

# Biodiversity Risks and Opportunities in Asia Pacific

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## Executive summary

In 2022, the landmark agreement reached at the United Nations Biodiversity Conference (COP 15) increased pressure on companies and investors to address nature loss and resulted in a Global Biodiversity Framework (GBF). The launch of the Taskforce on Nature-related Financial Disclosures (TNFD) framework in September 2023 may further raise expectations toward management and reporting on nature-related risks for issuers and investors.

Asia Pacific (APAC) is at the heart of the global biodiversity crisis, with 63% of the region's GDP at risk from nature loss.<sup>1</sup> Using data from MSCI ESG Ratings, we assessed the constituents of the MSCI AC Asia Pacific Investable Market Index (IMI)<sup>2</sup> on their exposure to three sources of risk that relate to biodiversity: **biodiversity and land use, toxic emissions and waste** and **water stress**. Given that biodiversity risks may be even higher for companies operating in biodiversity-rich regions, we focused on the companies with assets located in **biodiversity-sensitive areas (BSA)**.<sup>3</sup> To identify opportunities in addressing biodiversity impacts, we used MSCI ESG Sustainable Impact Metrics to evaluate sectors<sup>4</sup> and companies that have generated revenues from **pollution prevention, sustainable agriculture** and **sustainable water solutions**.

## Key takeaways

- 70% of companies in the MSCI AC Asia Pacific IMI that we identified as having assets in BSA<sup>5</sup> were also considered to be facing financially relevant risks from at least one of three related key issues we assess in the MSCI ESG Ratings model: biodiversity and land use, toxic emissions and waste and water stress, as of Oct. 17, 2023 (Exhibit 2).
- These three biodiversity-related key issues can be used to differentiate companies with higher risks compared to peers. We found companies in the materials, consumer-staples and energy sectors had high exposure to biodiversity-related risks (Exhibits 3, 4, 5).
- We investigated companies making a positive contribution to biodiversity, notably those deriving revenues from pollution prevention, sustainable agriculture or sustainable water<sup>6</sup> (Exhibit 6).
- The industrials sector generated the highest average percentage of revenue from products and services related to sustainable impacts (Exhibit 8). Companies with the highest revenue percentages from biodiversity-related sustainable solutions (Exhibit 7) were Sunny Friend Environmental Technology Co. Ltd. (>99% from waste-treatment solutions), Sims Ltd. (>90% from recycling solutions) and Beijing Enterprise Water Group (>85% from water infrastructure and distribution solutions).

<sup>1</sup> Akanksha Khatri and Steve Howard, "How to address Asia Pacific's biodiversity crisis and encourage nature-positive growth," World Economic Forum, September 2021.

<sup>2</sup> The MSCI AC Asia Pacific IMI captures large-, mid- and small-cap representation across five developed and eight emerging market countries in the Far East. With 4,307 constituents as of November 2023, the index covers approximately 99% of the free float-adjusted market capitalization in each country.

<sup>3</sup> The [MSCI Biodiversity-Sensitive Areas Screening Metrics](#) identify companies that could directly contribute to biodiversity loss based on the nature of their operations and if three or more physical assets are located within a 1.5-kilometer (km) vicinity of a BSA, which include healthy forest, intact biodiversity areas, prime areas for conservation and deforestation fronts.

<sup>4</sup> All mentions of "sector" in this document refers to the Global Industry Classification System (GICS®). GICS is the global industry classification standard jointly developed by MSCI and S&P Global Market Intelligence.

<sup>5</sup> 13% (n=562) of constituents of the MSCI AC Asia Pacific IMI were flagged for assets in BSA as of Oct. 17, 2023, and, unless otherwise noted, represent the analytical set ("companies") referred to throughout this report.

<sup>6</sup> For further details, please refer to the MSCI ESG Sustainable Impact Metrics Methodology (client access only).



## A growing focus on biodiversity

Regulatory developments targeting financial institutions to address biodiversity loss may have been slower in APAC compared to other regions such as Europe. Indeed, the European Union (EU) already has a wide variety of nature directives of environmentally sustainable economic activities aiming to protect and restore biodiversity and ecosystems. For example, the European Sustainability Reporting Standards includes biodiversity and ecosystem-related disclosure requirements. In addition, in April 2023, the EU Parliament passed a new regulation on deforestation-free supply chains.

Soon, APAC-based companies with ties to European markets may have to adapt their reporting and practices in response to these regulations. Currently, some jurisdictions in APAC have started to consider biodiversity risks at a national level:

- **Australia** committed to protect 30% of terrestrial and marine ecosystems by 2030 under COP 15's GBF. This goes hand-in-hand with its Environment Protection and Biodiversity Conservation Act, intended to provide meaningful environmental protection and explicitly includes nature-positive outcomes in law.<sup>7</sup>
- **China** has in place its National Biodiversity Conservation Strategy and Action Plan for 2011-2030<sup>8</sup> and over 50 regulations<sup>9</sup> related to biodiversity. In 2023, the State Council Information Office released a white paper titled "Biodiversity Conservation in China."<sup>10</sup>
- **Singapore's** Monetary Authority has issued Environmental Risk Management guidance for financial institutions, which encourages them to consider biodiversity risks alongside climate change.

In addition to regulatory requirements, investors may have several objectives when it comes to addressing biodiversity. In this report we outline different approaches, including:

- **Mitigating negative impacts through risk identification:** Using a range of data available through the MSCI ESG Ratings model, investors can seek to identify companies with the highest risk of contributing to biodiversity loss in fragile ecosystems (or with assets in BSA) based on the type of biodiversity risk — land disturbances, pollution and/or water stress.
- **Engaging with companies that face the highest risks:** Depending on their tolerance for biodiversity-related risks, investors may adopt a combination of screening metrics to identify sectors or companies for engagement, based on the level of risk exposure to business segments with the potential to contribute to biodiversity loss.
- **Identifying activities that have a positive impact:** Investors may be focused on a range of positive outcomes when it comes to dealing with biodiversity impact. These positive impacts may be more prominent in specific sectors and companies that have been developing biodiversity-related solutions.

<sup>7</sup> "Environment Protection and Biodiversity Conservation Act 1999," Australian government, DCCEEW, Sept. 8, 2023.

<sup>8</sup> "China National Biodiversity Conservation Strategy and Action Plan (2011-2030)," Ministry of Ecology and Environment PRC, October 2021.

