term investment outcomes for the benefit of their shareholders. There are however instances when we are asked for our votes either at scheduled shareholders events, such as AGMs, or at special meetings where we are called to vote on issues that require more immediate attention. In such cases, proxy voting is a key part of our active ownership, as it provides an important way for us to convey our views to boards and management.

Voting responsibly continues to be part of our fiduciary duty and, as such, is managed with the same care as all other elements of our investment process. One of the key strengths of our proxy voting process lies in its flexibility, allowing us to make our own decisions but leveraging and benefiting from RBC GAM's custom Proxy Voting Guidelines ("the Guidelines"). On receiving ISS notifications on upcoming shareholder meetings, we review all items on the ballot and make our voting decisions independently, based on our own assessment of specific company circumstances and on principles that are in accordance with the Guidelines. These voting guidelines, which have been built by RBC over time, provide an overview of the corporate governance principles we adhere to and offer useful guidance as to how we vote on ESG-related issues.

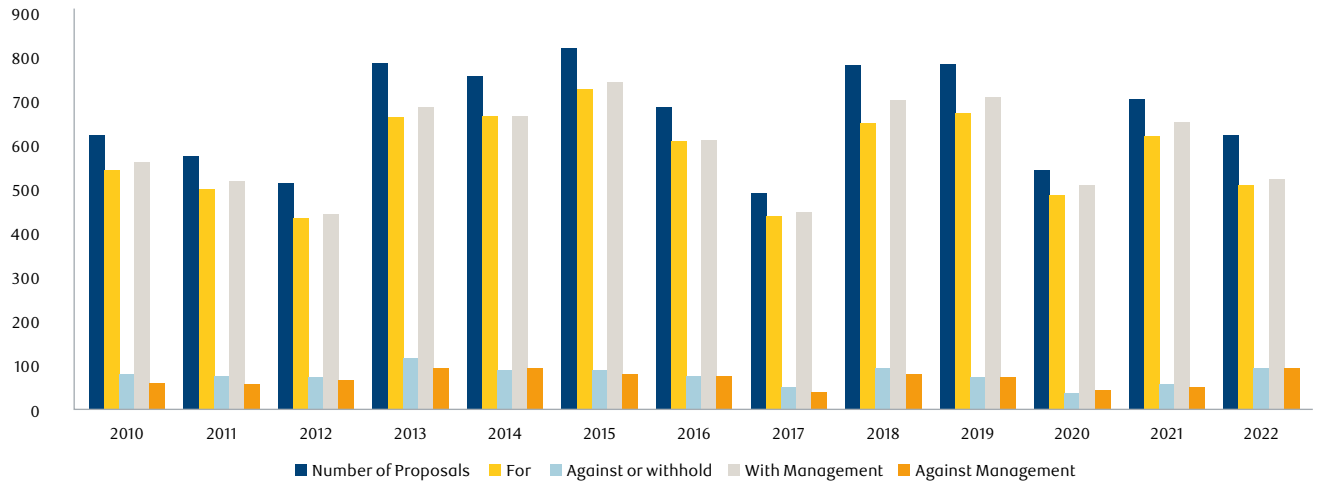
"Our active ownership approach involves engaging in regular dialogue with portfolio companies."



RBC GAM updates and publishes its Guidelines on an annual basis and engages a proxy advisor to implement them in jurisdictions where they are applicable and to make voting recommendations in jurisdictions where they may not be applicable, as is the case in many EM countries. In those instances, while we follow our proxy advisor's regional guidelines, we still review each meeting's items, and we vote based on our own assessment of a company's specific circumstances.

Since inception of the strategy we have voted at 896 meetings for a total of 8,764 proposals, voting against management 913 times (Exhibit 1). While in most cases we agree with the ISS recommendations, there have been instances when we have voted differently from ISS recommendations, based on the knowledge we have of a company. When in doubt, we schedule calls with management in order to seek clarification. An example of voting differently from an ISS recommendation is offered on the following page.

Exhibit 1: RBC Emerging Markets Equity strategy – voting history since inception



Source: RBC GAM. Data as at October 2022.

"Since a decision to invest in a company, at least in part, reflects our confidence in management we often support them on routine matters."

Earlier this year, we voted in favour of a proposal when a Brazilian-listed company in the educational sector proposed the election of a non-independent director to its board for a new term. Our default implementation on this issue is that RBC GAM will leverage the ISS benchmark recommendation[2] against certain non-independent directors. However, following a further review we believed a 'for' vote was warranted, based on the following:

- The board of the company comprised 38% (3/8) women at the time of voting, exceeding RBC GAM's target level of at least 30% participation of women.
  - If that director was to be removed, she would lower gender diversity on the board below our optimal level.
  - We believe that the board would also continue to benefit from more gender diversity.
- The board currently meets our two-thirds required independence.
  - Although the director is considered non-independent, the board is still majority independent and meets our required guidelines.
  - She is considered non-independent because she is the daughter of the founder and owns equity in the business herself. ISS notes that she is a majority owner of the company, but does not provide details as to how much she owns in her own name. As a large shareholder, we actually feel that her interests would likely align well with that of shareholders such as ourselves.

- Although she is new to the board, she is one of the founders of the company and also knows the business very well. During her tenure, the company has built an excellent track record of integrity and strong corporate governance.

As the "Proposal Category" table shows (Exhibit 2), the majority of resolutions target specific corporate governance issues such as approval of directors, accepting reports and accounts, approval of incentive plans and election of auditors. Since a decision to invest in a company, at least in part, reflects our confidence in management, we often support management on routine matters. However, we will not hesitate to withhold our support or oppose management if we believe that it is in the best interests of shareholders and our clients.

Exhibit 2: RBC Emerging Markets Equity strategy – voting statistics since inception

Proposal category	Number of proposals	With management	Against management	% against management
Authorize reissuance of repurchased shares	64	4	60	93.8%
Approve issuance of equity without preemptive rights	212	127	85	40.1%
Approve remuneration policy or report	119	81	38	31.9%
Elect director	2653	2294	355	13.4%
Appoint internal statutory auditors	157	134	20	12.7%
Allow directors to engage in commercial transactions	55	44	5	9.1%
Elect members of audit committee	245	218	27	11.0%
Authorize board to fix remuneration of external auditor(s)	78	75	3	3.8%
Approve remuneration of directors	697	661	31	4.4%
Approve auditors and their remuneration/ratify auditors	415	403	7	1.7%

Source: RBC GAM. Data as at October 2022. With and against votes may not sum up to the total number of proposals as in rare cases a 'Do Not Vote' instruction is submitted.

[2] ISS (issgovernance.com).

ESG engagement case studies

Engaging with companies on ESG-related topics continues to be a critical part of our investment process and this report features some notable engagement examples from 2022.

A large Taiwanese IT company

We engaged with a large Taiwanese IT company on carbon emission targets. In particular, we wanted further clarification on the company's path to its 2030 greenhouse gas ("GHG") emissions and 2050 carbon neutrality targets, and in particular on why the latter falls short of the Science Based Targets Initiative ("SBTi") guidelines. The SBTi is an international partnership between the UN, CDP and WWF, and together these organisations have developed sector-based standards for setting science-based and net-zero targets, and verifying companies' targets against these standards. This provides an independent, third-party verification of the scope, ambition, and temperature alignment of a company's climate targets.

While we do not believe in questioning management on how to manage its business, we felt disclosure on net-zero alignment could be improved. Management explained to us that the company's accelerated business growth and changing demand forecasts have required constant capacity plan adjustments. In addition, the company is working on various projects spanning the use of new materials, machineries and processes that involve hundreds of different parties and suppliers, making it very difficult to break down carbon dioxide ("CO_2") reductions item-by-item. Nevertheless, it remains committed to its roadmap to net-zero emissions, as outlined in its Corporate Sustainability Report ("CSR"), and to reducing emissions within the company and across the supply chain.

"The company expects that its CO_2 emissions are likely to moderately increase until 2025, and then gradually decrease thereafter until the first CO_2 milestone target is reached in 2030."

The explanation above forms the basis of why management has not yet subscribed to the SBTi. This initiative requires companies to consistently reduce carbon emissions from the latest reported period, on a yearly basis. However, company growth has accelerated and the related capacity increase has outpaced the growth of renewable energy supply from the country of operations. The company expects that its CO_2 emissions are likely to moderately increase until 2025, and then gradually decrease thereafter until the first CO_2 milestone target is reached in 2030. The company will continue to evaluate the best timing to commit to the SBTi.

Overall, we felt satisfied by the discussion and will continue to monitor and measure the company's progress in this area.

A small-cap consumer staples company

We engaged with one of our consumer staples small-cap holdings based in Taiwan on ESG disclosure related to supply chain integrity and management of climate change risk. We recently renewed our engagement efforts on ESG disclosure, which have been ongoing over the last few years, as we were given the opportunity to discuss this issue with the new CEO. As we often say, 'engagement requires patience', thus it's unlikely to obtain quick results.

In terms of climate change, the company has put in place many initiatives such as the installation of solar panels in all of its plants, and improvements concerning the recyclability of its packaged products. It has also started to measure energy consumption, water consumption and CO_2 emissions in order to have a baseline, with targets for improving each of these measures by 5-10% per year. These are only some of its initiatives in this area. It is the CEO's view that management needs to focus on improvements within the company before addressing other areas, such as the supply chain. Given its current size, it is not realistic for a domestic small-cap company to spend as much as the larger international companies on auditing suppliers' operations. The company tests the products, which have always passed the most stringent certifications for safety and quality; in addition, it has been working with many suppliers for some decades, which, in the CEO's view, has led to strong relationships and trust. While we recognise that a full CSR may still take time to be produced, we note that the company is keen to do more and we will continue to support and monitor its progress.

An Indian pharma company

This year we engaged with the management of one of our holdings in the Indian generics space on its carbon emissions targets. As far as we are aware, it is the only Indian pharma company to have announced targets for achieving net-zero by 2030, a 12.5% reduction in indirect carbon emissions by 2030 and water positivity by 2025. Given its ambitious targets, we engaged so that we might understand how feasible these targets are and to ensure that greenwashing does not play a part. What gives us confidence that its targets are feasible is the fact that management recently reviewed its initial interim goals, making them bolder, and aiming to be 100% renewable reliant by 2030 and carbon neutral in its direct operations by 2030.

Furthermore, this year the company announced social and governance goals for the first time, showing greater commitment to an ESG strategy. Over the years, the company has been recognised by global institutions for its work on ESG. It has committed to doing much more and it constantly review its commitments, as the extent of actions that can be taken becomes apparent.

A Mexican bank

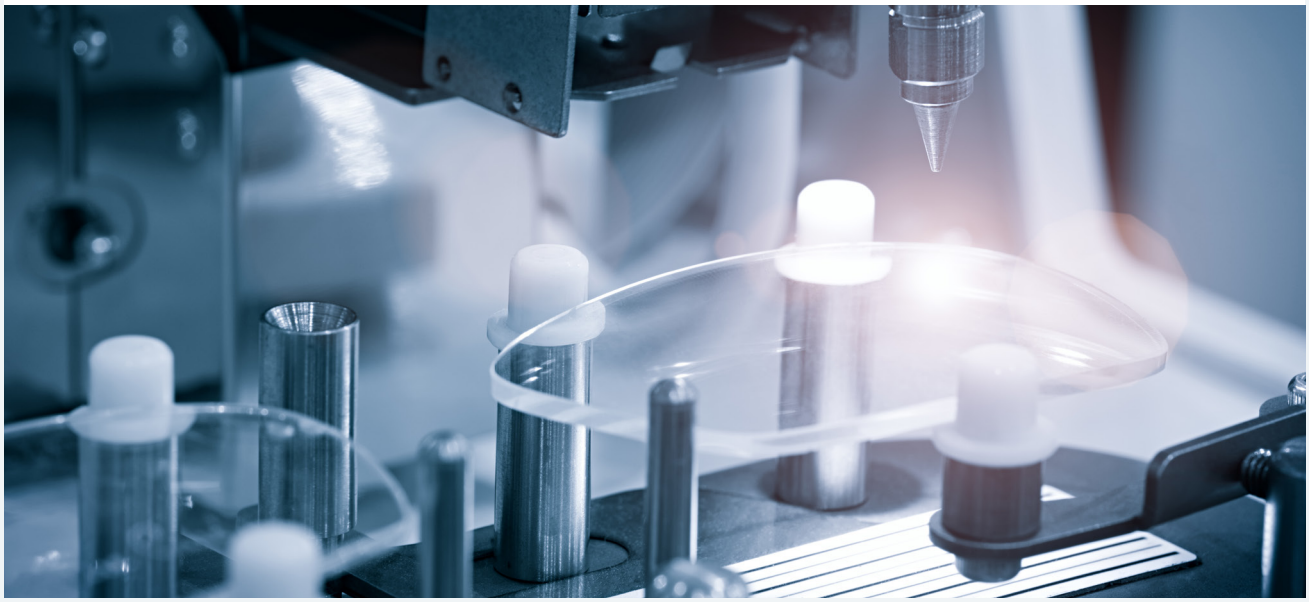
We engaged with the management team of a Mexican bank on stakeholder relationships and, in particular, employee engagement. Sustainability is embedded within all areas of the bank, and from a social perspective, the bank strives to do everything it can to take care of employees and provide the right environment for them to succeed. Steps that the bank has taken to look after employees and stakeholders include paying the highest possible wages, focusing on boosting the participation of women within the workforce, establishing programmes to mentor small businesses, and making concerted efforts to integrate family life into working at the bank. We will continue to engage with the bank on its progress within these areas.

A Chinese pet food company

We engaged with a Chinese pet food company around supply chain management. Supply chain management is crucial to pet food manufacturers as it is closely linked to product quality, as well as safety. We were impressed with the company's in-house product tracking system which monitors the entire production process, from the purchase of raw materials to delivery of finished products. The company has passed the strictest requirements on environmental management and food safety, and has received certificates accordingly. We believe this is one of its key competitive advantages and creates higher barriers to entry. Moreover, the company has an established product recall process to ensure timely recall of faulty products as well as to minimise associated financial, legal and reputational risks. The supply chain process is managed by the company's executive deputy general manager who has more than two decades of experience working in the pet food space. Overall, we were pleased with the outcome of our engagement.

A Chinese optical manufacturer

We engaged with a leading optical manufacturer in China on its net-zero strategy, following a recent questionnaire we conducted across our portfolio companies. While the majority of our holdings scored well, we identified this company as a relative laggard in relation to its strategy and emissions-related targets. Management confirmed that they are currently in discussions concerning a net-zero plan with interim targets which they will publish next year as the company plans to issue a green USD bond. We will continue to monitor and engage with the company.



Biodiversity and nature loss – the next big ESG issue?

Biodiversity and nature loss are issues that have started to climb global agendas, with COP15, the UN conference on biodiversity, concluding in Montreal in December 2022. Awareness has also started to increase within the investment community, with biodiversity and nature loss having arguably flown under the radar until relatively recently. The various links between biodiversity, nature loss and other environmental issues make it a difficult area to easily assess, and understanding and policy on the subject continue to evolve. This section of our report aims to define biodiversity, outline its impact, and explain why we believe these areas will become ever more financially material to investors, particularly within EM.

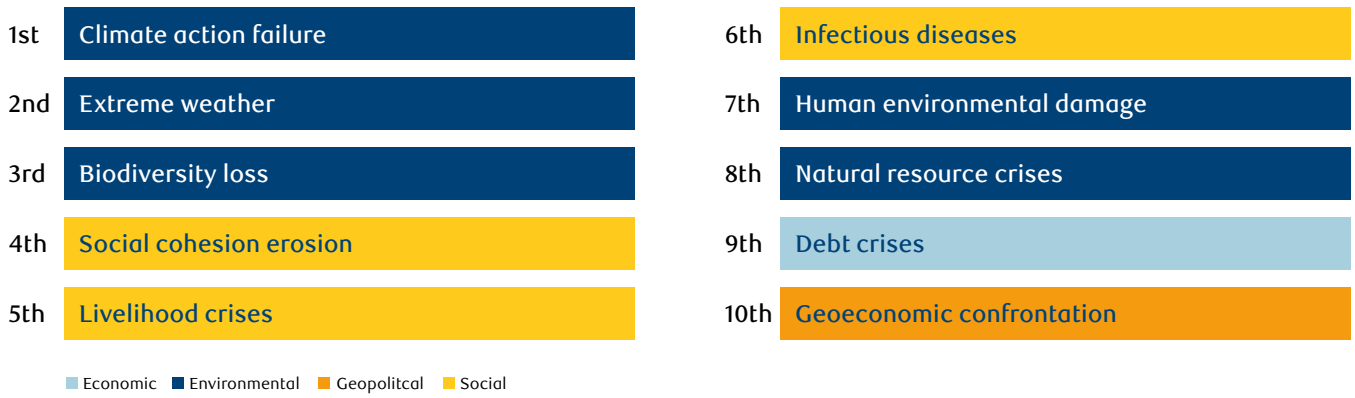
"The various links between biodiversity, nature loss and other environmental issues make it a difficult area to easily assess."

