ESG SPOTLIGHT

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Biodiversity in the Balance
Hedging Portfolio Risks

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ESG Spotlight | Biodiversity in the Balance: Hedging Portfolio Risks

Themes:
Land use and biodiversity, deforestation, supply chain management, portfolio analysis, long-short strategies

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Key Insights

Land use and biodiversity controversies are on the rise:

- Increased NGO reporting and improvements in our incidents tracking abilities have contributed to a growing number of firms being linked to land use and biodiversity controversies over the past decade (2012-2023).
- During this period, 1,659 land use and biodiversity incidents were associated with supply chain management and 776 pertained to direct operational involvement. The Food Products industry accounts for most of these cases.
- While few incidents initially resulted in a high business impact and risk assessment, those that have tend to involve allegations of violations of Indigenous rights or destruction of endangered species' habitat.
- The industries with the largest portion of direct involvement in land use and biodiversity incidents are Paper & Forestry (12%), Oil & Gas Producers (9%), Industrial Conglomerates (8%) and Utilities (7%).
- The industries with the largest portion of company involvement due to supply chain links are Automobiles (8%), Food Retailers (7%), Textile & Apparel (6%) and Household Products (6%).

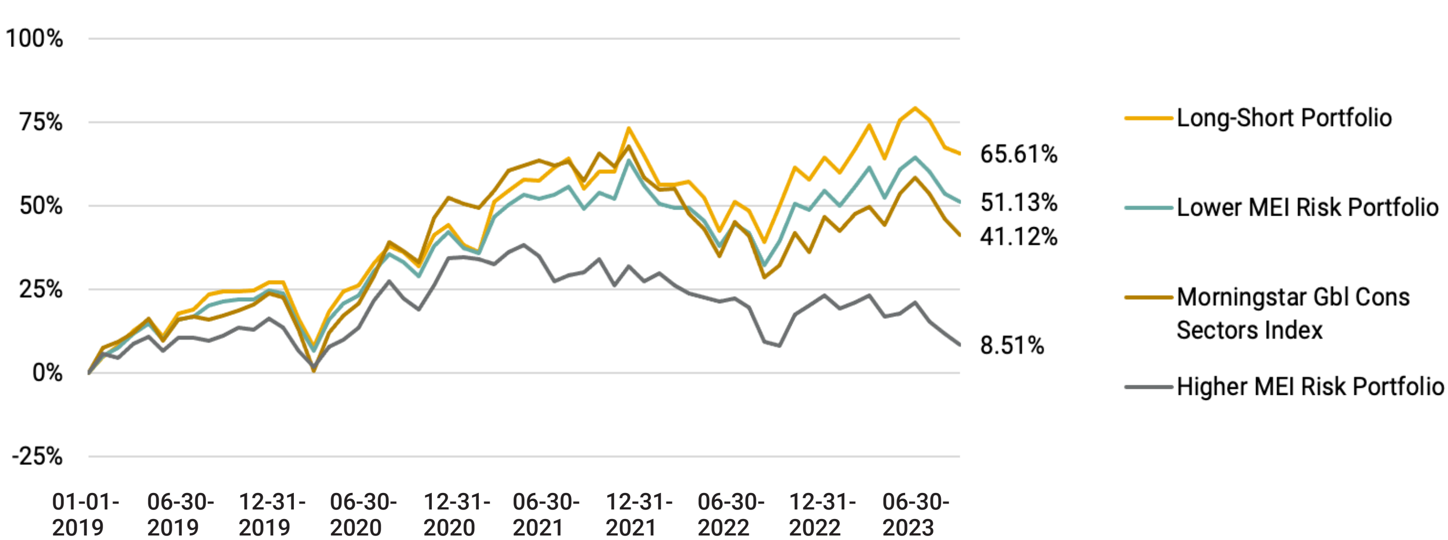
Industries with high exposure to the issue tend to lack adequate management initiatives:

- Food Products has the highest average risk score (3.2), the largest range of risk scores (0.7-8.1) and the most outliers on the Material ESG Issue (MEI) Land Use and Biodiversity – Supply Chain.
- Based on available evidence, 31% of companies in the Food Products industry have no official deforestation policy and 36% disclose a weak policy or only a general statement on the topic.