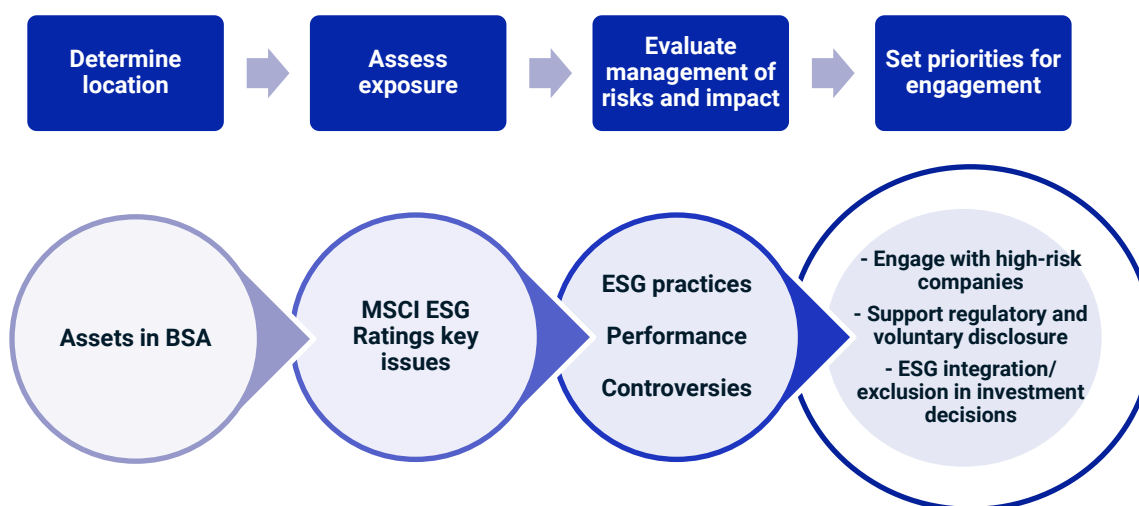
<sup>9</sup> Si Zihan and Yuan Yuan, "Legislative progress of biodiversity conservation in China," China Development Brief, June 16, 2023.

<sup>10</sup> "Biodiversity Conservation in China," The State Council Information Office of the People's Republic of China, Oct. 8, 2021.

## Exposure to biodiversity-related risks

Companies can impact nature through their direct and indirect operations. Some of the more severe impacts on biodiversity, such as deforestation or releasing waste or pollution, can occur both upstream and downstream in a company's supply chain. Due to the complexity of supply chains, however, assessing embedded biodiversity risks occurring throughout a company's broader value chains remains difficult. For many investors the challenge is figuring out where and how to begin such assessments. The TNFD suggests starting with the assessment of direct operations. Furthermore, the TNFD LEAP approach of "locate, evaluate, assess and prepare" stresses the importance of location-specific data. Investors seeking to understand their exposure to biodiversity risks may refer to the following approach (Exhibit 1).

**Exhibit 1: Potential approach for identifying outliers exposed to biodiversity risks**



Source: MSCI ESG Research, Oct. 17, 2023

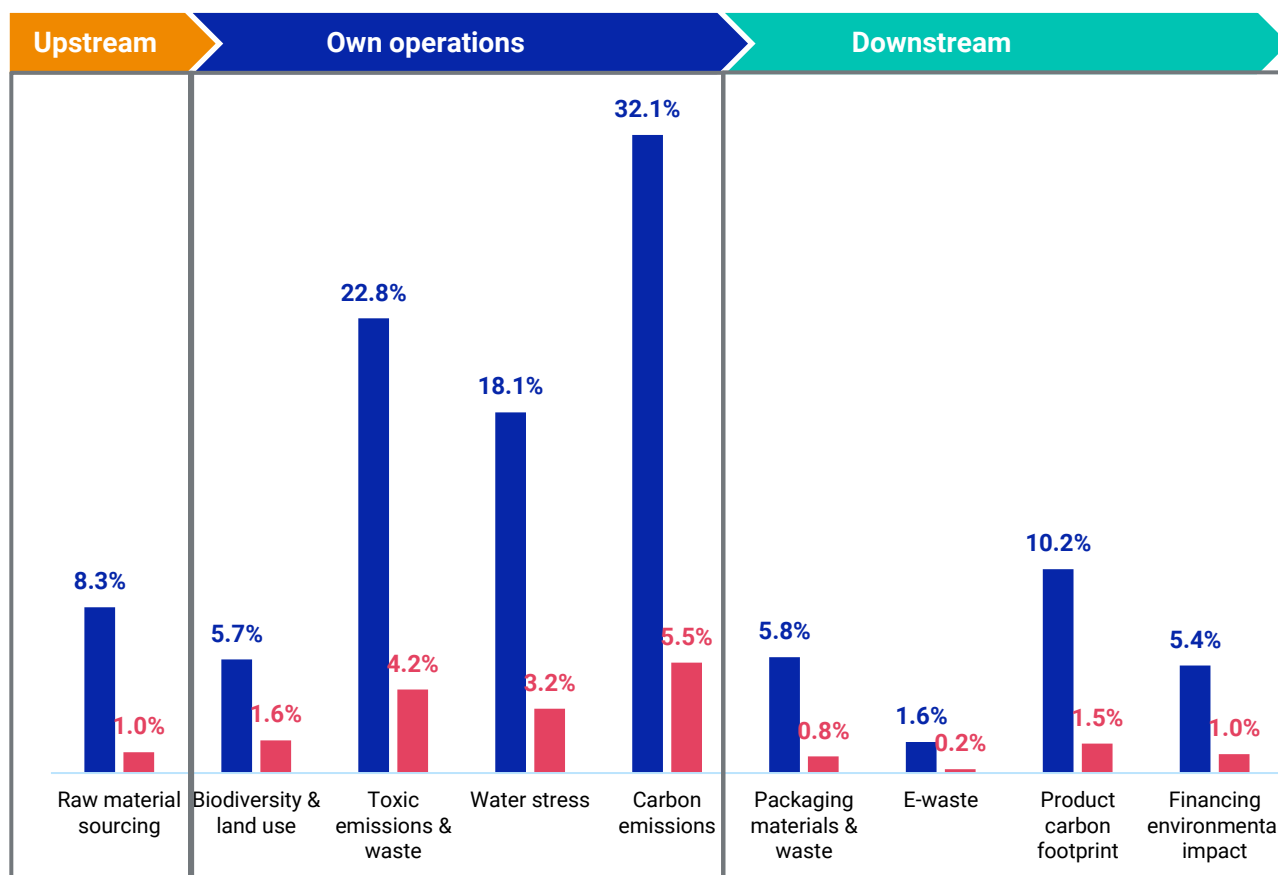
Of all the constituent companies in the MSCI AC Asia Pacific IMI, 13% (562) were flagged for assets located in BSA, as of Oct. 17, 2023. Having operations in a BSA does not mean that a company is adversely impacting the biodiversity in these geographies. Additional tools, such as key issue-level risk exposure and management assessment may be helpful. The MSCI ESG Ratings model covers key issues that can help to assess biodiversity risks from both direct and indirect operations, including upstream and downstream supply chains (Exhibit 2).