Biodiversity can be defined as the variety of all living material on Earth, including flora and fauna, as well as bacteria, fungi and natural ecosystems[3]. The Dasgupta Review[4] frames biodiversity as a characteristic of natural capital, which is the Earth's stock of renewable and non-renewable natural sources. Maintaining good biodiversity is vital to maintaining high-quality natural capital. With over half of the world's GDP moderately or highly dependent on nature and its services, and with all businesses reliant on natural capital in some form, it is a more important topic than many have realised to date[5].

Biodiversity plays a crucial part in the maintenance of healthy and diverse ecosystems that underpin key global industries. Animal pollination and soil fertility both rely on robust ecosystem health, which itself relies on biodiversity; the removal of one component can undermine the entire ecosystem. Biodiversity also helps regulate global climates as a vital characteristic of healthy forest and marine ecosystems, enabling them to continue absorbing CO_2 and excess heat. In 2020, for the first time, the World Economic Forum's ("WEF") Global Risks Report identified all of the top five global risks (in terms of likelihood) on a forward-looking 10-year basis as being nature related. Biodiversity loss featured in this list, and 2022's report showed respondents considered it a top three risk in terms of impact (Exhibit 1).

Unfortunately, current biodiversity and nature loss trends are not favourable. At the current rates of depletion, global farmland will deplete in just 65 years, and rainforest within 200 years[6]. Another alarming indicator is The Living Planet Index, which tracks the abundance of circa 21,000 populations of vertebrates globally. While this data treats population size rather than diversity, and focus solely on fauna rather than all ecosystem participants, it helps to demonstrate the extent of negative natural trends and can act as a barometer for declining overall ecosystem health. Headline data shows a 68% decrease in average population size from 1970 to 2016[7]. There are significant variations across geographies, but EM have borne the brunt of this population loss; while Latin America & the Caribbean show particularly stark impacts, all regions show troubling but unsurprising downward trends.

Exhibit 1: "Most severe risks on a global scale over the next 10 years"



Source: Global Risks Report 2022, World Economic Forum, accessed June 2022.

[3] RBC GAM, "Making connections: Biodiversity and climate change", October 2021.
[4] The Dasgupta Review is a 2021 report commissioned by the UK Treasury into biodiversity's economic impact.
[5] The Dasgupta Review, UK Government, August 2021.
[6] Bank of America research, BBC, Global Friends, June 2022.
[7] Living Planet Index, WWF, Living Planet Report 2020.

The bulk of nature loss is attributable to human activity, which has meaningfully altered 75% of land and 66% of marine environments[8]. According to the WEF, five key drivers have underpinned nature loss in the last 50 years:

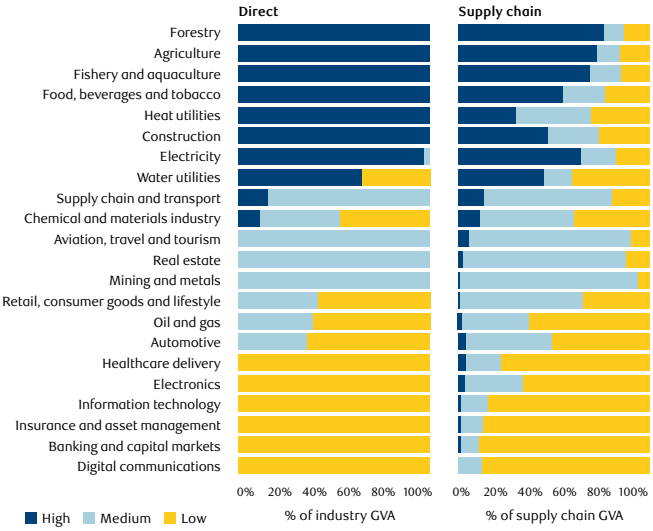
- Land and sea use change,
- Climate change,
- Natural resource use and exploitation,
- Pollution,
- Invasive alien species.

Biodiversity is one form of nature-related risk, and various industries are dependent on biodiversity and nature. Construction and the food and beverage industry are both heavily biodiversity-dependent sectors, and many other sectors are reliant either directly or through their supply chains on biodiversity, as outlined in Exhibit 2.

The agriculture and fishing sectors, two industries with heavy EM involvement, are among the most dependent, and have played key roles in worsening biodiversity and nature loss trends both through their impact on nature and dependency on it. Deteriorating insect diversity and populations meaningfully impact the agriculture industry, with three-quarters of human-grown crop types pollinated by insects, and creating healthy soil ecosystems with robust biodiversity is important to supporting agricultural yields. Any negative impacts on agriculture and food are particularly keenly felt in EM where food vulnerability can be high, as seen earlier this year following the Russia-Ukraine crisis and its impact on wheat availability[9]. Even fertiliser usage degrades soil quality and detrimentally affects biodiversity. With over half of the world's habitable land used for agriculture[10], impacts are wide reaching and severe.

Ocean biodiversity supports the livelihoods of approximately 3 billion people worldwide[11]. It is also vital to sustaining the ocean's absorption of 30% of human-produced CO_2 and 90% of excess heat in the climate system[12], and has been heavily impacted by fishing practices, including through the amount of unintended fish and other marine life. This is the "bycatch", caught while trying to catch specific types of fish for consumption by over three billion people globally. Fish makes up 20% of average animal protein intake; in Asia, this figure rises to 50%[13]. 80% of international goods trade is also carried by sea[14], with this percentage even higher in EM.

Exhibit 2: Percentage of direct and supply chain Gross Value Added with high, medium and low nature dependency, by industry



Source: University of Cambridge Institute for Sustainability Leadership (CISL 2020). Biodiversity Loss and Land Degradation: An Overview of the Financial Materiality, 2020.

Trade vessel movement destabilises marine ecosystems, both through pollution and by carrying species from their native marine areas which can disrupt new habitats[15]. Displacement across terrestrial environments also encourages the spread of zoonotic diseases, diseases that are transmitted from animals to humans, with the two brought into closer and more regular contact as animal habitats degrade and disappear. Avian flu, swine flu, SARS and Covid-19 are prominent examples, and EM demographics, including the high number (circa 1 billion) of livestock keepers, mean that EM populations face the bulk of this risk too.

It is vital to recognise that biodiversity is closely entwined with other environmental issues. Water consumption and waste management are two such issues, but foremost among these is climate change. Climate change and biodiversity are inherently linked and have reciprocal impacts on each other; examples include the impact of sea level rises caused by global warming on biodiversity through population loss and habitat degradation, and deforestation's impact on CO_2 levels in our atmosphere, both through increased emissions and reduction of future carbon capture capabilities[16]. This table from RBC GAM's Corporate Governance and Responsible Investment ("CGRI") team outlines the key interdependencies (Exhibit 3).

[8] Scarcity Primer, Bank of America Research, February 2022.
[9] The looming food crisis in EM.
[0] UN FAO, Our World in Data, Bank of America Global Research, accessed September 2022.
[11, 12, 13, 14, 15] Scarcity Primer, Bank of America Research, February 2022.
[16] Jones, A., Allison, R., Bedenham, G., Bharadwa, B., Clyde, J., Darsley, A., & Spencer, N. (2022). The importance of biodiversity risks. British Actuarial Journal, 27, E9, accessed September 2022.

Exhibit 3: Impacts of biodiversity on climate change and vice versa

Impacts of biodiversity on climate change	Impacts of climate change on biodiversity
▪ Biodiversity is important for carbon sequestration with carbon stored in trees, soil, peatlands and other terrestrial landmasses. ▪ Marine ecosystems play an important role in absorbing emissions and heat, thereby helping to mitigate climate change. ▪ Healthy and biodiverse ecosystems improve the ability to adapt and be resilient to natural disasters. For example, floodplains and wetlands offer protection from floods; coral reefs, seagrass and mangroves buffer coastlines from waves and storms; forested slopes protect against landslides, and more.	▪ Rising temperatures and changes in precipitation shift animal and plant habitats, growing seasons, and population size, leading to species die-off and extinctions. ▪ Ocean warming and acidification affects fisheries, coral reefs and other marine life upon which businesses and communities depend. ▪ Changing climate patterns lead to an increasing frequency of pest and disease outbreaks. ▪ Climate change affects the diversity of crops, yields and growing seasons with significant potential impacts on the agriculture sector and global food security.

Source: RBC GAM, "Making connections: Biodiversity and Climate Change", October 2021.

Worryingly, biodiversity and nature loss have shorter timeframes for impact than climate change, where action is needed in the short term but most outcomes are mid to long term in nature; the need for action on both fronts is pressing. There is likely to be significant commonality between solutions for climate change and biodiversity-related issues, and as investor focus on climate change-related issues continues to grow, focus on biodiversity and nature loss, and how to mitigate it, will grow in tandem. There are instances, however, where solutions for one issue can exacerbate the other; one example is wind and hydro power generation, which reduces reliance on non-renewable energy sources and reduces GHG emissions outputs but simultaneously disrupts ecosystems and impacts biodiversity where the facilities are built.

From an awareness standpoint, biodiversity and nature loss-related issues, including species loss and extinction, were among the main reasons for climate-change awareness becoming more widespread and climate-related activism increasing. With momentum particularly strong amongst younger generations, and given the youthful demographics within many EM countries, we expect increasing numbers of EM consumers to make nature-conscious choices, including where they work and what they buy, providing an additional incentive for companies with EM exposure to be proactive, and for EM governments to pay close attention.

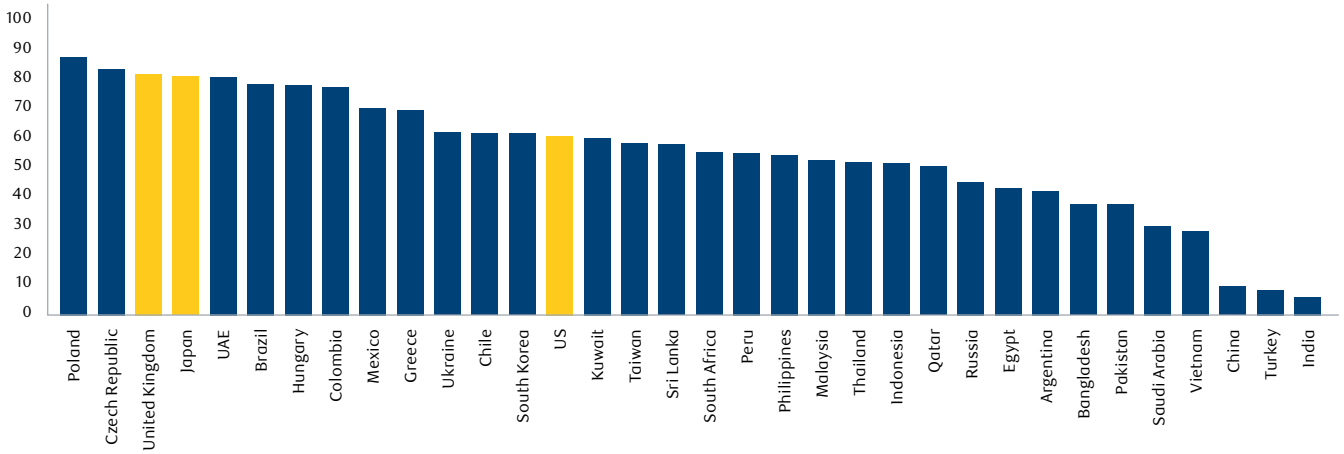
"Geography and location form integral components of biodiversity-related risk."

One of the biggest challenges to reversing negative biodiversity and nature loss trends is that at present, most companies do not publish biodiversity and nature-related data. There is currently no standardised set of metrics or reporting framework for companies to use. In addition, unlike climate reporting, which has largely coalesced around carbon emissions data, there has been no single metric that neatly encapsulates biodiversity and nature-related performance or impact. Tools are starting to emerge, however, such as the ENCORE ("Exploring Natural Capital Opportunities, Risks and Exposure") tool to enable businesses to understand their impacts and dependencies on data, and progress is being made.

Data is better at country level. Geography and location form integral components of biodiversity-related risk, and it is worth noting that EM bear a significant portion of the world's biodiversity risk in terms of their geography and natural composition. In countries such as Brazil and Indonesia, which have abundant rainforest and, in Indonesia's case in particular, an abundance of different native species, the likelihood of nature-related risk incidents, through deforestation and other channels, is high. Of the ten countries in the world with the highest count of registered biodiversity risk incidents in 2021, six were within EM; Indonesia and Mexico had the highest proportion of biodiversity risk incidents, and Brazil had the highest count of biodiversity risk incidents anywhere in the world[17].

[17] RepRisk, "Biodiversity risk by the numbers", February 2022

Exhibit 4: Yale – biodiversity and habitat issue score



Source: Biodiversity and Habitat issue score, Yale Environmental Index, accessed June 2022. Includes EM countries (blue) and selected DM countries (yellow).

It is also worth noting that countries with large populations, such as China and India, face commensurately large challenges when trying to control natural resource use and preserve natural capital. One example of a nature-based index that provides country-level data is Yale's 'Environmental Index' (Exhibit 4). Its specific 'biodiversity and habitat issue score' represents an assessment of countries' actions towards retaining natural ecosystems and protecting biodiversity within their borders[18]. 180 countries have been scored, and while EM countries such as Poland (5th) and Brazil (35th) score well, China (174th) and India (179th), the two biggest EM populations and economies, are shown to be among the worst scorers, and have seen their scores deteriorate[19]. Poland's strength is in part attributable to the lack of loss of natural habitats in spite of its levels of coal usage, and Brazil benefits from the sizeable protected areas of rich biodiversity within its borders, in spite of ongoing deforestation. China and India, however, are populous and growing nations facing significant environmental issues, including pollution and toxic emissions. With large portions of the world's nature and biodiversity existing within EM, the opportunities and risks facing the region are high.

Policy changes will be vital to witnessing improvement in biodiversity and nature loss trends. One potential catalyst for this is the post-2020 Global Biodiversity Framework, which is being worked on as part of COP15. COP15's goals include outlining a 10-year plan to slow and reverse nature loss, and a key focus will be the finalisation and implementation of this framework. The United Nations Climate Change Conference, otherwise known as COP26, focused on climate change and achieved global news headlines when it was held in November 2021 in Scotland. If pressure and policy on these issues follow the same trajectory as with climate change, we could start to see significant developments and country-level commitments to reversing negative trends. From an EM perspective, it is positive that China, having established its Kunming Biodiversity Fund during part one of COP15, is president of this meeting. Over 100 nations have now committed to preserving 30% of nature by 2030, and if policy follows these commitments, this will create considerable transition risks and opportunities.

Other initiatives that will increase focus on biodiversity and nature loss include the UN Sustainable Development Goals ("SDGs"); two of the SDGs, Goals 14 ('Life Below Water') and 15 ('Life On Land') have close ties to biodiversity, and focus on achieving these goals will continue to gather momentum. Initiatives that link financial and natural metrics are also growing in number, including China's 'Gross Ecosystem Product' metric, and if metrics like these become more widespread, we may start to see nature and natural capital being viewed as important elements of a country's security and health[20]. Regulatory scrutiny continues to increase, with the Sustainable Finance Disclosure Regulation ("SFDR") incorporating biodiversity-related assessment within its scope as a principal adverse impact, and French financial institutions are now required under Article 29 to disclose both biodiversity and climate-related risks, along with strategies to reduce biodiversity-related impact. Similar regulation is likely to follow elsewhere.

[18] Countries are assessed based on seven indicators, including terrestrial biome protection, marine protected areas, and species protection.
[19] Yale Environment Index, accessed June 2022.
[20] Going Beyond GDP: A Deep Dive into Beyond GDP Indicators, Jefferies; accessed September 2022.

Lack of disclosure at a corporate level needs addressing, and there are clear parallels emerging between the progress of efforts to combat biodiversity and nature loss and the efforts to combat climate change. Nowhere is this more apparent than through the Taskforce for Nature-Related Financial Disclosures ("TNFD"). Most investors will be aware of the Taskforce for Climate-Related Financial Disclosures ("TCFD"), which has rapidly gathered momentum in the last few years. While the TCFD's focus is primarily on climate and carbon emissions, the TNFD will encompass broader nature-related risks, aiming to standardise definitions and provide a framework for companies to disclose using, based on its "LEAP" assessment model. The LEAP model[21] encourages companies to:

Locate their interfaces with nature,
Evaluate their dependencies and impacts,
Assess their risks and opportunities, and
Prepare to respond to nature-related risks and opportunities and report.

Location of operations is a primary area of scrutiny, and companies will need to heighten focus on the location and impact of their supply chains. With many companies having significant portions of their supply chain based within EM, countries and companies in the region will face close examination. The TNFD is currently in beta phase, with a view to finalising and rolling out its reporting framework for companies to use in 2023. The TNFD's stated aim is to operate alongside the TCFD, which is mandatory for UN PRI signatories. If the trajectory of the TNFD and nature-related reporting follow that of the TCFD and climate-related reporting, combined with increasing focus from governments, central banks and other bodies, it is likely that biodiversity and nature loss will sit prominently within reporting for corporates and investors across a number of jurisdictions. Companies will be compelled to publish data on their nature-related risks and opportunities, and to incorporate consideration of these factors within their planning and operations.