Analyzing model consumer sector portfolio strategies shows how ESG integration may yield upside:

- A model portfolio that invests in stocks with lower MEI risk scores delivered a cumulative return of 51.1% over the past five years (2019-2023) and had a Sharpe ratio of 0.48, compared to a higher MEI risk portfolio that had an 8.5% cumulative return and a Sharpe ratio of -0.04.
- The outperformance of the Lower MEI Risk portfolio is mainly attributable to the effects of stock selection in Consumer Defensive and sector allocation effects in Consumer Cyclical.
- The Long-Short Portfolio, which addresses growing market interest in incorporating ESG signals into alternative investments, outperformed the Lower and Higher MEI Risk portfolios, yielding a cumulative return of 65.6%.

Exhibit 1: Cumulative Returns of Three Model Portfolios Based on Land Use and Biodiversity – Supply Chain Risk Scores*



*Study period: 1/1/2019 to 10/31/2023.

Source: Morningstar Sustainalytics, Morningstar Direct

An Evolving Landscape

Building on Market Driven Initiatives

Investors have grown increasingly interested in addressing portfolio risks linked to biodiversity loss, which can stem from holding stocks in companies involved in land use changes. Such activities have led to operational and supply chain disruptions, reputational damage and systemic risks. With more than half of the world's total GDP moderately or highly dependent on nature,[2] several organizations, such as the Principles for Responsible Investment (PRI)[3] and the Taskforce on Nature-related Financial Disclosures (TNFD),[4] have recently published recommendations for companies and investors to incorporate nature into their decision-making process. Building on these initiatives, this report draws on a selection of relevant Environmental, Social and Governance (ESG) data points to support an investment thesis that mitigates risks related to land use and biodiversity (Exhibit 2).

Controversy Research

According to data from our Controversy Research team, Paper & Forestry, Oil & Gas Producers, Industrial Conglomerates and Utilities are among the industries with the largest portion of firms directly involved in incidents related to land use and biodiversity. Automobiles, Food Retailers, Textile & Apparel and Household Products firms are most commonly involved through their supply chains.

ESG Risk Ratings

Applying our aggregate measure of the Material ESG Issue (MEI) Land Use and Biodiversity – Supply Chain, which assesses both company exposure and management of the issue, we identify Food Products as the industry facing the highest levels of risk on this issue. The industry is highly exposed due to its dependence on commodities such as palm oil, soya, cattle, cocoa and coffee.

MEI Integration

We have built three model portfolio strategies. As shown in Exhibit 1 (p. 2), on a cumulative returns basis, the Lower MEI Risk portfolio outperformed the Higher MEI Risk portfolio by more than 42 percentage points over a five-year period. While this result suggests the possibility that consumer goods companies that face higher biodiversity risk than their peers may be systematically overpriced by the market, many other ESG and non-ESG factors contribute to the performance of each stock. Assessing whether MEI risk scores have any causal connection to individual stock performance is beyond the scope of this study. The Long-Short Portfolio, which we have developed to address growing market interest in incorporating ESG signals into alternative investments (including hedge funds), yielded a cumulative return of 65.6%, outperforming the Lower MEI Risk portfolio, the Higher MEI Risk portfolio and the market, as proxied by the Morningstar Global Consumer Sectors Index.