Our focus in this report is on biodiversity-relevant risks from direct operations. We assessed companies' exposure and management practices using the key issues of biodiversity and land use, toxic emissions and waste and water stress, as they can help identify high-risk sectors and companies in BSA. Overviews of each of these three key issues<sup>11</sup> are provided below:

<sup>11</sup> For more information on the key issues and the methodology, refer to "[MSCI ESG Ratings Methodology](#)," MSCI ESG Research, February 2024.

- **Biodiversity and land use** evaluates companies' exposure to and management of changes in land and sea use and overexploitation of organisms.
- **Toxic emissions and waste** assesses companies on their potential environmental contamination and toxic or carcinogenic emissions arising from their operations, as well as on the strength of their environmental management systems.
- **Water stress** evaluates companies' water intensity, exposure to water-stress risks and their efforts to manage these.

**Exhibit 2: APAC companies assessed across biodiversity-related key issues and exposed to BSA**



■ The constituents of the MSCI AC Asia Pacific IMI assessed on the relevant Key Issues

■ The constituents of the MSCI AC Asia Pacific IMI flagged for assets in BSA and assessed on the relevant Key Issues

*Of all the constituents of the MSCI AC Asia Pacific IMI (n=4,307), 36% (1,540) were assessed on at least one biodiversity-related key issue. Data as of Oct. 17, 2023. Source: MSCI ESG Research*

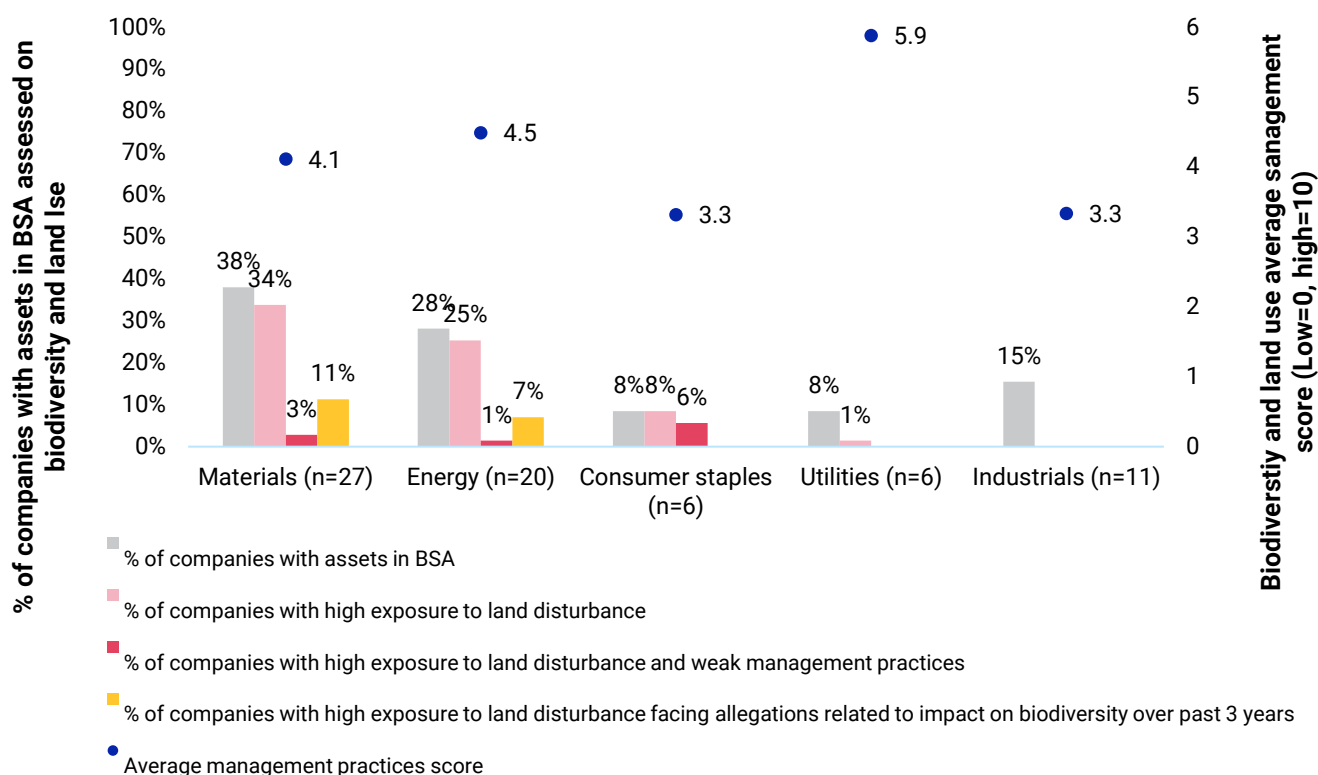
In the following sections, we will demonstrate how investors can identify sectors and companies with a high exposure to risks of contributing to biodiversity losses in fragile ecosystems through their direct operations. We will focus on three types of biodiversity risk — **land disturbances**, **pollution** and **water stress**.

## Identifying companies at risk of causing land disturbance

Risk exposure is determined by assessing the proportion of a company's operations that are based in areas with high/moderate/low biodiversity sensitivity (determined by the number of protected species) and the extent to which those operations may contribute to nature disturbance or cause land degradation and impact ecosystems. The strength of each company's risk management is assessed through commitments to minimize disturbances, protect community resource uses, improvement trends in land-use practices and avoidance of controversies.<sup>12</sup>

Of the MSCI AC Asia Pacific IMI constituent companies assessed on biodiversity and land use, 71 (28.7%) reported assets in BSA. Of these, 49 were estimated to have had high exposure to operations that may impact wildlife or cause biodiversity degradation (Exhibit 3).<sup>13</sup>

**Exhibit 3: Sectoral variations in metrics from the key issue of biodiversity and land use**



The analysis included consumer staple (n=6), energy (n=20), financials (n=1), industrials (n=11), materials (n=27) and utilities (n=6) constituents of the MSCI AC Asia Pacific IMI. We did not include financials (n=1) in the exhibit because there was no exposure to high-risk business segments. As per the MSCI ESG Ratings methodology, risk exposure values between 6.6 and 10 are considered high, while for this analysis, weak risk management practices are defined by risk management scores below 3 (out of 10). Data as of Oct. 25, 2023. Source: MSCI ESG Research

<sup>12</sup> A controversy case is defined as an instance or ongoing situation in which company operations and/or products allegedly have a negative environmental, social and/or governance impact. Each controversy case is assessed for the severity of its impact on society or the environment and consequently rated very severe (reserved for "worst of the worst" cases), severe, moderate or minor, as per the [MSCI ESG Ratings Methodology](#). In this assessment, we considered controversies that started between November 2020 to November 2023.