"From an investment perspective, the current lack of company level, nature-related disclosure means that thoughtful engagement with companies is imperative to understanding the risks and opportunities that businesses face on this subject and how they approach them."

We believe that investors are likely to follow a similar path on biodiversity and nature loss to when climate change emerged as a critical issue, with risk-based assessments leading to laggards that perform poorly on nature-based criteria being penalised, prior to companies that perform well being rewarded. Key risks come in three areas, 1) physical risks through worsening environmental conditions, 2) transition risks including increased costs to address environmental changes, and 3) liability risks in the event of environmental damage[22]. Each of these are significant, and businesses looking to operate sustainable franchises over the long-term will have no choice but to integrate the assessment of biodiversity-related risks into their planning and processes.

From an investment perspective, the current lack of company level, nature-related disclosure means that thoughtful engagement with companies is imperative to understanding the risks and opportunities that businesses face on this subject and how they approach them. Engagement has always been integral to our investment process, and we have started to engage with our investee companies on biodiversity and nature loss. While the issue is nascent for many companies, we have been pleased to see that some have already started to think and act meaningfully on this issue, including around the introduction of policies, biodiversity-related audits and inspections of high-risk areas of operation, and reporting on biodiversity impacts and dependencies as part of their CSR reporting. We have taken the decision to formally integrate considerations of biodiversity and nature loss within our investment process, specifically including it as part of our consideration of environmental risks within the detailed investment checklist of nearly 80 questions that we complete for each of the companies we own and which we use to analyse our investments. We are also heartened that many of the areas that intersect with biodiversity and natural capital, including climate change and GHG emissions, water usage, waste management and supply chain management, have been part of our analysis of, and discussions with, the companies we invest in for some time.

Summary

We believe that biodiversity and nature loss will become high-profile focuses for the global financial community. With increasing nature-related regulation and initiatives, including the TNFD, it will become incumbent on companies and investors to think meaningfully about these issues and the associated risks and opportunities they face. The importance of the issue in EM is clear, and we look forward to continuing to develop our work and engage with our investee companies on this important topic.

[21] A version of LEAP has also been readied for financial institutions. Source: The LEAP Nature Risk Assessment Approach, TNFD Global Framework, accessed September 2022.
[22] University of Cambridge Institute for Sustainability Leadership (CISL), 2021.

Our portfolio's net-zero alignment

We support the global goal of achieving net-zero emissions by 2050 or sooner, as set out in the Paris Agreement and confirmed at COP26. As part of this commitment, we have made measuring and monitoring the carbon footprint and net-zero alignment of our RBC Emerging Markets Equity portfolio ("the portfolio") a key focus of our ESG integration efforts.

RBC GAM has invested considerable resources in improving access to third-party climate data for portfolio management teams, and we have worked closely with our colleagues in the CGRI team to incorporate this climate data into our portfolio analysis.

We recognise, however, that methodologies for measuring the carbon footprint and net-zero alignment of investment portfolios are still in development, and the quality and availability of climate data is limited, especially for smaller-cap EM names. Consequently, we have also conducted our own investigation into the climate change performance and policies of all of the holdings in our portfolio, in order to assess the quality of the GHG emissions reduction targets and net-zero action plans of our investee companies. The goal of this is to identify areas of weakness that we can engage on with management.

"To measure our portfolio's carbon emissions, we need to be able to identify and quantify the emissions associated with the underlying issuers."

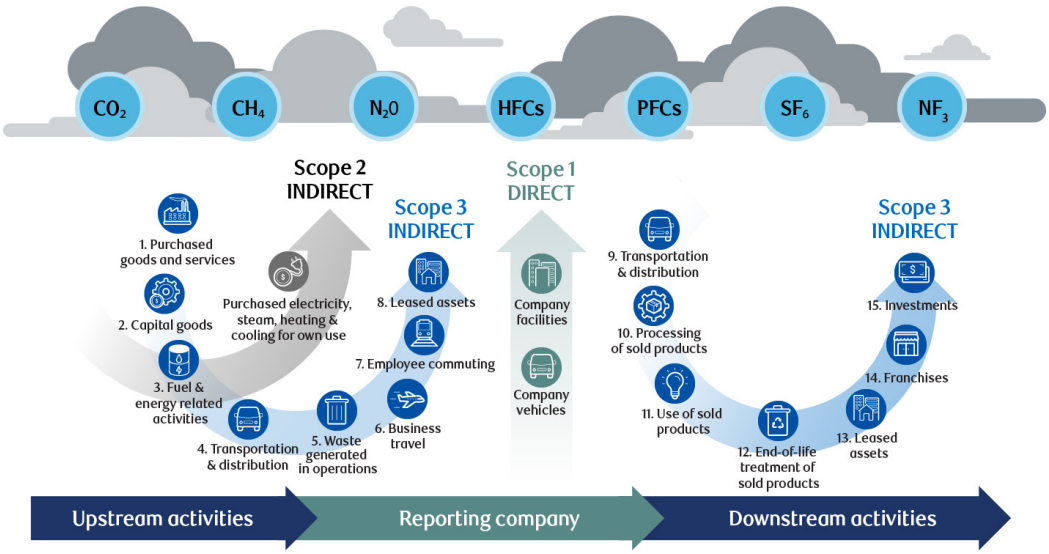
Measuring the carbon footprint of our holdings

There are, in fact, seven GHG emissions mandated under the Kyoto Protocol, which contribute significantly to climate change. Each of these gases has a different global warming potential ("GWP") – the amount of heat they hold. CO_2 is the most abundant GHG emission, which is why it is used as the unit of measure for GHG emissions analysis. All other GHG emissions are converted into carbon dioxide equivalents ("CO_2e") based on their GWP. Therefore, the metric "tons of CO_2e" is inclusive of all GHG emissions. References below to carbon emissions are to CO_2e.

To measure our portfolio's carbon emissions, we need to be able to identify and quantify the emissions associated with the underlying issuers. This, in turn, requires us to identify who owns or has responsibility for each molecule of emissions released by that issuer. Each emissions category, or 'scope', is described below and illustrated in Exhibit 1.

- **Scope 1:** emissions that occur directly from sources owned or controlled by the reporting company. This may include company-owned manufacturing facilities or vehicles.
- **Scope 2:** emissions from the generation of electricity, steam, heating and cooling that are purchased and consumed by the reporting company.
- **Scope 3:** emissions from sources not owned or controlled by the company. Rather, they occur throughout their value chain. This includes upstream activities (e.g. within a company's supply chain) and downstream activities (e.g. through the use of a company's products or services).

Exhibit 1: Scope 1, 2 and 3 activities



Source: RBC GAM.

When analysing Scope 1, 2 and 3 emissions, there are certain aspects to keep in mind:

- **Scope 1 emissions** are driven largely by the industry of an issuer, as the activities and outputs of some industries produce more emissions than others. It's important to bear this in mind when comparing Scope 1 emissions across portfolio companies, as it is often more informative to do so across sector/industry peers. This also means that a portfolio's sector and industry weights can have a significant impact on its overall emissions profile.

- **Scope 2 emissions** are driven by the carbon intensity of the electricity grid in the region(s) in which a company operates, as well as by a company's industry. A company operating in a region where power generation is largely coal-based will have higher Scope 2 emissions than a company operating in a region with more low-carbon power generation. In addition, certain industries, such as a steel manufacturer, will produce more Scope 2 emissions than, for example, a consumer staples company due to its energy-intensive smelting process.

- **Scope 3 emissions** are not reported in a comprehensive, consistent and comparable way by companies. As a result, in order to analyse and compare Scope 3 emissions within a portfolio or a benchmark, estimated emissions are used. This allows for an 'apples-to-apples' comparison across sectors and a portfolio.

- Double counting arises when emissions are aggregated across sectors or portfolios. Double counting refers to the overlap of emissions that occurs due to the fact that one company's Scope 1 and 2 emissions are another company's Scope 3 emissions. For example, the Scope 3 emissions from 'use of products' from an auto manufacturer (i.e. combustion of gasoline) are the Scope 1 emissions for a delivery company that uses the vehicles from the manufacturer.

As a result, when aggregating emissions at a portfolio level, it is more accurate to report the Scope 1 and 2 emissions of the investee companies separately from the Scope 3 emissions of issuers. Consequently we have decided to focus on Scope 1 and 2 in this report.

Measuring our portfolio's carbon intensity

Measuring the carbon emissions of an investment portfolio involves identifying the emissions associated with each holding and then quantifying and aggregating the portfolio's ownership of those emissions.

This analysis can be useful for two reasons:

- To determine the portfolio's contribution to climate change, by understanding what fair share of emissions are 'owned' by the portfolio through its investments.
- To identify current or potential risks due to the transition to net-zero, such as asset stranding, cost increases from carbon pricing, or impacts on revenue due to changing consumer preferences.

"Measuring the carbon emissions of an investment portfolio involves identifying the emissions associated with each holding."

There are a number of metrics used to measure the carbon intensity of an equity portfolio (Exhibit 2). All use tons of CO_2e as the numerator, but different denominators to weight each holding's associated emissions within the overall portfolio. Of the measures detailed below, our preferred one is the 'Weighted Average Carbon intensity (Tons CO_2e/USDm Sales)' for two reasons. Firstly, using weighted average is an intuitive allocation of emissions that we can take into account when sizing positions in our portfolio. Secondly, unlike 'Tons CO_2e/EVIC' or 'CO_2e/USDm invested', which are sensitive to market moves and valuations, using 'Tons CO_2e/USDm Sales' is a better measure of carbon emissions relative to the company's underlying economic activity, as measured by its sales.

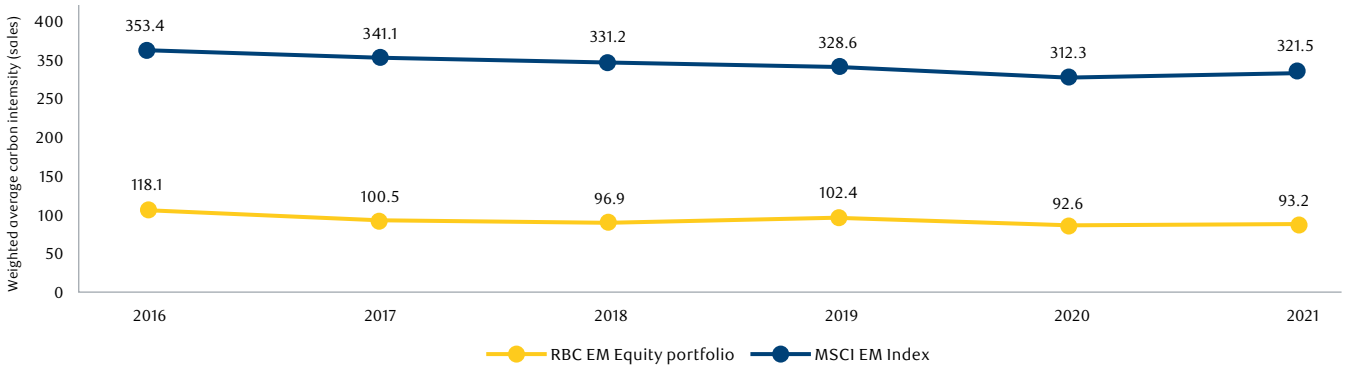
'Weighted Average Carbon Intensity (Tons CO_2e/USDm Sales)' is therefore the main measure we monitor when comparing the carbon intensity of our portfolio against our benchmark, and also when we track the reduction of carbon intensity over time.

Exhibit 2: Carbon footprint and weighted average carbon intensity

	Carbon footprint (Carbon emissions may be normalized based on different financial metrics)		**Weighted average carbon intensity (WACI)** (Carbon emissions analysis based on portfolio weights)	
Metric	**Carbon intensity** (tCO_2e / $M sales)	**Carbon emissions per dollar invested** (tCO_2e / $M invested)	**WACI (Sales)** Tons CO_2e / $M sales	**WACI (EVIC)** Tons CO_2e / EVIC
Calculation	$\frac{\sum_n^i \left[\frac{\$investment\ i}{issuer's\ EVIC\ i} * issuer's\ emissions\ i\right]}{\sum_n^i \left[\frac{\$investment\ i}{issuer's\ EVIC\ i} * issuer's\ \$M\ sales\ i\right]}$	**Carbon emissions =** $\sum_n^i \left[\frac{\$investment\ i}{issuer's\ EVIC\ i} * issuer's\ emissions\ i\right]$ **Normalized value per $M=** $\frac{Carbon\ Emission}{Total\ Market\ Value\ of\ Port\ (or\ Bench)in\ millions}$	$\sum_n^i \left[\frac{Current\ value\ of\ investment\ i}{Current\ Portfolio\ Value} * \frac{Issuer's\ emissions\ i}{issuer's\ \$M\ sales\ i}\right]$	$\sum_n^i \left[\frac{Current\ value\ of\ investment\ i}{Current\ Portfolio\ Value} * \frac{Issuer's\ emissions\ i}{issuer's\ EVIC\ i}\right]$
Question answered	**How much carbon emissions does my portfolio generate for every $M sales?**	**How much carbon emissions are generated by my portfolio for every $M invested?**	**What is my portfolio's exposure to carbon-intensive companies?**	**What is my portfolio's exposure to carbon-intensive companies?**
Description	▪ This figure provides a view on the carbon efficiency of portfolio companies' operations. ▪ Scope 1 and Scope 2 GHG emissions are allocated to investors based on issuers' total capital structure.	▪ This figure provides a view on the share of carbon emissions that an investor is responsible for. ▪ Scope 1 and Scope 2 GHG emissions are allocated to investors based on issuers' total capital structure.	▪ This figure provides a view on the portfolio's exposure to carbon-intensive companies – offering a gauge of carbon efficiency in terms of output. ▪ Scope 1 and Scope 2 GHG emissions are allocated based on portfolio weights.	▪ This figure provides a view on the portfolio's exposure to carbon-intensive companies – offering a gauge of carbon efficiency in terms of enterprise value. ▪ Scope 1 and Scope 2 GHG emissions are allocated based on portfolio weights.
Considerations **+ Pros** **- Cons**	+ Metric may be used to compare portfolios to one another and/or to a benchmark. + Metric takes into account differences in the size of companies (providing a view on the carbon efficiency of companies). – Using sales to normalize the data tends to favor companies with higher pricing levels relative to their peers. – Does not take into account the inventories produced during the year. – May be volatile and influenced by non-climate related factors (e.g. business cycles and inflation.) – Intensity based on sales may not be perfectly comparable across industries.	+ Metric may be used to compare portfolios to one another and/or to a benchmark. + Simple and easy to communicate to investors. – Metric does not take into account differences in the size of companies (e.g., does not consider the carbon efficiency of companies). – Given that the market value of the portfolio is used in the equation, this metric can be sensitive to fluctuations in financial markets. For instance, a sharp and sudden decline in markets may reduce the value of a portfolio. This would result in a higher level of carbon emissions per dollar invested even though actual emissions produced by issuers have not changed.	+ Metric can be more easily applied across asset classes (i.e. equity and corporate fixed income) since it does not rely on equity ownership approach. + Simple and easy to communicate to investors. – Metric is sensitive to outliers. – Using sales to normalize the data tends to favor companies with higher pricing levels relative to their peers. – Doesn't take into account inventories produced during the year but not yet sold. – May be influenced by non-climate factors (e.g. business cycle and inflation). – Intensity based on sales may not be perfectly comparable across industries.	+ Metric can be more easily applied across asset classes (i.e. equity and corporate fixed income) since it does not rely on equity ownership approach. + Simple and easy to communicate to investors. – Metric is sensitive to outliers. – Does not reflect a company's operational activities. – May mischaracterize companies with a higher enterprise value than their peers as carbon-efficient. – Due to its reliance on financial market values, shifts in market prices could increase or decrease emissions intensity, even with no changes in real world emissions or organizational processes.
Used by:	– TCFD Recommendations (supplemental guidance for asset managers).	✓ TCFD Recommendations (supplemental guidance for asset managers).	✓ TCFD Recommendations (supplemental guidance for asset managers).	✓ EU Technical Expert Group on Sustainable Finance.

Source: RBC GAM.

Exhibit 3: Weighted average carbon intensity (USDm sales)[23] trend of current holdings



Source: RBC GAM.

Our portfolio's carbon intensity over time

Exhibit 3 shows the carbon intensity of our portfolio since 2016. It is important to note that this chart shows the historical carbon intensity using current holdings as we want to measure the reduction in carbon intensity of our current portfolio, rather than our historical portfolio, to better gauge what the future trend may be.

The first point to note is that on this measure the carbon intensity of the portfolio is significantly lower than that of the MSCI EM benchmark, measuring 93.2 tons CO_2e/USDm sales in 2021 versus the benchmark's 321.5. The second is that the carbon intensity of the *current* portfolio has fallen from 118.1 to 93.2 CO_2e/USDm sales, a reduction of 21.1% in the last five years.