Exhibit 2: Research, Data and Tools Applied in the Report

Source: Morningstar Sustainalytics, Morningstar Direct

Healthy Ecosystems, Communities and Economies

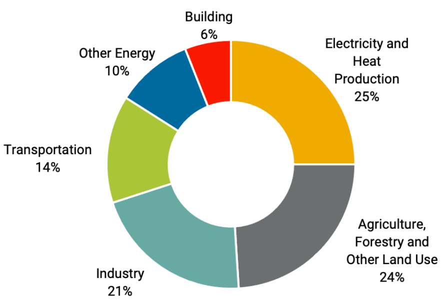
Drivers of Biodiversity Loss

Industrial activities have led to biodiversity loss on a global scale. Primary drivers include land and sea use change for large scale food production, overexploitation linked to overfishing, overhunting and overharvesting, climate change, pollution and invasive alien species.[5]

A Soccer Field Sized Area of Forest is Lost Each Second

Forests cover more than 30% of Earth's land area, providing unique habitats and critical resources for 80% of terrestrial plants and animals. Over the past 30 years, approximately 420 million hectares (ha) of forest have been converted to other land uses.[6] Today, the world loses tree cover at an estimated rate of about 8,000 square metres – roughly the surface area of a soccer field – every second.[7]

Exhibit 3: GHG emissions by economic sector



Source: IPCC [8]

The environmental impacts of deforestation include disruptions to rivers and water systems, soil erosion, contamination, biodiversity loss and climate change. Global greenhouse gas (GHG) emissions from agriculture, forestry and other land uses account for nearly a quarter of all anthropogenic GHG emissions (Exhibit 3).[9] Forests absorb carbon from the atmosphere. When cleared, the land stops sequestering carbon and releases it into the atmosphere as organic matter decays or burns. A recent study published in Nature found that from 2010 to 2019, forest degradation led the aboveground biomass in Brazil's Amazon basin to release about 16% more carbon than it sequestered.[10]

Scientists are increasingly expressing concern about rainforests reaching a tipping point; that is, a scenario in which restoration to previous states may become impossible. Rainforests like the Amazon have a self-sustaining water cycle; trees release moisture into the atmosphere through evapotranspiration, which leads to rainfall that sustains the forest. When forest degradation reaches a critical threshold, the feedback loops that maintain a forest's water cycle can be disrupted, leading to decreased rainfall and drier climates. If the Amazon were to tip into a savanna-like landscape, the consequences would be far-reaching for regional and global climate patterns, biodiversity, water cycles and the livelihoods of local communities that depend on forest resources.[11]

Social and Ethical Issues

Deforestation is also associated with a swath of social problems, such as land grabbing, violence, corruption and other criminal activities. A 2021 study showed how drug trafficking tends to be intertwined with environmental crimes in the Amazon because illicit commodities, including illegal drugs and timber, are often trafficked along the same routes and smuggled together to overseas markets.[12] In regions of high deforestation, companies often disregard the land rights of Indigenous people, while local communities face the loss of livelihoods and displacement. Deforestation can also involve violent altercations. A report by Global Witness found that 212 environmental activists were killed in 2019 alone, and more than half of the cases took place in Columbia or the Philippines.[13]

Human Health

Destroying forests and expanding infrastructure increases the likelihood of diseases and pandemics. According to a growing body of scientific research, biodiversity loss typically results in a few species replacing many. As species in forested areas become stressed or go extinct, their environmental niches can be filled by other species, such as rats and bats, which tend to survive and prosper in deforested areas. These species are more likely to host pathogens that can spread to humans, including potentially deadly viruses. Scientists have been urging governments to help reduce the risk of future pandemics by mitigating deforestation and controlling wildlife trade.[14]

Missing the Forest for the Green

Quantifying the Economic Toll

Data from Global Forest Watch, an online platform that provides data and tools for monitoring forests, indicate that the main drivers of deforestation over the past two decades were forestry, activities related to commodities, wildfire and shifting agriculture (Exhibit 4).[15] Commodity-driven deforestation is fuelled by a growing demand for consumer goods, the manufacturing of which requires commodities like palm oil, soya, cattle, timber, cocoa, coffee, rubber and precious metals.