<sup>13</sup> The level of risk exposure is the percentage of reserves and production in regions considered to be at risk of operational disruptions (based on the level of deforestation, fragility of ecosystems and communities' economic dependence on natural resources) and the percentage of assets in high-impact operations.



For companies facing the highest range of biodiversity-related risks, seven were assessed as having the weakest management practices compared with sector peers (Appendix, Exhibit A2). By sector, these were:

- **Materials:** Lynas Rare Earths Ltd., Mineral Resources Ltd.
- **Consumer staples:** Charoen Pokphand Indonesia, IOI Group, Australian Agricultural Company, Wens Foodstuff Group Co. Ltd.
- **Energy:** Whitehaven Coal

High levels of risk exposure may limit a company's ability to prepare for unexpected events. Companies in the materials (e.g., surface mining), consumer-staples (e.g., palm oil production) and energy sectors appeared to be more at risk of damaging pristine ecosystems due to logging and land/forest degradation. Where risk exposure is particularly high, even companies with better management practices may find it difficult to minimize disturbances from their operations.

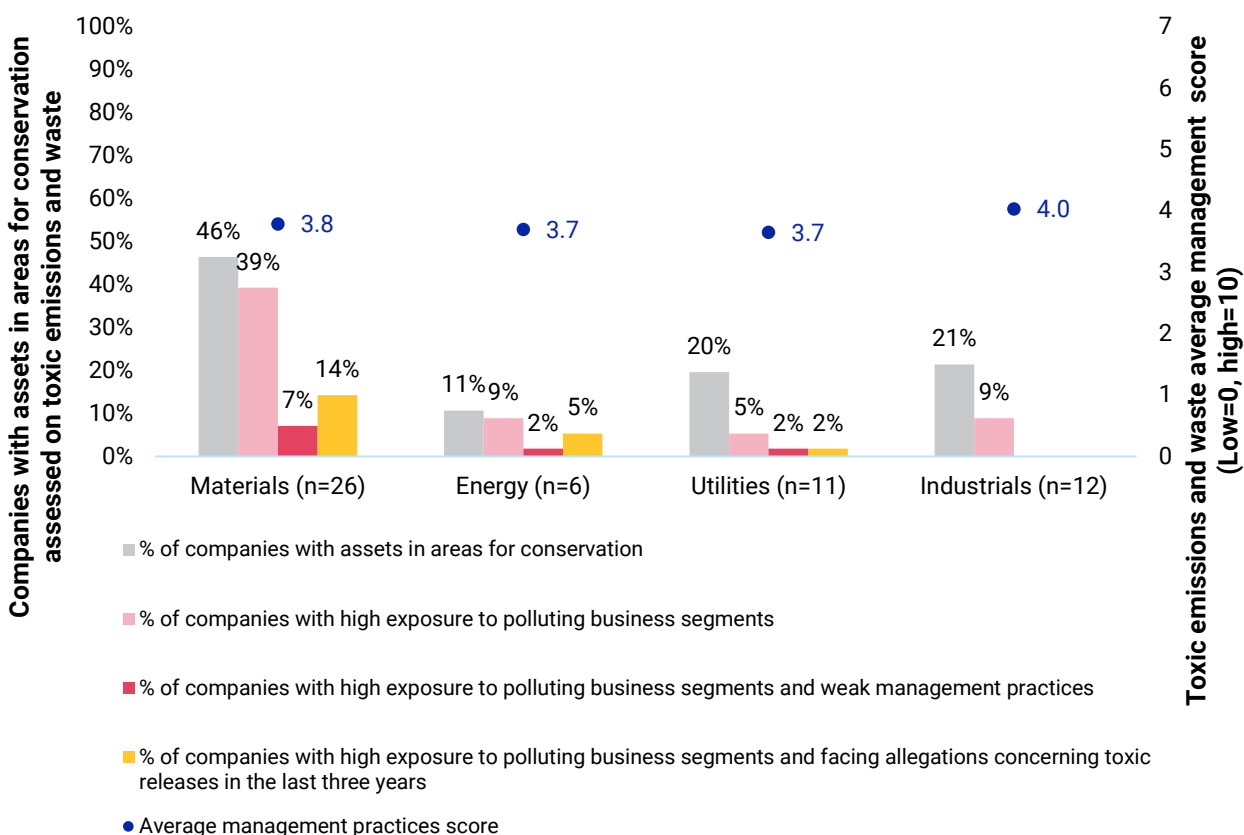
Our analysis, shown in Exhibit 3, indicates that 18% of companies (13) faced allegations of negative biodiversity impacts over the last three years. Of the five sectors we assessed, environmental controversies were most common among materials (one in three) and energy companies (one in four). Allegations included land degradation, oil and toxic spills and biodiversity-related impacts on local communities (as of Nov. 14, 2023). This may indicate either potential lapses in oversight when implementing environmental management systems or difficulties in mitigating residual risk. Notably, companies in consumer staples faced no new allegations from direct operations involving deforestation or wildlife impact, from November 2020 to November 2023. Any cases still considered "ongoing" began prior to November 2020.

## Identifying companies at risk of causing pollution in conservation areas

We identified 56 (5.7%) constituents of the MSCI AC Asia Pacific IMI that were both assessed on the toxic emissions and waste key issue and had three or more physical assets located within a 1.5 km vicinity of conservation areas.<sup>14</sup> We assessed these companies on their risk exposure to highly pollutive business segments (e.g., the release of hazardous waste and carcinogenic byproducts) and the strength of their related environmental management systems to control the release of such substances (Exhibit 4).

<sup>14</sup> The [MSCI Biodiversity-Sensitive Areas Screening Metrics](#) identify companies with physical assets located within a 1.5 km vicinity of a BSA, which include healthy forest, intact biodiversity areas, prime areas for conservation and deforestation fronts. For the toxic emissions and waste key issue assessment, we focus on companies with assets in prime areas for conservation because such areas include the most pristine and fragile ecosystems where pollution may have the highest material impact. Areas for conservation include pristine areas with 50% of the terrestrial realm that, if conserved, would reverse further biodiversity loss, prevent CO2 emissions from land conversion and enhance natural carbon removal.

**Exhibit 4: Sectoral variations in metrics from the key issue of toxic emissions and waste**



The analysis included energy (n=6), financials (n=1), industrials (n=12), materials (n=26) and utilities (n=11) constituents of the MSCI AC Asia Pacific IMI. We did not include financials (n=1) in the graph because the sector constituent in our analysis had no exposure to high-risk business segments. As per the MSCI ESG Ratings methodology, a high exposure score is between 6.6 to 10. For this analysis, weak risk management practices are defined by risk management scores below 3 (out of 10). Data as of Oct. 25, 2023. Source: MSCI ESG Research

A total of 35 companies in our sample (63%) were estimated to operate in business segments with a relatively high intensity of pollution and toxic emissions. Among these companies, around one third (13) faced allegations<sup>15</sup> related to chemical spills, toxic releases to the environment or environmental impact concerns, raised by local communities or environmental non-governmental organizations over the last three years, as of Nov. 14, 2023. One company in the materials sector (Newcrest Mining Ltd.) faced allegations assessed as severe.