The much lower carbon intensity of the portfolio is a direct result of our ESG integration in our bottom-up investment process. As part of our checklist, we have a number of questions about the environmental impact of a company's activities and the use of its product and services, as well as a question specifically on carbon intensity and net-zero. The portfolio's carbon intensity is also helped by its zero weight in the energy sector and large underweight in the materials sector, which is an indirect outcome of our investment process.

Science-based and net-zero targets

Carbon emission reduction targets can vary significantly based on the scope of emissions included, the ambition of the emissions reductions, and the company's likelihood of achieving the target. It is for these reasons that verified targets that meet an established standard are preferable in order to increase comparability.

However, we also recognise that not all issuers choose to apply a voluntary standard, such as the one established by SBTi which sets standards and independently verifies targets. This is especially the case for issuers in EM, which is why we track and monitor both the SBTi and non-SBTi carbon emissions reduction targets in our portfolio.

Our portfolio's net-zero alignment

Exhibit 4 shows the portfolio's current net-zero alignment, based on the following criteria:

- **Portfolio temperature alignment:** this is a modelled, forward-looking metric that provides an indication of the temperature pathway that our portfolio aligns to. This metric indicates what the global temperature rise would be in 2100, if the global economy was identical to our portfolio[24].

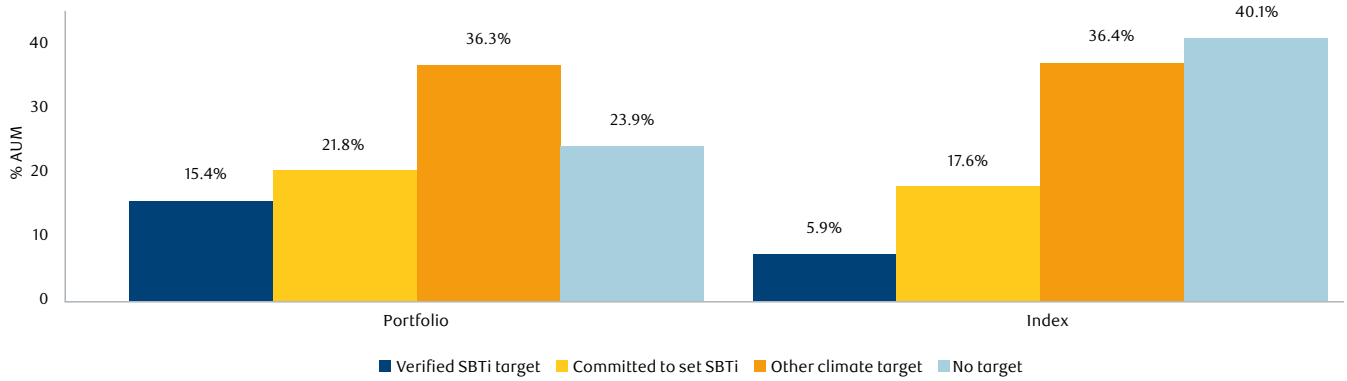
Exhibit 4: Net-zero alignment summary[25]

Type	Portfolio temperature alignment (°c)	% AUM aligned to below 2°c	% AUM with verified or committed SBTi target	% AUM with any climate target
RBC EM Equity portfolio	2.3	48.4%	37.3%	73.6%
MSCI EM Index	3.4	34.4%	23.5%	59.8%

Source: RBC GAM (for RBC EM Equity portfolio) and MSCI. Data as at 30 September 2022.

[23, 24] MSCI ESG Climate Change Metrics, 30 September. 2022, MSCI®.
[25] Temperature alignment and climate targets data from MSCI ESG Climate Change Metrics, 30 September 2022, MSCI®, Data on science-based and net-zero targets is from SBTi, as at September 30, 2022, https://sciencebasedtargets.org/companies-taking-action.

Exhibit 5: AUM by climate target type



Source: RBC GAM (for RBC EM Equity portfolio) and MSCI. Data as at 30 September 2022.

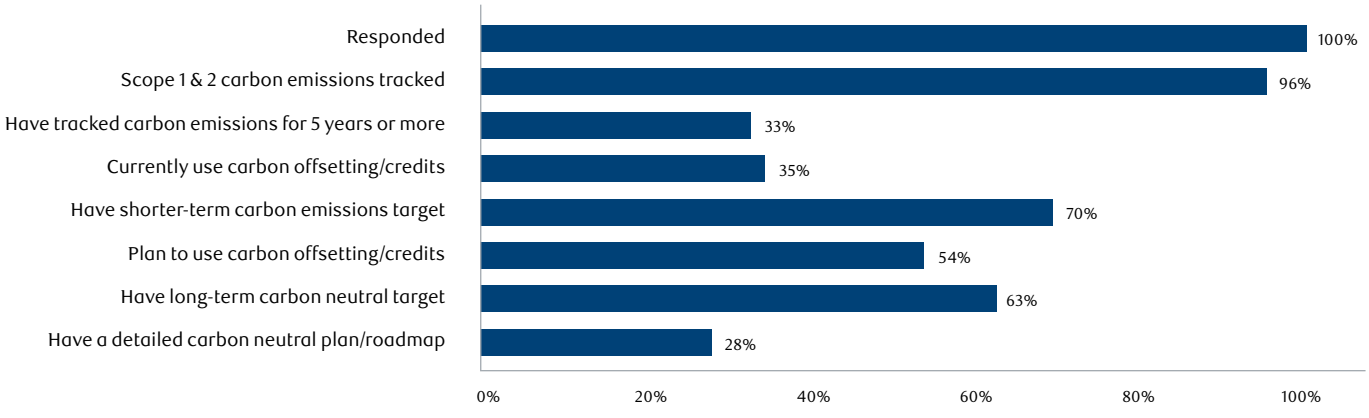
- **Portfolio coverage:** this is the percentage of the portfolio invested in issuers who themselves have established science-based or net-zero aligned emissions reduction targets. If issuers have targets that are verified by SBTi, this means that the emissions trajectory of those targets are independently verified to meet the SBTi's rigorous standards. Issuers that have committed to having their targets verified by SBTi must do so within 24 months. This analysis takes a forward-looking view by focusing on issuers' expected emissions reductions, and allows investors to identify issuers across sectors that are positioning themselves for a net-zero future.

The percentage of the portfolio invested in issuers with climate targets, which are categorised as follows, going from the most rigorous to least rigorous targets is shown in Exhibit 5. It is worth noting that 37.2% of the portfolio's AUM with a 'Verified' or 'Committed' SBTi target relates to the sum of the dark blue and yellow bars above.

We would like to ensure that the issuers in which we are invested, and for whom climate change is a material risk, have set credible climate targets and action plans that are aligned to the global ambition of achieving net-zero emissions by 2050 or sooner. In order to do this, we recently conducted a net-zero investigation of all the holdings in our portfolio, to identify issuers that are lagging and/or to identify areas of future engagement with management. Exhibit 6 shows the results of the key questions we asked our investee companies.

"If issuers have targets that are verified by SBTi, this means that the emissions trajectory of those targets are independently verified to meet the SBTi's rigorous standards."

Exhibit 6: Results of key questions to investee companies



Source: RBC GAM.

One observation from engaging with our investee companies on climate change and the environment more generally over the last 10 years is that the quality of data and disclosures has improved significantly. Five years ago only one-third of our current holdings disclosed Scope 1 and 2 GHG emissions, and now only one holding does not[26]. Almost two-thirds of our holdings already have a specific net-zero emissions reduction target, and many of the responses we received indicated that companies had committed to announcing their net-zero targets in the next 12 months. More encouragingly, 70% of our holdings have specific near-term GHG emissions reduction targets (typically over the next five years). This is important as it allows us to hold management to account on its rate of progress towards its emission reduction goals in the near term.

With regards to carbon offsetting, we believe that the priority should be for companies to drive down their emissions through improved energy efficiency in operations or by switching to renewable energy. While there may be a role for carbon offsets, there remain concerns regarding the quality of carbon offsets, and of the carbon markets in which they are traded. We expect this to improve over time as consistent, high quality standards and third-party verification of carbon offsetting projects continue to develop. For most companies, some amount of carbon offsetting will likely still be required for them to achieve carbon neutral operations. This is because certain activities, such as air travel, continue to release emissions.

There were two main areas identified in our investigation of net-zero commitments by investee companies that we aim to focus our engagements on in the coming year. Firstly, we need to make sure that the relevant investee companies honour their commitments to set net-zero targets in the next 12 months. Secondly, although almost two-thirds of our holdings already have a net-zero target, less than half of these companies have publically disclosed how they plan to achieve this. While having a net-zero target and timeline is an important first step, in order for that commitment to be seen as credible, companies need to publish a detailed roadmap that specifies how they plan to achieve their stated goals, and what interim goals they will meet along the way.

Summary

Our portfolio already has a much lower carbon intensity than its benchmark, given our long-standing focus on integrating material climate change and environmental factors, as part of our investment process. We are also pleased to report that the portfolio's carbon intensity has fallen significantly over the last five years.

That said, we are committed to supporting the global goal of net-zero emissions by 2050, and want to make sure that the issuers in which we are invested, and for whom climate change is a material risk, have set credible climate targets and action plans that are aligned with that goal. We look forward to updating you on our progress in next year's report.

[26] RBC GAM.

Inequality in emerging markets

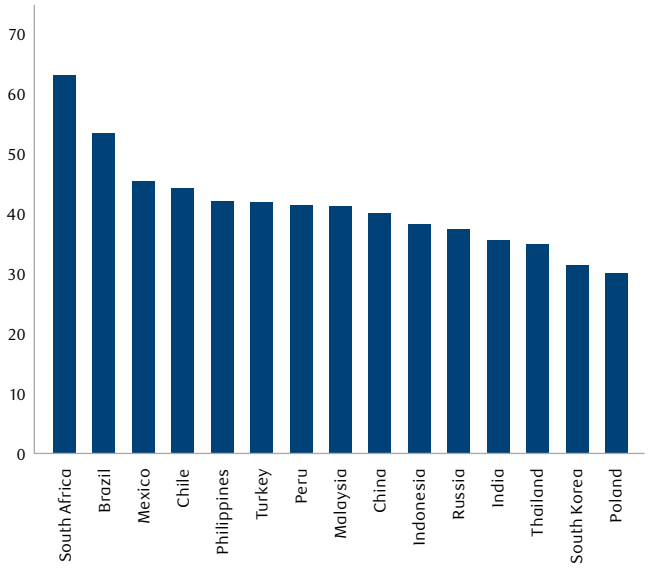
According to the WEF, 1% of the global population holds over 35% of all private wealth, which is more than the bottom 95% combined. The difference is even more significant in certain EM. We believe that rising levels of inequality, exacerbated by factors such as the Covid-19 pandemic, can have significant implications for the long-term economic growth of regions, political stability and regulation.

While there are many factors that contribute towards the level of inequality within an economy, in this report we take a look at inequality through three key lenses: politics, technology and climate change. We believe that these themes will be key to understanding how inequality can evolve in EM in the coming years. While our research does not intend to suggest a clear solution to tackling inequality, we believe it is important to be cognisant of the economic and environmental implications, and the consequent impact on EM equities over the longer term.

Inequality can be measured in a number of ways and we use the Gini Coefficient, a commonly-used measure of income inequality[27] (Exhibit 1).

We found that the average Gini Coefficient across EM is 41.3 compared to developed markets (DM), such as the U.S. at 41.4 and the U.K. at 35.1. While average income inequality in EM does not differ significantly from that of DM, such as in the U.S., we find that these averages mask wide disparities both between and within countries. Countries such as South Africa, Brazil and Mexico have much higher Gini Coefficients than countries such as South Korea and Poland.

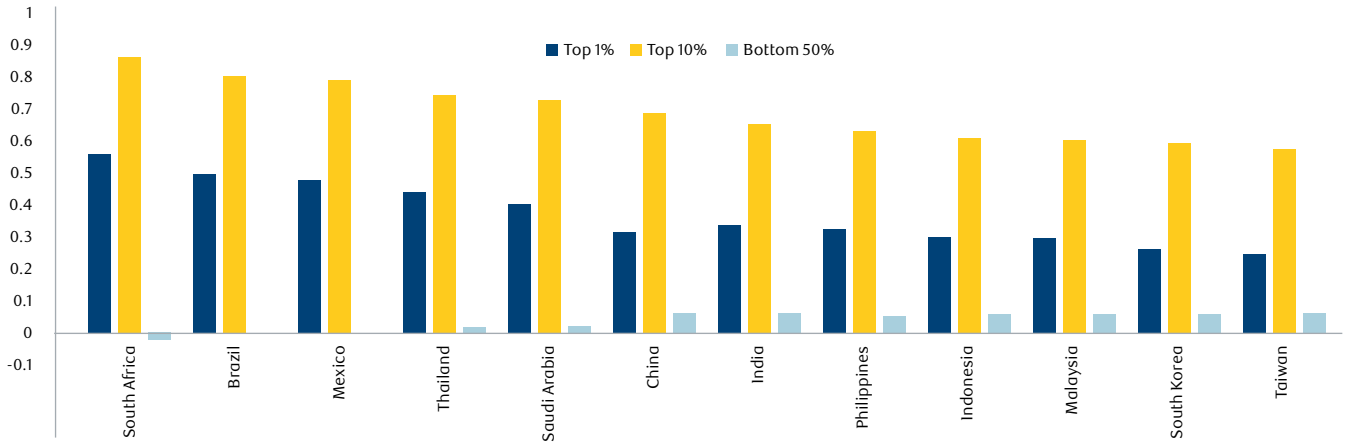
Exhibit 1: Gini Coefficient Index



Source: World Bank estimates, 2022. Data as of 2019, except for Mexico, Poland, Philippines and Russia (2018), Chile (2017), China and South Korea (2016), Malaysia (2015) and South Africa (2014).

We also find that global wealth inequality has increased at the very top of the distribution and is even more pronounced than income inequality, given the rise in private wealth in recent years. The poorest half of the EM population possesses, on average, 3% of total wealth. In contrast, the richest 10% possesses 68% of all wealth (Exhibit 2).

Exhibit 2: EM wealth inequality



Source: World Inequality Database, 2022. Interpretation: the global bottom 50% in Taiwan captures 6% of the percentage of total income measured at purchasing power parity ("PPP").

[27] Gini Coefficient: values range from 0 to 1 (or equivalently, 0 to 100), with 0 representing complete income equality across a population (everyone has the same income) and 1 (or 100) representing perfect inequality (one person has all the income).

Policy and inequality

Income and wealth inequalities have been on the rise nearly everywhere since the 1980s[28]. Certain countries have experienced significant increases in inequality (e.g. India) while others (e.g. Taiwan) have experienced relatively smaller rises. We believe that these trends can have important implications for policy and direction. In our view, it is not inequality per se, but also policy towards inequality that can have an impact on EM equities.

One way to understand these inequalities is to focus on the gap between the net wealth of governments versus the net wealth of the private sector. Over the past few decades, countries have become significantly richer due to the rise in private wealth, but their governments have become significantly poorer or have seen limited improvement in public wealth (Exhibits 3 and 4). This trend has been further magnified by the Covid-19 pandemic, which has exacerbated social problems in many countries. In turn, this has fuelled unrest and populist pressures in certain economies, and has led to an increase in more left-leaning governments. Such populist pressure typically features a prioritisation of income distribution, social security expansion and, consequently, less priority on fiscal risks.

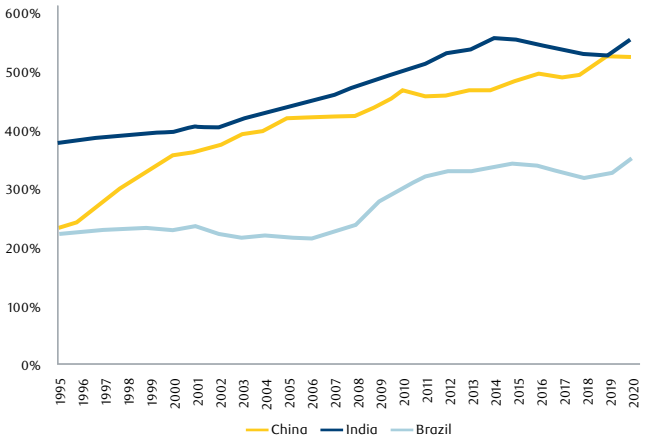
This, to some extent, explains the most recent performance in the mainland Chinese equity market. Having experienced rapid economic growth over the past two decades, wealth inequality has increased sharply in China. The top 10% share of wealth increased from 41% in 1995, to 68% in 2021. Meanwhile, the bottom 50% share of wealth decreased from 16% to only 6% in 2021 (Exhibit 5).

To tackle the extremes in inequality and plug the widening wealth gap, the Chinese government introduced the concept of "common prosperity", with the aim of shifting policy away from an emphasis on pure economic growth towards narrowing economic inequality and building social stability. In his August 2021 speech on common prosperity, President Xi argued that "The rich and the poor in some countries are polarised with the collapse of the middle class. This has led to social disintegration, political polarisation and rampant populism"[29]. The policy has been accompanied by raising the level of services for lower-income groups, limiting for-profit provision of substitutes for public services (such as education), and anti-monopoly regulations.