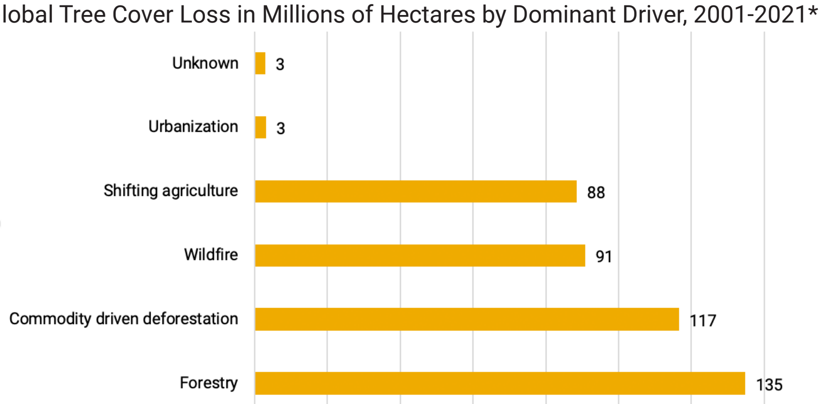
Accounting for Externalities

While companies in several industries associated with deforestation have profited from unsustainable land use practices, recent research suggests that the overall economic damage linked to forest degradation far outweighs the short-term benefits. A report by the Organisation for Economic Co-operation and Development (OECD) estimates that from 1997 to 2011, USD 4-20 trillion was lost annually in ecosystem services (such as crop pollination, water purification, flood protection and carbon sequestration) due to land-cover change, and USD 6-11 trillion was lost annually from land degradation.[16]

Economic Drivers

Deforestation poses risks to companies within their direct operations as well as their supply chains. Consumers, regulators and investors are increasing the pressure on companies to act by demanding deforestation-free products. For example, the new EU regulation on deforestation-free products, which aims to ensure that relevant forest-risk commodities (e.g. soya, beef, palm oil) will be prevented from entering the EU market or exported unless they can be proven to be free from deforestation. Operators and traders have to implement the rules by January 2025.[17] Exhibit 5 outlines how a combination of different factors, including physical, legal, transition and systemic risks, can affect a company's operations, credit worthiness and market position.

Exhibit 4: Estimated Global Tree Cover Loss in Millions of Hectares by Dominant Driver, 2001-2021*



*The methods behind this data have changed over time. Be cautious comparing old and new data especially before/after 2015.[18]

Source: Global Forest Watch

Exhibit 5: Categories of Potential Investment Risk Connected to Biodiversity Loss

Types of Risk	Operational	Credit	Market
Physical	Business continuity issues or opportunity costs linked to loss of access to raw materials and ecosystem services, e.g. freshwater, fish, fertile soil, genetic diversity.	Revaluation of debt servicing capacity and collateral for companies and governments.	Rating downgrades and share price losses.
Litigation and Regulation	New regulatory rules and trade agreements impose limitations on investing in activities that impact biodiversity.	Reputational damages due to false reporting of biodiversity risks and greenwashing.	Costs from changes in licences, permitting and compliance.
Transition	Amid a global shift to an economy geared towards conserving and restoring biodiversity, reputational damage can stem from a failure to manage biodiversity effectively.	Investees face losses due to sanctions, stranded assets, damages, inability to access project finance or increased taxes related to negative impacts on biodiversity.	Long-term price increases as a result of biodiversity change. Market access impacted e.g. by failure to meet commitments on deforestation and consumer preferences.
Systemic	Reputational loss for entire industries and markets. Operational risk to businesses across the economy.	Economy can no longer be insured at a reasonable cost. Risk to sovereigns dependent on natural resources — impacts can lead to default risk.	Market-threatening effects from biodiversity loss globally or regionally.