For companies facing the highest range of toxic emission-related risks, six were assessed as having the weakest management practices compared with sector peers (Appendix, Exhibit A3). By sector, these were:

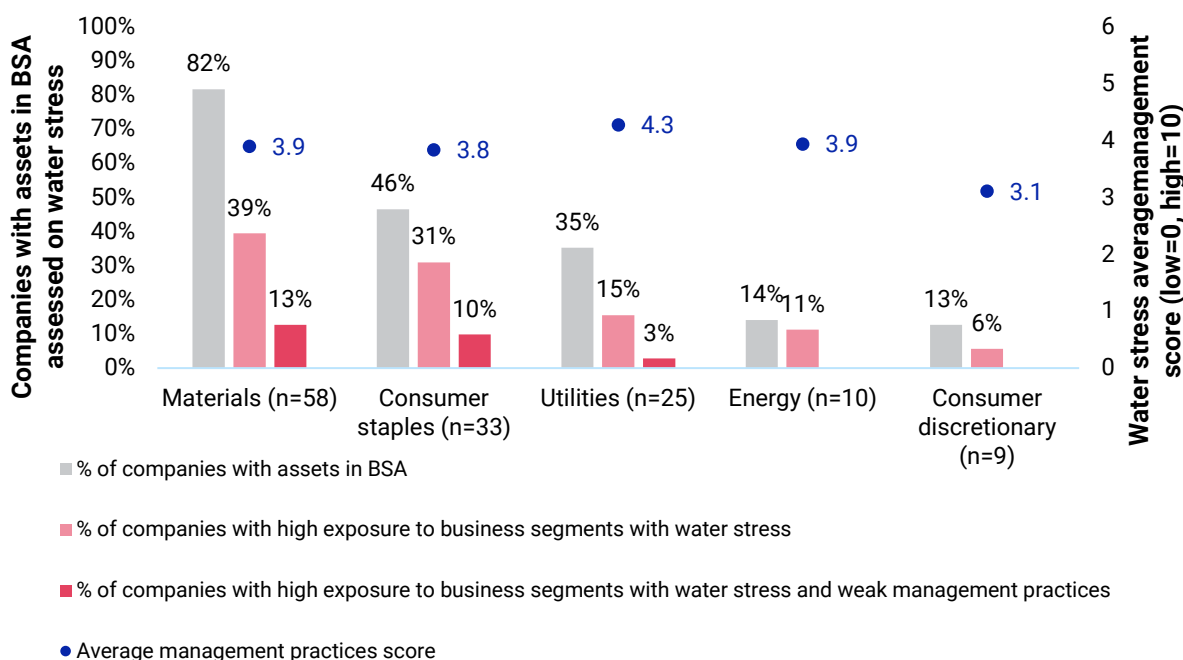
<sup>15</sup> In this assessment we considered controversies that started between November 2020 and November 2023. Each controversy case is assessed for the severity of its impact on society or the environment and consequently rated very severe (reserved for "worst of the worst" cases), severe, moderate or minor, as per the [MSCI ESG Ratings Methodology](#).

- **Materials:** BHP Group Ltd., Regis Resources Ltd., Ramelius Resources Ltd., Northern Star Resources Ltd.
- **Utilities:** AGL Energy Ltd.
- **Energy:** Ampol Ltd.

## Identifying companies with water-intensive businesses operating in water-dependent regions

Demands on freshwater resources across ecosystems can cause biodiversity to decrease. Wetlands, for example, harbor a large diversity of species and depleting water resources can have a broad impact. Similarly, more arid environments may have lower species density than other ecosystems, but the impacts of water depletion can be particularly severe. Companies in sectors that can utilize alternative water sources such as rain, sea water or grey water, may be better positioned to lower their freshwater dependency and reduce risks related to water stress.

**Exhibit 5: Sectoral variations in metrics from the key issue of water stress**



The analysis included communication services (n=1), consumer discretionary (n=9), consumer staples (n=33), energy (n=11), financials (n=1), industrials (n=1), information technology (n=1), materials (n=58) and utilities (n=26) constituents of the MSCI AC Asia Pacific IMI. We did not include communication services (n=1), industrials (n=1), information technology (n=1) and financials (n=1) in the exhibit because the sector constituents in our analysis had no exposure to high-risk business segments. Data as of Oct. 25, 2023. Source: MSCI ESG Research

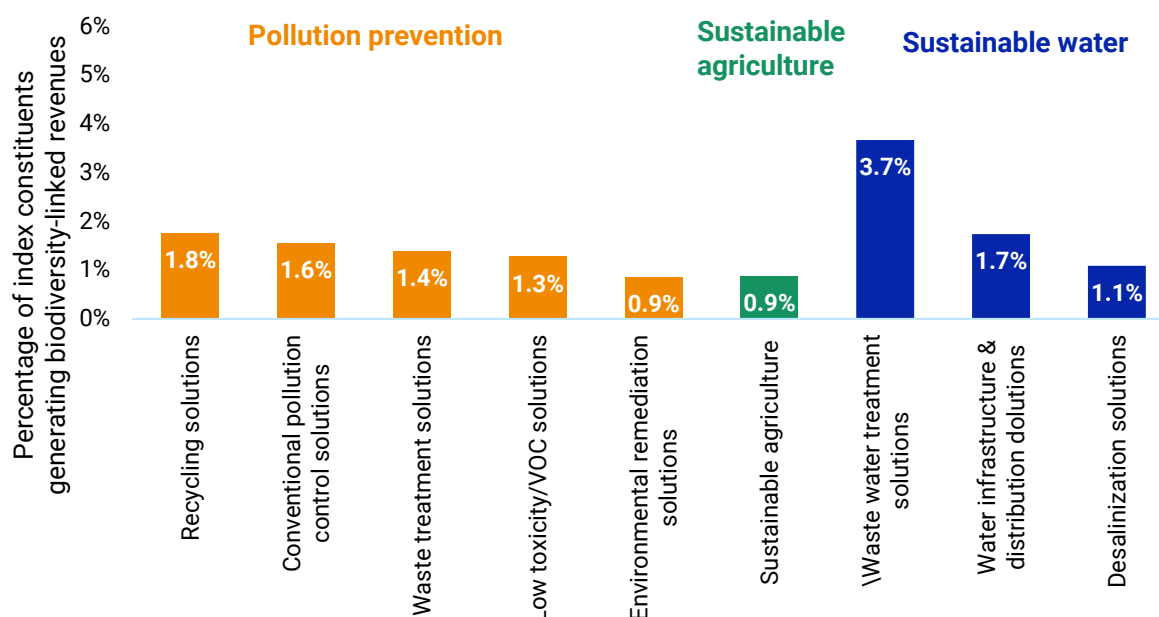
From our sample, 139 companies (17.6%) assessed on water stress had three or more physical assets located within a 1.5 km vicinity of BSA. Over half (73) of those companies were estimated to operate in business segments associated with water stress (Exhibit 5). Certain water-intensive industries, for example, utilities (water and electric), food products, beverages and metals and mining, especially with operations in biodiversity-sensitive regions, may face higher risks of