Meanwhile, countries in Latin America, for example Brazil and Chile, have also faced political instability and social unrest due to high levels of inequality. The growth in popularity of left-leaning governments has increased the risk of more expansionist – and market-unfriendly – policy formulation.

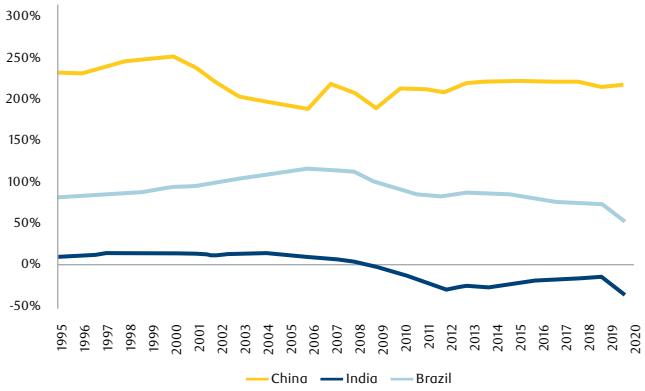
[28] World Inequality Report, 2022.
[29] "Common prosperity": Financial Times - China.org.cn

Exhibit 3: Net private wealth as a percentage of national income (%)



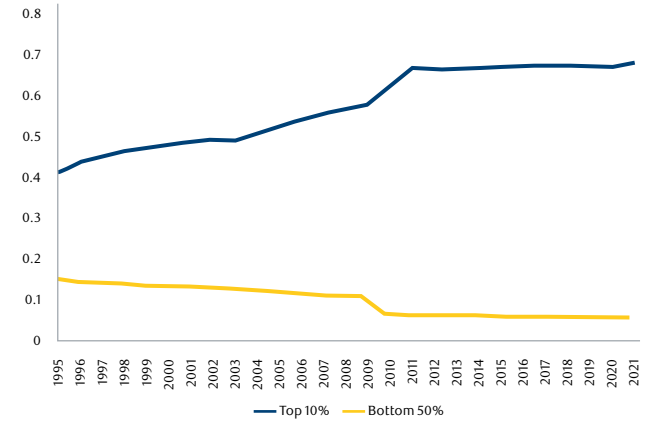
Source: World Inequality Database, 2022.

Exhibit 4: Net public wealth as a % of national income



Source: World Inequality Database, 2022.

Exhibit 5: China's wealth inequality



Source: World Inequality Database, 2022.

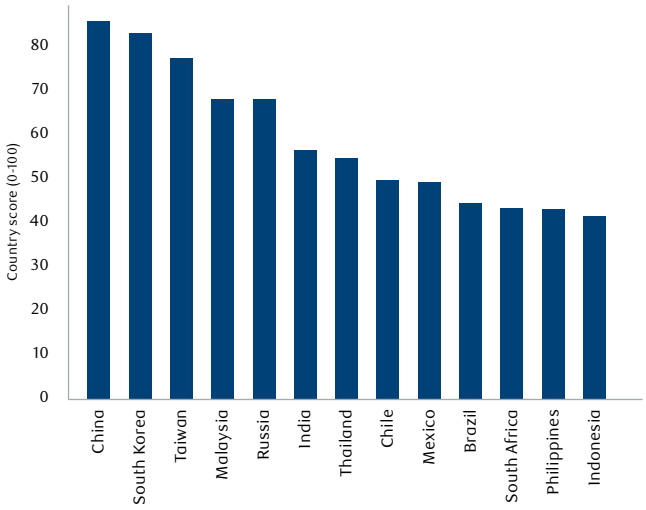
Technology and automation

Technology has been an enabler of the Fourth Industrial Revolution, which has brought about a wave of highly disruptive innovations and investment opportunities. This has helped achieve an unprecedented level of economic growth globally, which in EM has been driven by improvements in productivity. By 2030, it is estimated that artificial intelligence ("AI") will lead to an estimated USD 15.7 trillion in global GDP[30].

As the world of work is overhauled and automated through the use of robots, connected devices, big data and AI, research by the Organisation for Economic Co-operation and Development ("OECD") and the WEF indicates that approximately one billion people globally, or one-third of all jobs, will need to be reskilled as many work tasks become obsolete. This becomes even more extreme in EM where "premature deindustrialisation" means that up to 89% of jobs could become automated. Meanwhile, the benefits of automation will likely flow to about 20% of workers – primarily highly-compensated, highly-skilled workers – as well as to the owners of capital. This growing scarcity of highly-skilled workers may further increase income inequality over time[31].

We also expect to see more inequality between EM countries, given the wide divergences in technology investment and digital skillsets. Our assessment of the digital skills of the populations across EM suggests that North Asian countries, such as South Korea, Taiwan and China, are best positioned to suit the skill requirements of the future, while Latin American countries, as well as countries such as Indonesia and Philippines, still lag behind in terms of digital capabilities (Exhibit 6).

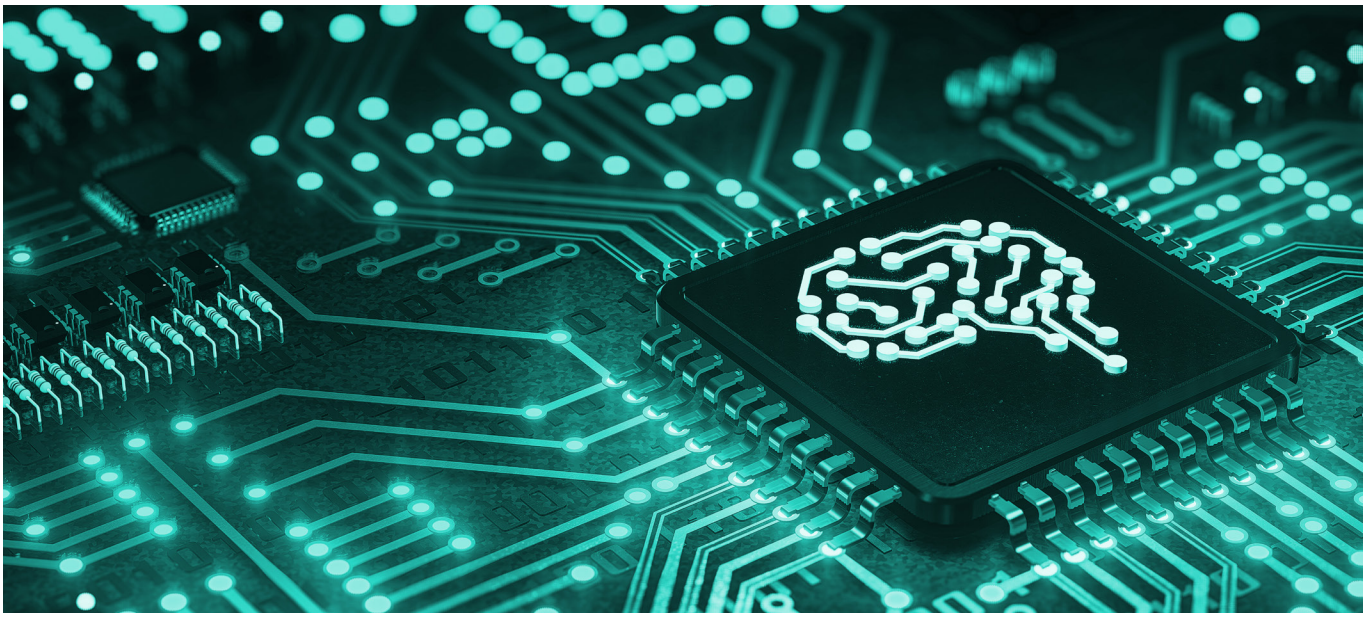
Exhibit 6: IMD knowledge rankings



Source: IMD World Digital Competitiveness Ranking, 2020 RBC Future of Work Report, 2021. Note: The IMD publishes an annual digital competitiveness ranking of 63 countries globally. For the purpose of assessing digital skills, we utilised the knowledge-based rankings, which take into considerations factors such as talent, training and education and scientific concentration (e.g. research and development).

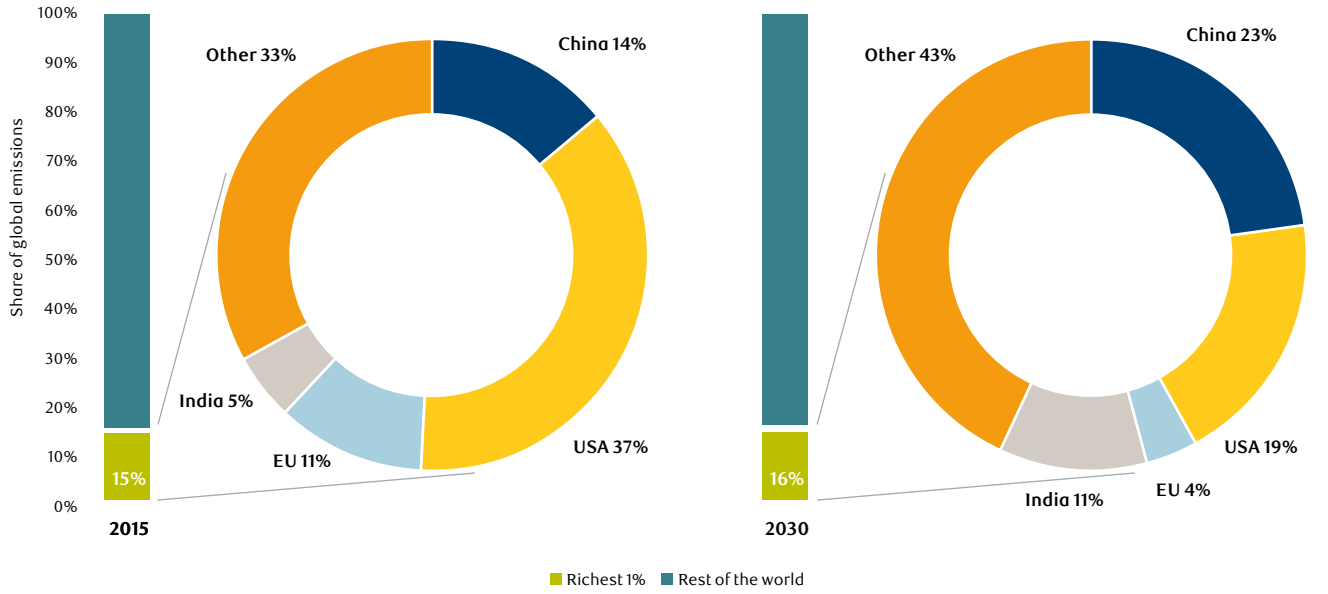
Climate change and carbon inequality

Climate change is increasingly becoming an unavoidable topic for EM governments, given the strong economic and political ramifications. Looking ahead, we expect the resultant impact on inequality to become a major focus point for governments in order to provide sustainable economic growth.



[30] PWC Global Artificial Intelligence study, 2017.
[31] Bain Labor 2030: "The collision of demographics, automation and inequality", February 2018.

Exhibit 7: Changing geographic source of emissions of world's richest 1% (2015-2030)



Source: IEEP and SEI, Oxfam. Data as at November 2021.

According to studies conducted by Oxfam, in 2015 the richest 10% of the world's population was responsible for 50% of total global emissions attributed to individual consumption, while the poorest half of the global population was responsible for only 10% of total global emissions. By 2030, the world's richest 1% is set to have per-capita consumption emissions that are still 30 times higher than the global per-capita level compatible with the 1.5°C ambition of the Paris Agreement, while an estimated 68 to 135 million people could be pushed into poverty by 2030 because of climate change[32].

We also expect to see inequality at the country level as the geography of carbon inequality is likely to change, with an increasing share of carbon emissions coming from many major EM countries.

By 2030, Oxfam estimates that China will contribute to a larger share of the emissions of the richest 1% than the U.S., while India will surpass the levels of the E.U. (Exhibit 7).

These stark levels of inequality should not only have a greater impact on the political and social acceptability of national efforts to reduce emissions, and the ability to limit global warming to 1.5°C by the end of the century, but can also pose significant risks to the health and livelihoods of the poorest individuals. In many EM countries, a large part of the population depends on activities that are most affected by climate change, notably forestry and agriculture, while not having access to basic health services makes them more vulnerable to any climate-related shocks.

[32] "Extreme Carbon Inequality", Oxfam, December 2015. "Carbon inequality in 2030", Oxfam, November 2021. "Global Action Urgently Needed to Halt Historic Threats to Poverty Reduction", October 2020.

Measuring the 'S' in ESG

Within ESG, much of the focus historically has been on the environment ("E") and governance ("G"), as climate change has taken centre stage. Social factors ("S") have received less attention and have generally been viewed as harder to define and measure.

There are a number of factors which contribute to this. These are:

1. **Lack of a unified framework:** while the UN SDGs provide some interesting perspectives, there is no standard framework for measuring a company's social responsibility efforts.
2. **A negative focus:** ESG assessments have tended to focus on risk and reputation i.e. the more negative angle. There is a strong case for putting more emphasis on positive aspects, such as companies that are focused on creating an engaged and resilient workforce, demonstrating progressive policies and producing socially-useful products.
3. **Cherry picking:** many companies will cherry pick the ESG measures they report on, however this does not mean that issues do not exist. This is particularly true for social factors, under which a wide range of issues can be captured. When a company overstates its commitment to responsible social practices, it is known as 'bluewashing'.
4. **Supply chain complexity:** one key area where company disclosure is frequently lacking on the social side is with regards to supply chains. More often than not, companies themselves are unaware of the issues, or worse, they choose not to disclose them. The complexity of supply chains and their importance to many industries makes this a particularly complex issue.

Independent research

For the reasons outlined above, we believe that there is no substitute for rigorous, independent research.

When we measure a company's social responsibility, our process focuses on the strength of its franchise and the quality of management. We ask the company whether its products and/or services have a positive impact on society, whether these products and services offer good value for money and whether production processes emulate best practice and encourage improving industry standards. We also ask questions to deduce a company's integrity, such as whether employees are paid enough, whether the company communicates effectively with all stakeholders in the business and whether it has built scalable infrastructure.

These questions ensure that we can have confidence that the companies in which we invest prioritise the interests of their workers and end-users, as well as the communities and societies in which they operate. The score we give a company is subjective but given the level of detail and number of questions we ask, the score will be all-encompassing and a fair reflection of how we view the efforts a company is making in its social responsibilities. We also consider third-party ratings but use these more for cross-checking purposes against our own scores.

Companies in certain industries, where supply chains have a reputation for being dubious and/or complex, often use third-party audits. These include audits such as RMI (Responsible Minerals Initiative), which sets the standards of minerals supply chains, the SMETA (Sedex Members Ethical Trade Audit) and Sedex (Supplier Ethical Data Exchange) which has over 60,000 members, mainly in the retail sector, and conducts supply chain checks for this sector.

The electronics sector created the RBA (Responsible Business Alliance) in 2004 to instill integrity into the supply chain, after it was found that despite the sector having more quantifiable and visible supply chains than other sectors, issues such as forced labour, poor working conditions and child labour could still be practiced[33]. We encourage the use of these third-party audits by the companies in which we invest.

[33] About the RBA (responsiblebusiness.org).

Third-party ratings

A back-tested study conducted by Bank of America Merrill Lynch, which looked at the "S" by region, found that social factors are prioritised (in descending order) in Europe, the U.S. and then Asia[34]. This shows that, as a rule, companies based in Europe will have their share prices driven more than other regions, by strong social practices. Conversely, social factors tend to be less important in Asia. While this makes sense intuitively given that Asian regions comprise a large proportion of EM, where social factors that are recognised in more developed nations are not yet fully considered, it also shows that if we want to measure a company's social efforts adequately, metrics will need to become much more standardised.

Standardisation: the Social Taxonomy

There has been an attempt in Europe to standardise social metrics through the creation of a **Social Taxonomy**. While draft legislation was published in February 2022, it is currently on the back-burner. This is because the focus on the "E" has been accelerated in Europe due to the need to be energy self-sufficient in renewables, the importance of which was made clear with the onset of the Russian-Ukraine crisis.

Regardless of the delay in implementation, the draft proposal of the Social Taxonomy can help us gain an idea of the types of questions we should be posing to our investee companies. The taxonomy aims to achieve three goals – decent work, adequate living standards, and inclusive and sustainable communities and societies (Exhibit 1). Each of these objectives is targeted at three different stakeholder groups – workers, consumers and communities – and each is aligned to the UN SDGs. For example, SDG 8 "Decent work and economic growth" is a key goal for EU companies.

"Although not fully developed in Europe, investors in both DM and EM can start to make use of this social taxonomy framework."

The EU Social Taxonomy aims to standardise certain key performance indicators ("KPIs") for companies, through its objectives and sub-objectives. The three objectives shown in Exhibit 1 also have precise sub-objectives, for example, objective number two, which promotes adequate living standards and wellbeing for end-users, has implications for the products a company manufactures. The products must be durable and recyclable. When it comes to products sold on the internet, the company must ensure privacy protection for the consumer.