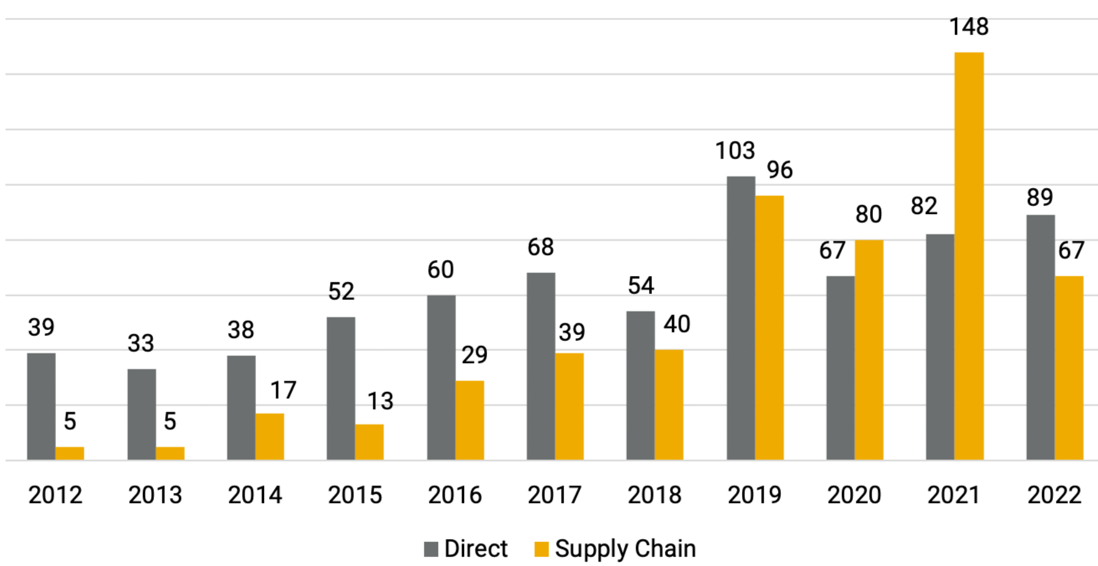
Source: Morningstar Sustainalytics, adapted from PRI[19] and PwC.[20]

A Few Bad Apples?

Investment Exposure

Sustainalytics' Controversies Research team tracks and assesses companies' involvement in a wide range of ESG events, including cases linked to land use and biodiversity.[21] In a recent edition of our ESG Spotlight Report Series, we found that the most common type of incidents linked to supply chain management relate to land use and biodiversity, with 1,659 cases having occurred between 2012 and Q1 2023.[22] Additionally, during this period, 776 incidents pertained to direct operational involvement. The high frequency of these types of incidents is driven by NGO reports. Increased NGO reporting and improvements in our incidents tracking abilities have contributed to a growing number of companies being linked to these issues over the past decade, from fewer than 50 firms in 2012 to more than 150 in 2022 (Exhibit 6). The Food Products industry accounts for most of these incidents (1,009 supply chain and 195 direct). While relatively few cases have resulted in a high business impact and risk assessment, those that have tend to be connected to other critical allegations about violations of Indigenous rights or destruction of endangered species' habitat.

Exhibit 6: Number of Firms Involved in Land Use and Biodiversity Incidents



Source: Morningstar Sustainalytics

Industry Analysis

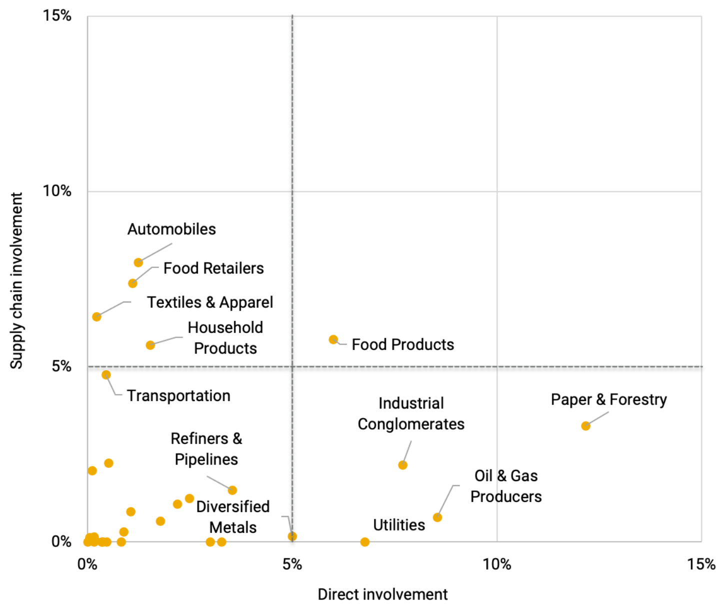
For the current study, we compared the percentage of companies that were involved in direct and supply chain incidents across different industries. Exhibit 7 groups 42 industries into four quadrants based on whether more than 5% of companies in each industry have been involved directly, or through their supply chain, in land use and biodiversity incidents. While 40 of the 42 industries in Sustainalytics' coverage have had some involvement in supply chain incidents over the past decade, only a small fraction of firms in most industries have an incident record on this issue.