impacting fragile ecosystems. Notably, while we identified a handful of APAC companies that faced high risk exposure but had relatively weak management practices under the biodiversity and land use (3%) and toxic emissions and waste key issues (7%), a much greater proportion of companies (13%) faced high exposure to water stress-related risks but did not appear to have comprehensive efforts to manage those risks (Appendix, Exhibit A4).

## Opportunities in addressing biodiversity impacts

While we have so far only focused on risks, there are also opportunities for companies whose products and services could help tackle biodiversity impacts or reduce the loss of natural capital. We used the MSCI ESG Sustainable Impact Metrics to identify potential investment opportunities in APAC (Exhibit 6).

**Exhibit 6: Proportion of APAC companies flagged for generating revenue from biodiversity-linked sustainable-impact products or services**



The analysis is based on constituents (n=4,307) of the MSCI AC Asia Pacific IMI. MSCI ESG Sustainable Impact Metrics capture revenue from products and services that positively impact the environment under six themes which align closely with the EU Taxonomy's objectives. The metrics can help investors identify companies with the potential to counter biodiversity loss through products focused on areas such as sustainable agriculture or pollution prevention. Data as of Oct. 17, 2023. Source: MSCI ESG Research

Our analysis revealed that 9.3% (401) of constituent companies of the MSCI AC Asia Pacific IMI were identified to have revenues from sustainable-impact solutions. We found that 7% of these companies were estimated to generate revenues related to pollution prevention, 1% related to sustainable-agriculture solutions and 8% related to sustainable-water solutions (Exhibit 6). Using sustainable-impact metrics, we further identified a list of companies (top three per solution) with the highest revenue percentage from sustainable-impact solutions and products (Exhibit 7).

**Exhibit 7: Companies with the highest revenue share from biodiversity-linked opportunities**

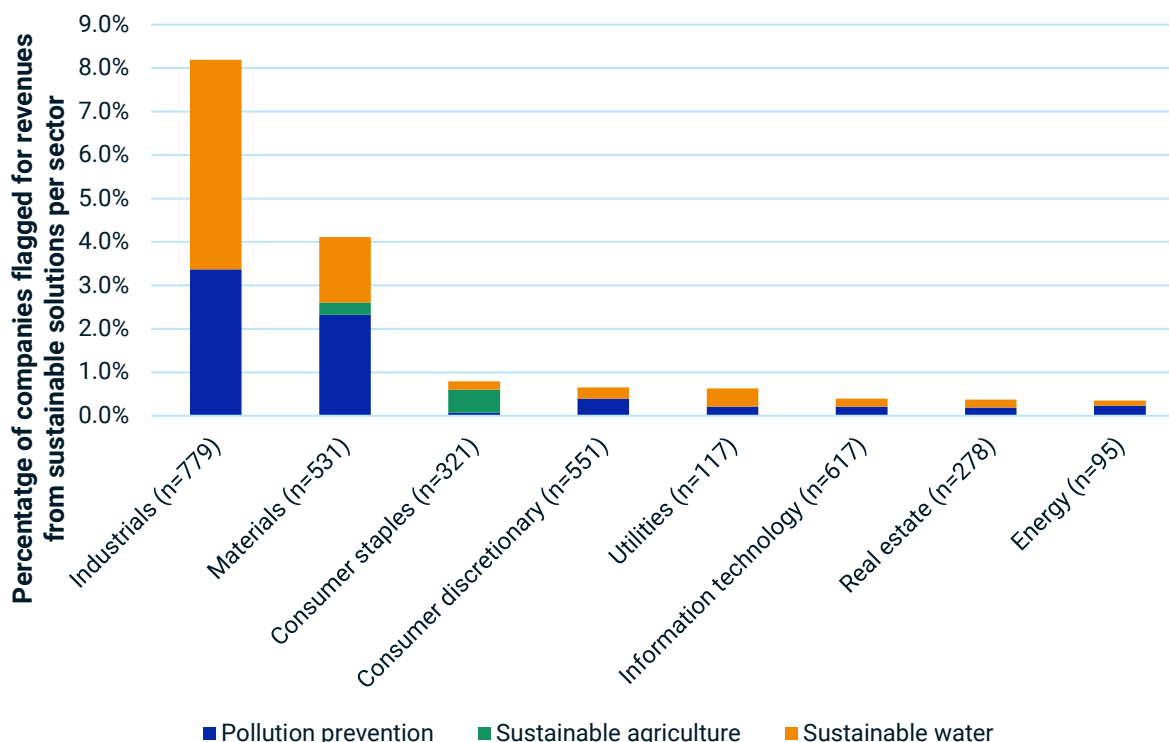
Theme	Solution	GICS sector	Top three companies by revenue	Revenue range (% total)
<b>Pollution prevention</b>	Waste treatment solutions	Industrials	Sunny Friend Environmental Tech	>99%
		Industrials	China Conch Environment Protection	>70%
		Industrial	Zhejiang Weiming	>55%
	Recycling solutions	Materials	SIMS	>90%
		Materials	ARE Holdings	>35%
		Industrials	INSUN Environmental New Tech	>35%
	Low toxicity/VOC solutions	Materials	Konishi	>28%
		Materials	Chugoku Marine Paints	>20%
		Materials	Akzo Nobel India	>20%
	Conventional pollution control solutions	Industrials	NGK Insulators	>30%
		Industrials	Ecopro HN	>30%
		Industrials	Kubota	>25%
<b>Sustainable agriculture</b>	Sustainable agriculture	Consumer staples	Greenpanel Industries	>55%
		Consumer staples	QL Resources	>55%
		Consumer staples	GFPT	>50%
<b>Sustainable water</b>	Wastewater treatment solutions	Materials	Calix	>45%
		Industrials	Organo	>30%
		Industrials	Metawater	>30%
	Water infrastructure & distribution solutions	Utilities	BEWG	>85%
		Materials	Finolex Industries	>60%
		Materials	Jindal SAW	>35%
	Water recycling equipment & services	Industrials	Daiseki	>15%
		Industrials	Kurita Water Industries	>15%
		Industrials	Ion Exchange (India)	>5%

The analysis is based on the constituents (n=4,307) of the MSCI AC Asia Pacific IMI. We consider revenue from products that match the sustainable-impact categories outlined above. When companies do not report exact revenue figures for products and services in the MSCI ESG Sustainable Impact framework, we use an estimate of the extent of company involvement in the subject activity. The estimation model incorporates disclosed data whenever available through company reports and additional sources. In the absence of information indicating otherwise, assumptions are made that product lines contribute in equal weight to company revenue. Further details are provided in the MSCI ESG Sustainable Impact Metrics Methodology available on ESG Manager. Data as of Oct. 17, 2023. Source: MSCI ESG Research

These opportunities were not evenly distributed across sectors – the number of companies with sustainable-impact revenues for industrials and materials was notably higher than for the other six sectors in our analysis (Exhibit 8).