KPIs relating to objective number one mean that companies must ensure gender diversity and the continuous re-skilling/furthering education of their employees. Some of the other sub-objectives include avoiding precarious working conditions, health and safety, social protection, skilling and education and prohibiting child labour. The above examples show how the EU Social Taxonomy could have significant implications for companies, through KPIs, and the requirements could be placed on them going forward, with regards to how they make a positive social impact.

Although not fully developed in Europe, investors in both DM and EM can start to make use of this social taxonomy framework. Companies can begin mapping products, services and activities to the three objectives. Voluntary reporting on each of these is likely to be viewed as best-in-class practice from a social perspective.

Exhibit 1: The EU Social Taxonomy objectives

Three social objectives of the EU Social Taxonomy	Targeted stakeholders	SDG alignment
1. Decent work (including for value-chain workers)	Workers	1, 4, 5, 8, 10, 17
2. Adequate living standards and well being for end-users	End-users/consumer	1 to 4, 6, 8
3. Inclusive and sustainable communities and societies	Communities and societies.	5, 6, 10, 11, 17

Source: Ec.europe.eu "Final Report on Social Taxonomy" – European Commission. Data as at 23 February 2022.

[34] "ESG from A-to-Z: a global primer", Bank of America Merrill Lynch. Data as at 8 November 2019.

Further optimism can be derived from the fact that EM countries will adopt social taxonomies, as certain sectors will have financial incentives to do so. The sectors in EM that would benefit the most from a social taxonomy are: housing (affordable housing), electricity, healthcare, transportation, food and telecoms. These sectors are used to reduce inequality, and companies operating in any of these six sectors will be able to raise social bonds (which are similar to green bonds in that the costs are lower), the popularity of which increased significantly in 2021.

While we can be optimistic about the long-term adoption of a social taxonomy, in the shorter term the Russia-Ukraine crisis will be an impediment to adoption, as the EU focuses on energy independence. For now therefore there is, as yet, no standard framework with which to measure the "S".

Summary

As part of our checklist of questions described earlier, we already address many social issues such as good working conditions, product quality and recyclability, gender diversity, anti-monopolistic practices and whether a company communicates with all stakeholders, including local communities and societies. However, given the ongoing and constantly-developing focus by the EU taxonomy on social aspects, driven by the underlying SDGs, we continuously monitor and update our findings.

As an example, our latest checklist includes questions on supply chain integrity, following the deep-dive survey we performed on our holdings. We asked each of the companies we hold how they guarantee the integrity of their suppliers and how their supplier contracts ensure fair treatment of labour, avoid forced labour, and provide adequate working conditions. We asked them whether they subscribe to an independent audit of their supply chains and whether any past contracts had been terminated due to an inability to ensure the integrity of the supplier.

"We address many social issues such as good working conditions, product quality and recyclability, gender diversity, and anti-monopolistic practices."

While we await the longer-term adoption of social taxonomies in EM, we continue to do our own in-depth analysis. We continue to evolve and do conduct periodic follow ups and cross checks, as it becomes apparent that best-in-class practices are rewarded not only by better productivity and happier stakeholders, but ultimately better profitability.

Case study: Delta Electronics

Successful transformation into green tech

Delta Electronics ("Delta") was founded in 1971 and is now the largest power supply components and power solutions provider globally[35].

Delta performs very strongly in in our ESG framework, having one of the highest ESG scores (based on our own methodology) across our EM portfolio holdings. We believe that Delta excels in many ESG areas, however, this case study aims to illustrate the company's positive impact in terms of climate change risk mitigation, from both its products' offering and its own operations.

Delta is a natural beneficiary of the climate transition with a large proportion of its revenues tied to green technologies or energy efficiency products servicing various end markets. Revenue exposures by segment includes clean energy products, smart manufacturing & automation and energy efficient solutions (Exhibit 1).

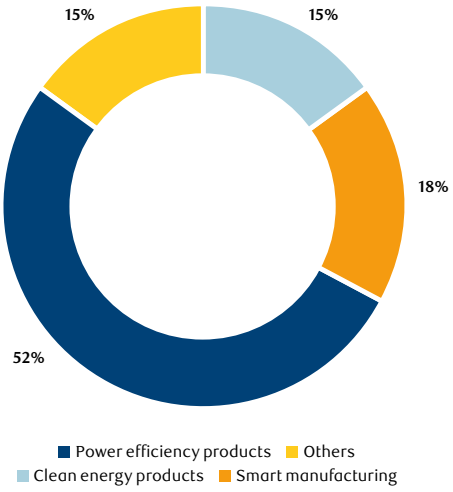
In terms of its renewable energy technologies exposure, Delta manufactures Electric Vehicles ("EV") chargers, EV power electronic components and Photo Voltaic ("PV") solar inverters which enable the EV and clean energy industries, solar in particular. The EV component and EV charger business has become Delta's most important revenue growth driver, growing at a 50% CAGR since inception and accounting for 15% of sales from low single digits only a few years ago[36].

For its industrials business, Delta provides smart manufacturing solutions and building automation products, which help customers improve resource efficiency among other things, via data-driven solutions for GHG emission reductions.

For its power-efficiency exposure, Delta is the largest supplier of thermal management and power equipment globally with a 40% market share; given the synergies, Delta also offers full solutions to its customers which include the design and development of green buildings projects alongside supplying power-efficiency equipment. Since 2018, Delta has led the development of 27 green buildings and two green data centres globally[37].

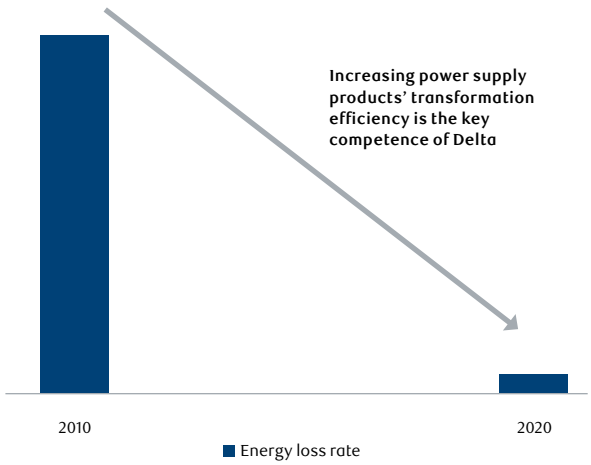
An interesting fact about Delta's power-efficiency business is that Delta's products and solutions from this business segment alone have helped customers reduce ~2 billion kWh of electricity (~1 million CO_2e) in 2020, which is equivalent to the CO_2 emissions of 200,000 gasoline-powered vehicles driven for a whole year (Exhibit 2). Looking at a longer timeframe, from 2010, Delta power-efficiency solutions have enabled customers to cumulatively save the equivalent of 20 million tons of CO_2; placing this number into context on an annualised basis, this saving is equivalent to the CO_2 emissions of all passenger vehicles driven in a country (such as Switzerland) for a whole year or a large city (such as London) for two years.

Exhibit 1: Revenue breakdown



Source: Company data, as at December 2021.

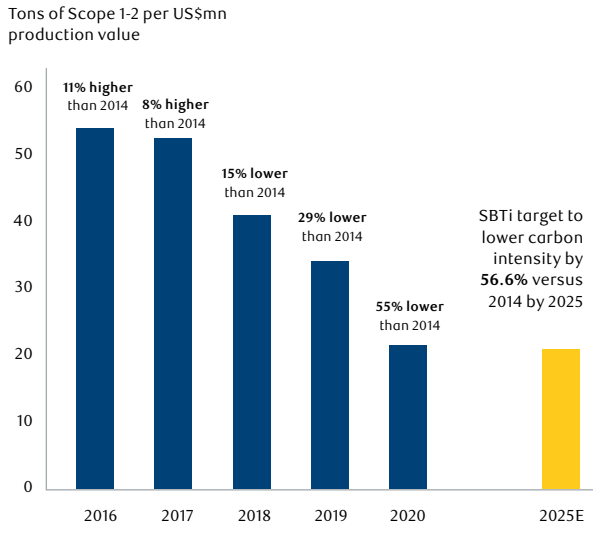
Exhibit 2: Delta power savings solution: energy loss



Source: Company data, Goldman Sachs International. Data as at 2022.

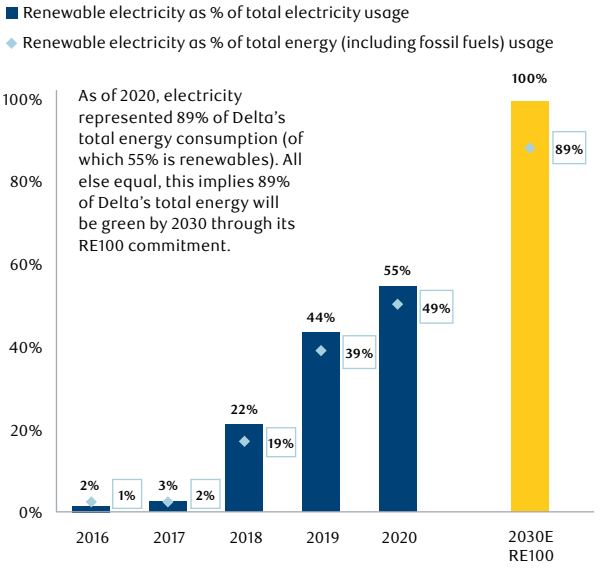
[35, 36, 37] Goldman Sachs International, RBC GAM.

Exhibit 3: Historical carbon intensity and 2025 SBTi



Source: Company data, Goldman Sachs research. Data as at 2021.

Exhibit 4: RE100 and implied renewable energy consumption



Source: Company data, Goldman Sachs research. Data as at 2021.

How has this been achieved? When it comes to transferring power, there is some energy loss. Minimising that loss is not only a core competitive advantage for players in the industry but also very important for the environment as any energy loss leads to increased energy utilisation and CO_2 emissions. This brings us to one of the key reasons why we like Delta – it is a company that invests in the future and has one of the highest Research and Development ("R&D") spends in the industry. Thanks to this mindset, Delta's solutions have achieved the lowest energy loss in the industry, at 0.5%[38].

In terms of its own operations, Delta's achievements and commitments to CO_2 reduction are very strong (Exhibits 3 and 4). Delta committed to RE100 in 2021, a global initiative that aims to increase renewable electricity usage to 100%. It aims to increase the share of renewable energy to 100% by 2030 (versus 55% in 2020). As electricity represented the majority of the company's total energy consumption in 2020, this target implies that Delta will source 90% of its total energy through renewable sources by 2030. Delta set a 2°C science-based target in 2017 to reduce Scope 1-2 carbon intensity (tons of Scope 1-2 per USD/million of product output value) from its main production facilities across Asia by 56.6% from the 2014 level, by 2025. Progress as of 2022 suggests that Delta will meet its SBTi, with a 55% carbon intensity reduction already achieved. Alongside that, Delta has committed to being carbon neutral by 2030.

[38] Goldman Sachs International, RBC GAM.

"The company has committed to paying the funds raised to a foundation that invests in social welfare."

We believe this target is achievable based on the company's outlined pathway and track record. The management of the company clearly has a lot of confidence in that respect, setting an internal carbon price of USD 300 per ton of GHG emissions (Scope 1) for its global operations, starting from 2021. While there is still a lack of clarity on how the carbon price will be implemented (e.g. whether prices will be applied to emissions that breach a certain threshold, or at the gross level to include the entire footprint), this is a standout initiative in our view for three reasons: 1) Carbon prices, especially those in voluntary markets where companies are not required to pay for emissions by law, have generally been below USD 5 per ton; 2) the proposed carbon price also exceeds internal carbon prices set by several global companies that have historically led in this area and set prices at or below USD 50 per ton (e.g. Microsoft, Siemens); 3) the proposed price significantly exceeds the USD 40-100 social cost of carbon estimates previously estimated by international organisations such as the UN, OECD and the IMF. Equally admirable, the company has committed to paying the funds raised to a foundation that invests in social welfare, including building green infrastructure.

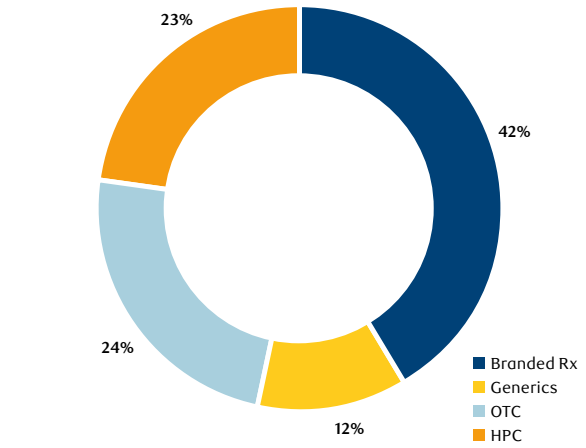
Case study: Raia Drogasil

A company focused on healthy employees and a healthier society

Raia Drogasil ("RD") is Brazil's largest pharmacy operator in terms of stores, revenue and net income. RD has a presence in all 27 Brazilian states, operating more than 2,490 pharmacies. Its overall product mix is split into four categories: Branded Rx, Generics, OTC and HPC (Exhibit 1). As of the second quarter 2022, 10.5% of sales were digital with the remainder from physical retail.

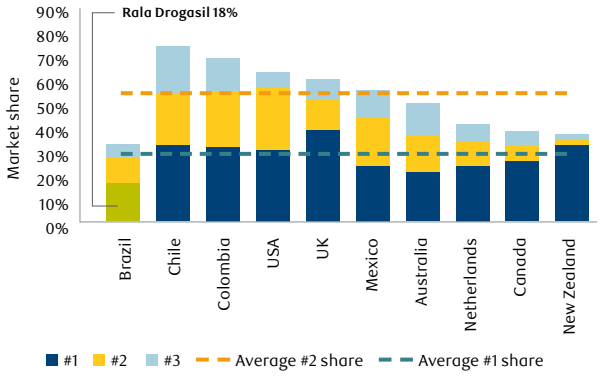
RD sits within the highly-fragmented Brazilian pharma retail market, which is projected to grow, driven by income appreciation, an ageing population and improving healthcare access (via digitisation). The fragmentation of this market indicates significant potential for consolidation (Exhibit 2). The top three pharmaceutical operators in Brazil have 35% of sales, with RD commanding the largest portion of market share. RD aims to become the group that contributes the most towards a healthier society in Brazil, by 2030. It aims to achieve this via an impactful, sustainability strategy named 'Caminhar Juntos' ('Walking Together').

Exhibit 1: Retail sales mix



Source: Raia Drogasil Earnings Presentation for the second quarter, 2022.

Exhibit 2: Brazil market is fragmented compared to others in the region



Source: Euromonitor, BofA Global Research. Data as at June 2022.
Note: #1, #2 and #3 refer to the top three competitors, in terms of market share.

"Walking Together" – RD's strategic sustainability strategy

In 2021, RD announced its long-term strategy named 'Walking Together' (Exhibit 3). This sustainability strategy is a holistic approach to healthcare that underpins RD's transformation to a business that promotes integrative health and social wellbeing. It considers the health of both RD employees and society, alongside the wellbeing of the environment. 'Healthier People', 'Healthier Businesses' and 'Healthier Planet' are the three ESG pillars that constitute RD's strategy. Under each pillar is a significant goal that RD expects to accomplish by 2030. Each goal is underpinned by a number of commitments covering specific thematic fields. In total, there are 35 commitments spanning eight thematic fields, across the three pillars.

RD's 'Sustainability Strategy 2030' comprises an overarching plan that is supplemented by its 2025 business strategy. This strategy consists of three elements: 1) New pharmacy – solidifying an omnichannel presence 2) Healthcare product marketplace – expanding the RD business network and 3) Healthcare platform – the integration of products and services. This strategy could be viewed as a grassroots level plan to enhance RD's business to achieve its 2030 ambition. We see evidence of its success reflected in its opening of 240 new pharmacies across Brazil as of 2021 – an expansion target which the company has already achieved.

Exhibit 3: RD's 'Sustainability Strategy 2030'

Walking Together

Healthier People	Healthier Businesses	Healthier Planet
Encourage 50 million healthier people	Economically empower 350,000 people	Net zero and zero landfill
Take care of the health of employees	Include and empower employees through promotion of diversity	Contribute to global carbon neutrality
Promote healthy habits among RD customers	Extend development opportunities to staff personnel	Enhancing the circular economy in the value chain of RD
Promote comprehensive health in communities	Promote empowerment and diversity between suppliers	

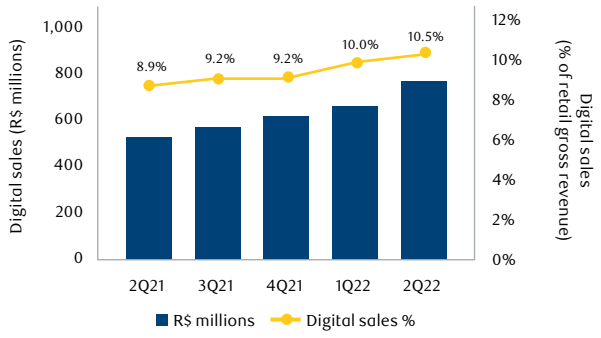
Source: Raia Drogasil 'Sustainability Goals 2030', 2021. Note: Chart has been adapted from this document.