**Exhibit 8: The proportion of companies deriving revenue from sustainable solutions varied across sectors**



*The analysis is based on constituents (n=4,307) of the MSCI AC APAC IMI, identified for revenue contributions from sustainable-impact solutions. Data as of Oct. 17, 2023. Source: MSCI ESG Research*

## Conclusion

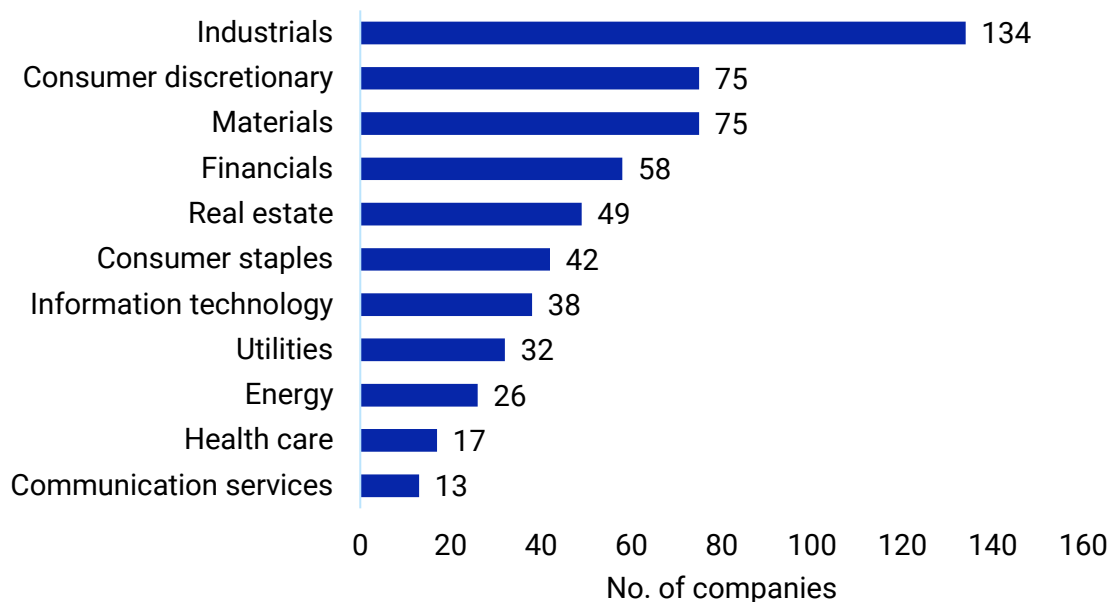
Declining biological diversity may increasingly become a financially relevant risk for investors. For example, companies that adversely impact biodiversity-sensitive environments may see higher risks of reputational damage, divestments by concerned investors and regulatory restrictions. Investors aiming to address these risks may wish to keep a closer watch on those sectors and companies with high exposure to reserves (e.g., oil and gas) and operations involving significant disturbance of land areas, contributions to pollution or water stress.

To help APAC- and biodiversity-focused investors identify potential investment risks, this report looked initially at BSA and which companies in the MSCI AC Asia Pacific IMI were at greater risk of effecting negative impacts. By using three of our biodiversity-related key issues, we then differentiated companies based on their relative risk exposure and capacity to mitigate those risks. We also looked at the opportunities that these companies may be exposed to – where specific products or services that positively impact biodiversity (or mitigate negative pressures) might offer companies a competitive advantage.

We see growing needs from various stakeholders, including companies, to assess the biodiversity impacts of day-to-day operations and the risks associated with those impacts. Our results showed clear company and sectoral differences across both biodiversity-related risks and opportunities – differences that investors may find helpful in executing a range of investment strategies.