What has Raia Drogasil achieved so far?

1. Healthier people

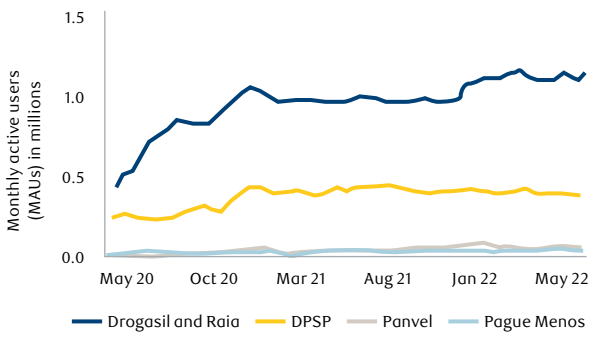
RD's commitments to healthier people are conducive to the health and wellbeing of both RD employees and society as a whole, which includes local communities and customers. RD's work towards improving employee health entails the reduction of risk, sick leave reduction and providing access to healthcare services. The company manages this via an internal employee healthcare programme which provides employees with tools and resources to foster a safer working environment and improve individual health. According to RD, 23.5% of eligible employees had reduced risk factors (such as the risk of accidents with machinery), as of 2021. The company is also working towards enhancing the provision of healthcare to its customers by leveraging its digital channels. RD is digitising relations via its apps, such as Vitat Health, and social networking platforms, such as WhatsApp, to improve customer experience. The company has managed to increase its digital sales penetration, reaching 10.5% of gross sales as of the second quarter of this year (Exhibit 4), and it enjoys a significantly higher active user base compared to its peers (Exhibit 5). In addition, RD is also expanding its portfolio of services offered at pharmacies and its selection of health and wellness products, as well as managing the use of controversial ingredients. RD also supports societal health through numerous initiatives such as volunteer programmes, health campaigns and donations to social causes.

Exhibit 4: Digital sales and penetration growth



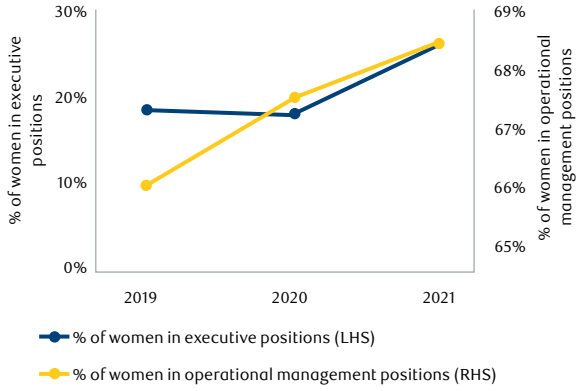
Source: Raia Drogasil Earnings Presentation for the second quarter, 2022.

Exhibit 5: RD has significantly larger app user base compared to peers



Source: BofA Global Research, June 2022.

Exhibit 6: Growth of women in management positions (%)



Source: Raia Drogasil Annual and Sustainability Report, 2021.

Exhibit 7: RD supports several progressive organisations

Source: Raia Drogasil Annual and Sustainability Report, 2021.

2. Healthier businesses

RD's goal to achieve healthier businesses entails initiatives geared towards inclusion and empowerment for social groups on multiple levels (disability, ethnicity, gender and LGBTQ+). Progress in achieving healthier business is reflected well in the growth of female participation in management roles. RD's female participation in executive positions has increased from 18.6% in 2019 to 26.3% in 2021. A similar level of growth is observed in operational management (Exhibit 6). The company also conducts training programmes for professional growth and educates employees on diversity and inclusion. In addition, RD supports progressive movements such as *'MOVER Movement (against racism)'* and *'Forum from companies and LGBTI+ rights'* (Exhibit 7). Furthermore, RD engages in supply chain management by monitoring suppliers through ESG frameworks to enhance transparency and increase product quality.

3. Healthier planet

The company's commitments towards a healthier planet entail emissions reduction and leveraging the circular economy in production to manage waste.

In 2021, RD reduced its direct GHG emissions, with a 12% reduction in Scope 1[39] emissions due to the lower use of generators in distribution centres. The company also works towards supplying operational assets (such as buildings) with renewable energy. As of 2021, 31% of company-owned units were supplied with renewable energy[40]. In addition, the company undertook a pilot initiative to use electric bicycles, as part of its effort to reduce the emissions impact from logistics. This is in line with its continued efforts in logistics management, where the company is testing out technologies to improve efficiency and minimise emissions.

As a business that generates excess in the form of medical waste and civil construction waste, management of the same is an important component of the company's sustainability plan. RD has embarked on several endeavours on this front: **1)** introduced an initiative to reduce the usage of plastic bags, **2)** implemented the use of eco-efficient packaging, **3)** introduced standards to monitor and manage civil construction and **4)** initiated programmes in its pharmacies to ensure the disposal of medicines that are past their end dates.

[39] Scope 1 emissions are direct GHG emissions that occur from sources that are controlled or owned by an organisation (e.g. emissions associated with fuel combustion in boilers, furnaces or vehicles). Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat or cooling. Source: US EPA, last updated 9 September 2022.
[40] RD Annual and Sustainability Report 2021 (page 90).

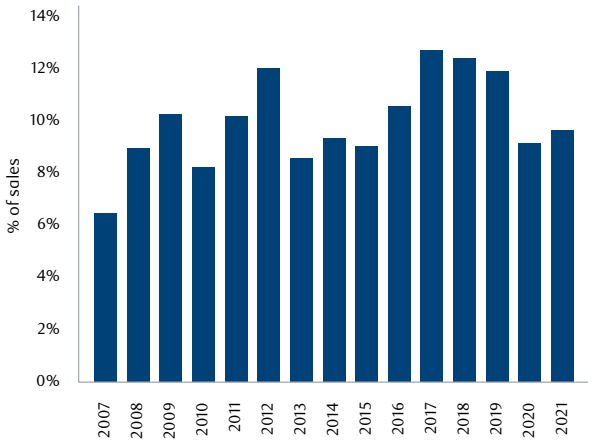
Case study: Shenzhen Inovance Technology

The importance of investing for the future

Technological innovation is critical to growth, particularly as the speed of business cycles continues to accelerate. A key way of generating new technologies is through R&D investment, which has been proven to be positively correlated to a firm's future profitability and market valuation[41].

Shenzhen Inovance ("Inovance"), a leading Chinese industrial automation solutions provider, is a great example of how a relatively young yet visionary company transformed itself into a global competitive automation company, which is now ahead of its peers. It achieved this through its robust R&D strategy, and its establishment of employee training and development programmes. Founded in 2003, with an initial focus on elevator inverters, Inovance steadily expanded into the factory automation industry, offering higher value-added products than its peers, such as PLC (programmable logic controller), and servo (servomechanism).

Exhibit 1: R&D Investment as % of sales



Source: Credit Suisse. Data as at August 2022.

Market-focused R&D

A key ingredient of the company's success formula is its continuous focus on R&D. Its R&D spending has comprised around 10% of its total revenue (Exhibit 1), which is much higher than its global automation peers. As of 2021, 21% of its staff were engineers who were focused on areas such as core technologies, product development and industrial applications.

Specifically, Inovance employs a rigorous engineering process which incorporates advanced design modelling, performance analysis and quality assurance techniques on the platform to ensure high-manufacturing quality across different product lines, and more importantly, to ensure R&D productivity. On top of this, Inovance has a global R&D network and maintains extensive research facilities in countries including China, Germany, Italy and India. We believe that its R&D team has been key to its rapid growth during the past two decades and this has allowed it to stay at the forefront of industrial automation, keeping up with the latest technology trends.

"Its R&D spending has comprised around 10% of its total revenue, which is much higher than its global automation peers."

Product development

When it comes to product development, which is at the core of its R&D strategy, Inovance uses a systematic approach. The company adopts an integrated product development (IPD) approach, the process of which covers four areas:

1. **Demand management:** identifying and capturing new growth areas being created by the changing landscape;
2. **Market management:** assessing current market trends and customer needs;
3. **Technology management:** managing technological fundamentals needed for new products;
4. **Product development management:** enhancing and optimising product capabilities.

Through its use of the lifecycle concept of development, and the involvement of all team members early in the design process, Inovance achieves operability objectives with less rework and waste, which in turn improves its profitability. Moreover, a shorter time-to-market enables it to seize 'early-mover' competitive advantages and cut down the lag between R&D investment and financial return. With a higher rate of innovation than its peers, Inovance also generates additional value for customers by converting more and better ideas into product and service offerings.

[41] Branch, B. (1974). Research and Development activity and profitability: A distributed lag analysis. Journal of *Political Economy*, 82(5), 999–1011; Sougiannis, T. (1994). The accounting-based valuation of corporate R&D. *Accounting Review*, 69(1), 44–68.

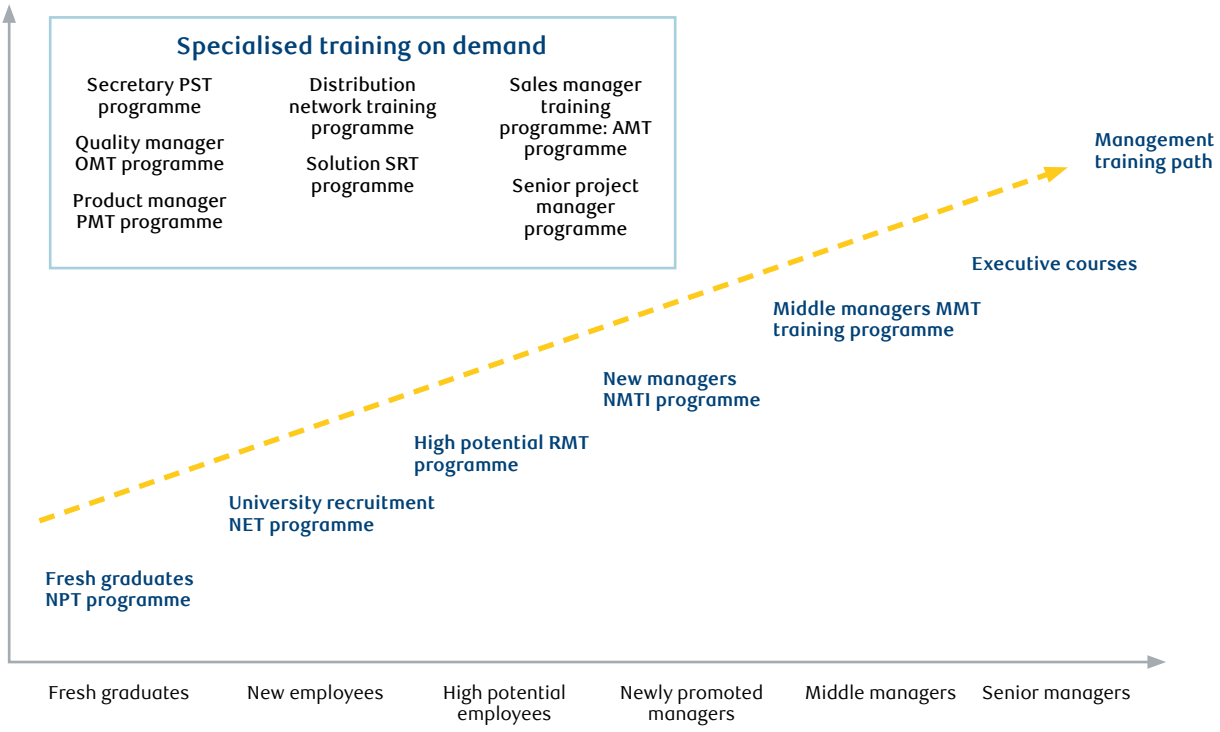
Employee training and development programme

Creating a highly trained, highly skilled, and ever-improving workforce is another key ingredient to scaling up a company's innovation capabilities. While learning is the fundamental capability that a firm needs to address, a range of obstacles can threaten its sustainability objectives and long-term success.

In 2018, Inovance established *Inovance Academy* to provide comprehensive training programmes for employees from different levels and departments of the organisation (Exhibit 2). Beyond teaching employees the specifics of their jobs, Inovance also trains staff in communications, leadership and performance management techniques.

This means that employees are up-to-date with the latest information and enhanced skills, which in turn improves their productivity and overall job performance. More importantly, by installing a continuous-learning culture, Inovance can attract and maintain the highest-quality talent, which ultimately creates lasting competitive advantages. This is particularly vital to innovation-driven companies, as finding talent has been a significant challenge[42].

Exhibit 2: Training and development programme



Source: Shenzhen Inovance Annual Report, 2021.

Summary

In our view, forward-thinking organisations have strong, long-term business visions and are investing for future growth. Without doubt, Inovance has been a good example of this. We believe Inovance's commitment to technological advancement and its efficient development approach will help the company to build a sustainable, high-performance business.

[42] McKinsey & Company 2021 "China's digital R&D imperative".

Case study: SK Hynix

A leader in future carbon reductions

SK Hynix started as Hyundai Electronics Industries, established in 1983 by South Korea's Hyundai Group. In 1999, the company acquired LG Semiconductor from South Korea's LG Group, and in 2001, changed its name to Hynix Semiconductor. In 2011, it was included under the umbrella of leading South Korean mobile carrier SK Telecom, a unit under SK Holdings, and in 2012 changed its name to SK Hynix. Since then SK Hynix has evolved and grown to become one of the leading memory chip manufacturers and semiconductor producers globally[43].

SK Hynix's product mix is mainly split into two categories within memory: DRAM (Dynamic Random Access Memory) and NAND. DRAM is a type of volatile memory providing fast data access, while NAND is a type of non-volatile flash memory used for data storage[44]. DRAM currently represents about two-thirds of revenues and NAND around one-third (Exhibit 1).

Environmental commitments

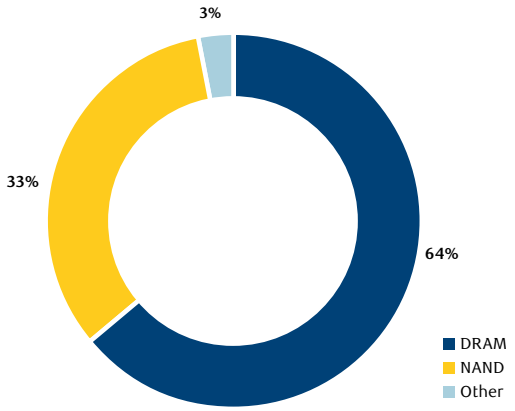
The semiconductor industry has continuously expanded since forming in the 1960s, and has been a driving force behind the continued growth in the electronics industry. Structural growth drivers such as 5G, AI, high-performance computing and big-data analytics are likely to mean that semiconductor content and the value it provides will continue to increase rapidly going forward. Semiconductors are also an integral part of EV, and solar and wind applications, and are therefore important in the long-term drive towards decarbonisation.

At the same time, chip manufacturing requires significant amounts of energy and water in production. Additionally, process gases used in the manufacturing process are high emitting gases. The expansion of facilities and production in order to meet surging semiconductor demand has naturally led to increases in GHG emissions, due to increasing energy and water usage.

SK Hynix recognises the significant role it has to play in encouraging improving industry standards and to address climate change, as one of the largest players in the semiconductor industry. It is focused on continuously making efforts to reduce its impact on the environment. To this end, in 2020, SK Hynix became one of the first South Korean companies to join RE100[45], a global initiative bringing together some of the world's most influential businesses to make commitments to use 100% renewable energy. SK Hynix has pledged to use 100% renewable energy by 2050. Its renewable energy usage has gone up significantly in recent years (Exhibit 2) and this is likely to continue going forward, as it strives to achieve the RE100 pledge.

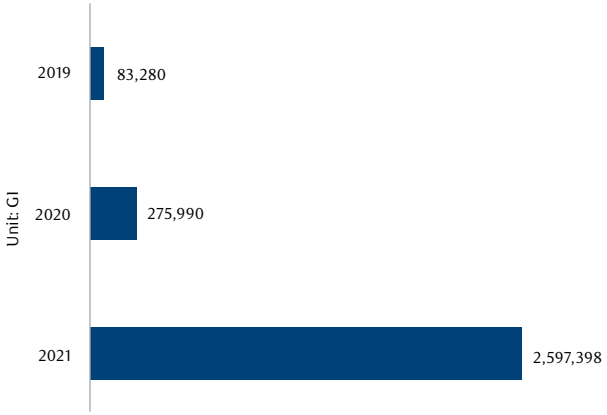
In addition to the RE100 commitment, SK Hynix has also announced a goal of achieving net-zero carbon emissions by 2050 as part of a company-wide focus to address climate change. It will also seek to solidify its position as an eco-conscious semiconductor company by maintaining Scope 1 and 2 emissions at 2020 levels until 2030, through efforts to reduce GHG emissions.

Exhibit 1: Revenue breakdown



Source: SK Hynix Earnings Presentation for the second quarter, 2022.

Exhibit 2: Renewable energy usage



Source: SK Hynix Sustainability Report, 2022.

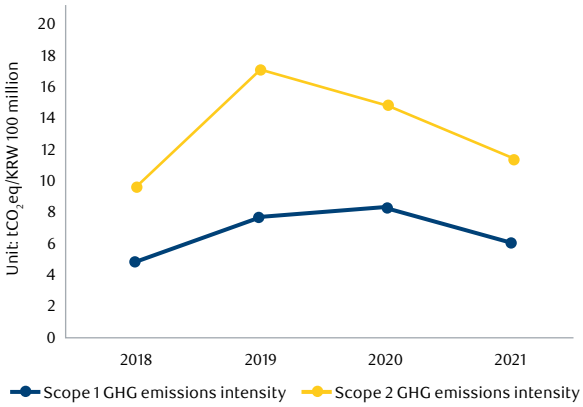
[43] Asia Nikkei - SK Hynix.
[44] Semiconductor Engineering "Understanding Memory".
[45] How SK hynix Connects the E-S-G Dots | SK hynix Newsroom.

Reducing greenhouse gas emissions

As one of the leading global memory manufacturers, SK Hynix strives to provide solutions that are not only strong in performance but are also environmentally sustainable. As part of the company's strategy to reduce GHG emissions, it is making efforts to develop gases that are less harmful to the environment to minimise the environmental impact from the manufacturing process, as well as to develop innovative technologies that can reduce carbon emissions. Overall, the company's Scope 1 and 2 GHG emissions intensity has been decreasing in recent years (Exhibit 3). The GHG emissions intensity looks at emissions per revenue generated. SK Hynix's Scope 2 intensity has been coming down in the last two years after peaking in 2019, while its Scope 1 intensity peaked in 2020. The intensity is expected to continue to reduce in future years.

One of the major ways that SK Hynix works to reduce GHG emissions is through the use of water scrubbers. Water scrubbers decompose detrimental gases at high temperatures and spray water on the decomposed gases to cool them down and wash away pollutants. This can help reduce GHG emissions significantly. The company has installed water scrubbers in the cooling systems in its chip factories to block hazardous chemicals and gases from being released into the atmosphere, and water is used in this process to control the temperature. Water usage and GHG emissions are linked as increasing the use of water scrubbers leads to lower GHG emissions but causes higher water usage. To this end, the company has been focusing on improving water conservation and innovating its water scrubbers to use less water in the process of cleaning up gases. Additionally, SK Hynix has been increasing its water reuse consistently over the last four years (Exhibit 4).

Exhibit 3: Scope 1 & 2 GHG emissions intensity



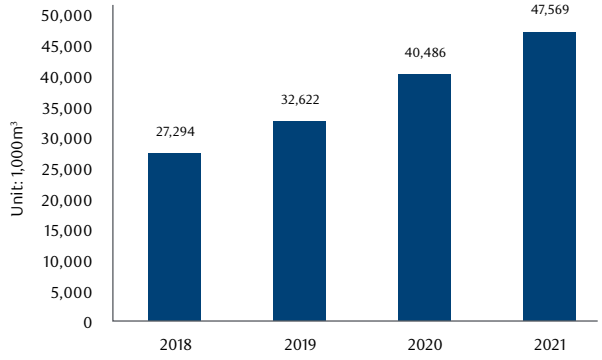
Source: SK Hynix Sustainability Report, 2022.

R&D investments

SK Hynix is a company that invests significantly in R&D to remain a leader not only in technological innovation but through reductions in its environmental impact. The company has been increasing its R&D investment amount, as well as the number of R&D personnel, consistently over the years (Exhibit 5). A meaningful proportion of SK Hynix's R&D investments are focused on reducing its environmental footprint.

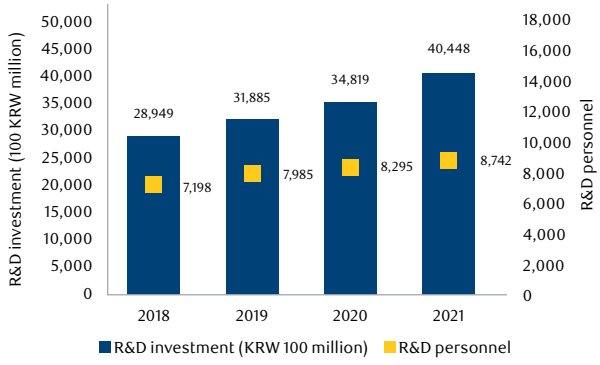
> "The company has installed water scrubbers in the cooling systems in its chip factories to block hazardous chemicals and gases from being released into the atmosphere."

Exhibit 4: Water reuse



Source: SK Hynix Sustainability Report, 2022.

Exhibit 5: R&D investment and personnel



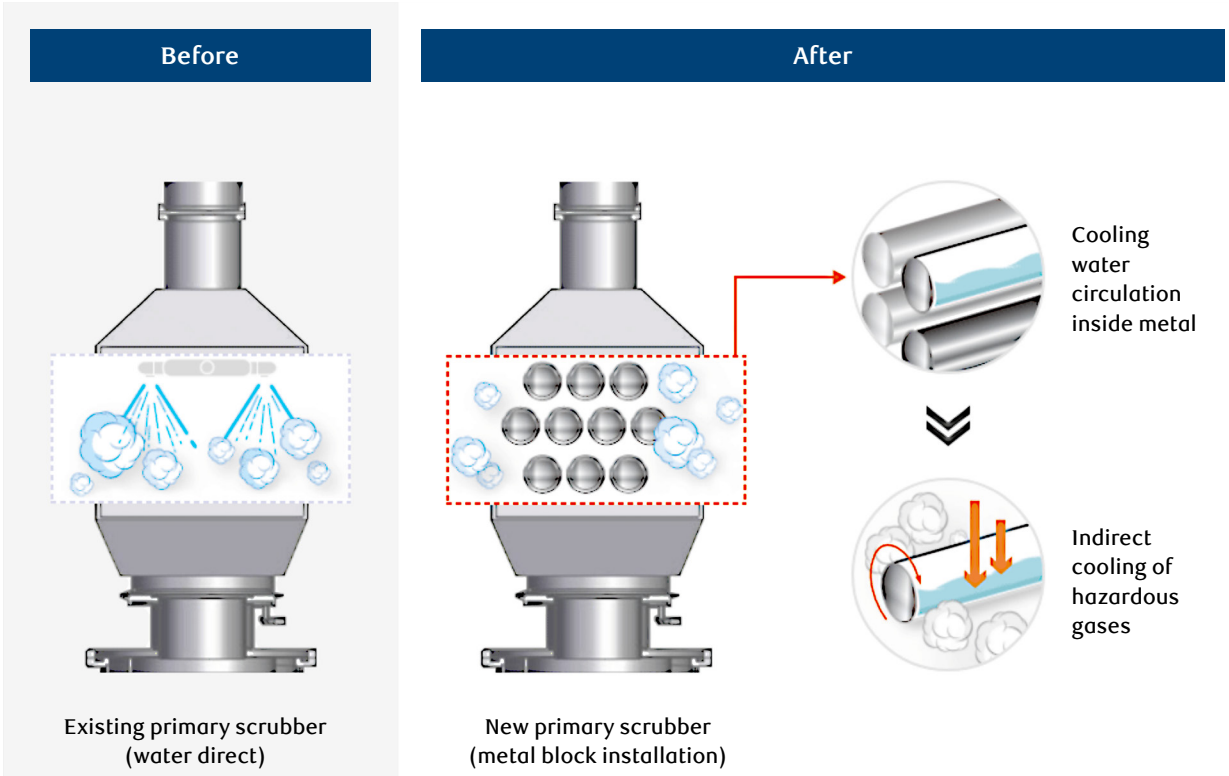
Source: SK Hynix Sustainability Report, 2022.

A good example of innovation on the environmental front is the invention of SK Hynix's water-free scrubbers, which the company first developed in 2018. Compared to the current water scrubbers described previously, these water-free scrubbers can eliminate process gas without using any water resources, and by doing so further reduce water resource consumption. The problem with traditional water scrubbers is that while they have a high purification rate of harmful gases, they also require a large amount of water to work. To help improve this issue, SK Hynix came up with the idea of installing a metal block inside a water scrubber to circulate coolant inside the metal and indirectly cool the harmful gases that pass through.

This is what the company called 'water-free scrubbers' (Exhibit 6). It took the company a year to find a metal coating technology that could withstand high temperatures and to redesign the structure, with another eight months to validate the effect[46].

SK Hynix is planning to continue to expand the application of water-free scrubbers, while actively reducing water consumption through optimisation of the operating conditions of existing water scrubbers. We will continue to engage with the company and monitor its progress in reducing GHG emissions and improving its water use.

Exhibit 6: Water-free scrubber



Source: SK Hynix Water Management.

[46] SK Hynix Water Management.

Appendix

Climate metric	Unit	Description
Temperature alignment	°C	Implied global average temperature increase from pre-industrial times to 2100, if the global economy looked like this portfolio. The goal of the Paris Agreement is to limit global warming to 2°C, with an ambition of reaching 1.5°C.
% AUM aligned to below 2°C	%	% of AUM invested in issuers with temperature alignment below 2°C.
% AUM with a verified or committed SBTi target	%	% of AUM invested in issuers with science-based (i.e. Paris Agreement-aligned) emissions reduction targets that have been verified by the SBTi or are committed to be verified by the SBTi within 2 years.
% AUM with any climate target (SBTi and non-SBTi)	%	% of AUM invested in issuers with any climate-related target (SBTi and non-SBTi).

Climate target type	Description
Temperature alignment	Companies with a verified SBTi target have had their emissions-reduction targets verified by the SBTi to be science based and to meet the Paris Agreement. Some companies may also have had their targets verified to be net-zero. A science-based target is a target that is aligned to the emissions-reduction trajectory needed to meet the Paris Agreement. In other words, to achieve the goal of reducing emissions to well below 2°C, and the ambition of reaching 1.5°C by the end of the century. Energy sector companies are not currently able to set SBTi targets as there is no sector-specific standard developed. Data is directly from SBTi: Science Based Targets.
Any climate target	If a company does not have a SBTi-verified or committed climate target, we identify if the company has set any emissions-reduction target, based on MSCI data. This identifies whether a company has set a climate target, but does not provide a view on the scope of emissions, ambition, or timeframe associated with the target.
No target	Applied to all companies that are not identified as having a climate target, as per MSCI.

About the team

Phil Langham, RBC Global Asset Management (UK) Limited

30 years of experience

Senior Portfolio Manager & Head of Emerging Markets Equities

BSc (Economics) (1987), University of Manchester, U.K.

Phil is a senior portfolio manager and head of the Emerging Markets Equity team at RBC GAM. He joined the firm in November 2009 from the asset management division of a large European bank, where he was head of global emerging markets. Phil was previously based at another global financial services firm in Zurich for four years as director and head of emerging markets and Asia in their multi asset class division. Prior to that, he managed global emerging markets, Asian, Latin American and US portfolios for nine years at a sovereign wealth fund. Phil started his career in the investment industry in 1992.

Laurence Bensafi, CFA, RBC Global Asset Management (UK) Limited

24 years of experience

Portfolio Manager & Deputy Head of Emerging Markets Equities

CFA (2004); Magistère d'Économiste Statisticien & D.E.S.S. Statistique et Économétrie (1997), Université de Toulouse, France.

Laurence is a portfolio manager and deputy head of the Emerging Markets Equity team at RBC GAM. Prior to joining the firm in 2013, she headed the emerging markets team of a leading U.K. asset manager. In this role, Laurence was responsible for managing Asian and global emerging market income strategies, and developing quantitative stock selection and environmental analysis models. She began her investment career in 1998 as a quantitative analyst at a major financial services company, where she supported European and global equity portfolio management by developing quantitative models to assist in the portfolio construction and security selection process.

Guido Giammattei, RBC Global Asset Management (UK) Limited

24 years of experience

Portfolio Manager

MBA (2005), Carroll Graduate School of Management, Boston College, U.S.; BSc (Economics) (1998), Universita' Cattolica Del Sacro Cuore, Italy.

Guido is a portfolio manager on the Emerging Markets Equity team at RBC GAM. Prior to joining the organization in 2010, Guido had worked as an emerging markets portfolio manager and also as an equities analyst at a U.K.-based asset management firm, specialising in global emerging market strategies. He had previously worked at a global asset management firm as a securities analyst, where he progressed to become a junior portfolio manager. Guido began his career in the investment industry in 1998 as an equity and derivatives trader in Italy.

Veronique Erb, RBC Global Asset Management (UK) Limited

22 years of experience

Portfolio Manager

MSc (Finance) (2000), Cass Business School, U.K.; BSc (Economics and German) (1998), University of Surrey, U.K.

Veronique is a portfolio manager on the RBC Emerging Markets Equity team at RBC GAM. Prior to joining the firm in 2015, Veronique was at a large independent brokerage and investment group in Asia, where she was responsible for Asian ex-Japan equities for 15 years. During this time, she developed significant expertise in Asian equities, as well as a deep understanding of the region's corporate culture and economic development. Veronique began her career in the investment industry in 2000.

Richard Farrell, CFA, RBC Global Asset Management (UK) Limited

15 years of experience

Portfolio Manager

CFA (2012); MSc (Investment Management) (2009), Cass Business School, U.K.; BSc (Business and Finance) (2005) King's College London, U.K.

Richard is a portfolio manager on the Emerging Markets Equity team at RBC GAM. Prior to joining the firm in 2013, he had spent three years at a major U.K. asset manager providing fundamental equity analysis in the energy and materials sectors within global emerging markets. Richard began his career in the investment industry in 2005 as an equity analyst in the mergers and acquisitions team of a large multinational bank.

Christoffer Enemaerke, CFA, RBC Global Asset Management (UK) Limited

12 years of experience

Portfolio Manager

CFA (2016); MSc (Finance and Accounting) (2012), BSc (Business Administration and Economics) (2010), Copenhagen Business School, Denmark.

Christoffer is a portfolio manager on the Emerging Markets Equity team at RBC GAM. He joined the firm in 2013 and started his career in the investment industry in 2010 at the investment management division of a Nordic-based financial services group in Copenhagen. In his role as a graduate trainee and research associate, Christoffer focused on bottom-up fundamental analysis of companies in the Asia ex-Japan universe.

Ashna Yarashi-Shah, CFA, RBC Global Asset Management (UK) Limited

10 years of experience Portfolio

Manager

CFA (2022), BSc (Statistics, Economics and Finance) (2012), University College London, U.K.

Ashna is a portfolio manager on the Emerging Markets Equity team at RBC GAM. Prior to joining the firm in 2017 as an emerging markets equity product specialist, she had worked in equity sales at a large global financial institution, covering the Asia Pacific region. During her time there, Ashna was also a member of the content development team for the European, and Europe, Middle East and Africa (EMEA) regions. She began her career in the investment industry in 2012.

James Bateson, RBC Global Asset Management (UK) Limited

5 years of experience

Portfolio Engineer

MSci (Geography with Quantitative Research Methods) (2017), University of Bristol, U.K.

James is a portfolio engineer on the Emerging Markets Equity team at RBC GAM, responsible for enhancing the team's data analysis, portfolio construction and risk management capabilities. He initially joined RBC in 2017 for the Graduate Rotational Program. Over the two years of the program, James completed rotations with RBC Wealth Management, BlueBay Asset Management, and the RBC Global Equities team before joining his current team in 2019.

Angel Su, RBC Global Asset Management (UK) Limited

3 years of experience

Analyst

GMiM International Management (2019), London School of Economics, U.K. and University of St. Gallen, Switzerland; MA (Hons) (Finance and Business) (2017), University of Edinburgh, U.K.

Angel is an analyst on the Emerging Markets Equity team at RBC GAM, working closely with portfolio managers to support both top-down and bottom-up research. Before joining the organisation in 2019, Angel completed a number of internships in Hong Kong, which included roles at a global assurance, tax, and consulting services firm, a U.S. management consulting firm, and a major Chinese firm offering investment banking and securities brokerage services.

Will McBean, RBC Global Asset Management (UK) Limited

7 years of experience

Analyst

BA (French, Latin) (2015), University College London, U.K.

Will is an investment analyst on the Emerging Markets Equity team at RBC GAM. He assumed this role in 2022 after working on the team as a cover for the team's product specialist. Will joined RBC GAM in 2019 as a client services manager, where he was responsible for managing and developing relationships with existing institutional clients. Will was previously a client relations manager at a U.K. pension pool, where he looked after the pool's relationships with local authority clients. He had earlier worked as a senior analyst at an asset management research firm, where he worked closely with institutional investors and alternative funds.

Dijana Jelic, RBC Global Asset Management (UK) Limited

11 years of experience

Product Specialist

BA (History of Art) (2010), University of Warwick, U.K.

Dijana is a product specialist on the Emerging Markets Equity team at RBC GAM. Prior to joining the firm in 2018, she had worked as a vice president at an international bank, where she spent six years in the managed investments and investment marketing businesses, focusing on the positioning of investment capabilities and thought leadership. Dijana began her career in investment advisory in 2011.

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