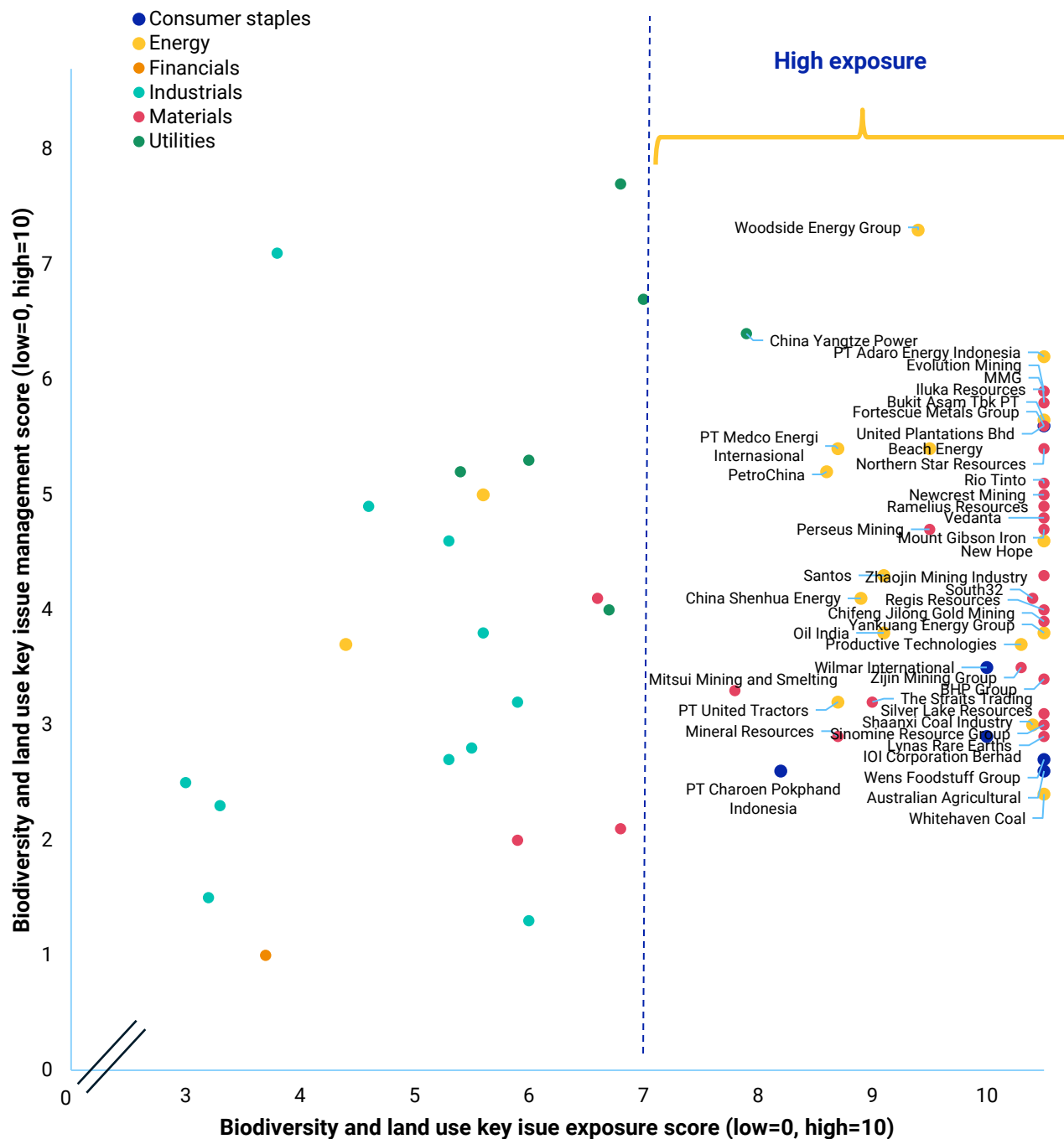
## Appendix

**Exhibit A1: Sectoral variation in asset exposure to BSA**



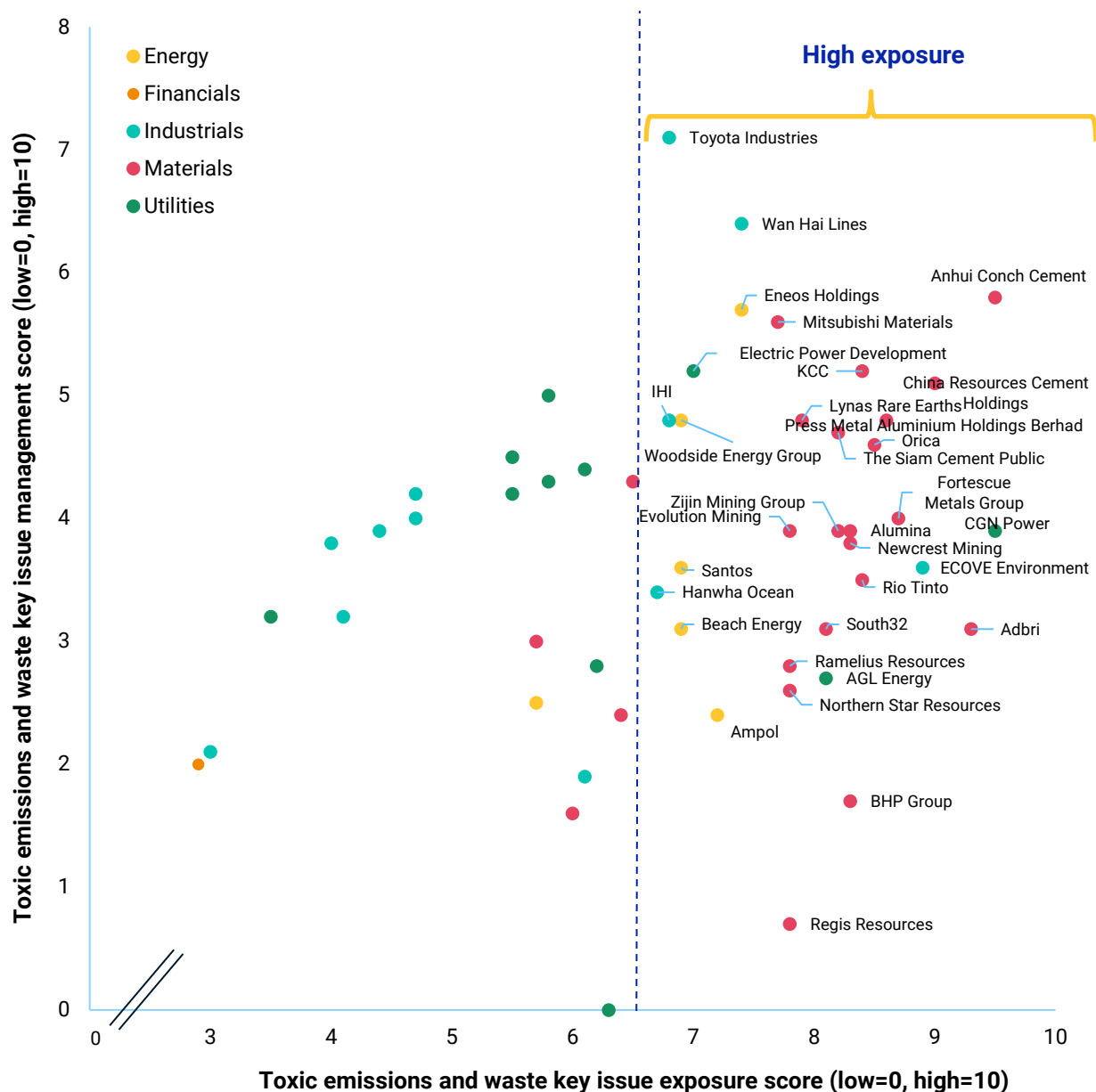
13% (n=520) of MSCI AC Asia Pacific IMI constituents disclosed assets in BSA. Data as of Oct. 17, 2023. Source: MSCI ESG Research

## Exhibit A2: APAC companies with assets in BSA that are also assessed on the key issue of biodiversity and land use



The analysis included consumer staples (n=6), energy (n=20), financials (n=1), industrials (n=11), materials (n=27) and utilities (n=6) constituents of the MSCI AC Asia Pacific IMI. As per the MSCI ESG Ratings methodology, high exposure score is between 6.6 and 10. For this analysis, weak risk management practices are defined by risk management scores below 3 (out of 10). Data as of Oct. 25, 2023. Source: MSCI ESG Research

## Exhibit A3: APAC companies with assets in conservation areas that are also assessed on the key issue of toxic emissions and waste



The analysis included energy (n=6), financials (n=1), industrials (n=12), materials (n=26) and utilities (n=11) constituents of the MSCI AC Asia Pacific IMI with reported assets in conservation areas. Data as of Oct. 25, 2023.  
Source: MSCI ESG Research

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