Most Industries Have <5% Company Involvement

Bottom Left Quadrant

For most peer groups (34 of 42), less than 5% of industry constituents have an incident record related to land use and biodiversity during the study period. Insurance and Telecommunications are the only industries for which no related incidents have been tracked. Still, several companies in this quadrant are prone to controversies. For example, the Diversified Metals and Refiners & Pipelines industries include 30 and 12 firms, respectively, with direct involvement. Industries in extractives sectors, which are heavily dependent on non-renewable resources to produce commodities, tend to be involved in activities that take a heavy toll on the environment. As a result, they are frequently the subject of conservationist protests, regulatory fines for failure to comply with environmental laws and negative news stories about allegations of illegal occupation or destruction of forests, marshes, wetlands, rivers, oceans and other ecosystems.

Exhibit 7: Percentage of Industry Constituents Involved in Land Use and Biodiversity Incidents, 2012-2023*



*42 industries distributed by percentage of companies involved in direct or supply chain incidents linked to land use and biodiversity, Jan 2012-March 2023. The number of firms per industry is based on controversy research coverage. Industries with >4% involvement are labelled.

Source: Morningstar Sustainalytics

Industries with Direct Involvement

Bottom Right Quadrant

The industries with the largest portion of direct involvement in land use and biodiversity incidents are Paper & Forestry (12%), Oil & Gas Producers (9%), Industrial Conglomerates (8%) and Utilities (7%).

Paper & Forestry

Paper & Forestry companies extract trees from forests for wood pulp, which is used to produce paper and other forest products. Depending on a company's approach, extracting trees can result in biodiversity loss and disruptions of ecosystems, habitats, plants and animals due to forest destruction and fragmentation. Some firms in this space use pesticides, herbicides and fertilizers that pollute the environment when applications result in water and soil contamination.

Oil & Gas

The Oil & Gas industry's activities can have a significant impact on biodiversity through habitat loss, alteration of land, or specific detrimental activities. The industry typically operates in onshore, developed markets, where risks to biodiversity are well understood by neighbouring communities and regulators. Oil and gas well sites are often numerous and certain areas may have a high concentration of well pads, connecting roads and pipeline infrastructure.

Industrial Conglomerates

Industrial Conglomerates have been involved in related incidents due to being named in NGO reports as owners of agriculture companies, including subsidiaries that produce palm oil.

Utilities

Utilities' existing assets and infrastructure projects, such as power plants, transmission towers and wires, pipelines, reservoirs and hydroelectric dams, affect large tracts of land and critical bodies of water, and may have negative impacts through habitat fragmentation and ecosystem disruption. The highest biodiversity impacts are from hydroelectric projects, which may have significant negative impacts on the surrounding environment, flora and fauna.

Industries with Supply Chain Involvement

Top Left Quadrant

Automobiles (8%), Food Retailers (7%), Textile & Apparel (6%) and Household Products (6%) have had the largest percentage of company involvement in supply chain incidents linked to land use and biodiversity.

Automobiles

Most cases in the auto industry pertain to allegations that automakers have been sourcing leather from Brazilian suppliers that are involved in deforestation.

Food Retailers

Food Retailers have been involved in a wide range of controversies about selling beef, chicken, soya, paper and palm oil products that have been linked to illegal land clearing and deforestation, as well as fish and fishmeal sourced from suppliers that are allegedly involved in unsustainable and destructive fishing practices.

Textiles & Apparel

Most cases in the Textiles & Apparel industry relate to firms that procured leather sourced from Brazil, where industry suppliers are contributing to deforestation in the Amazon.

Household Products

Companies in the Household Products industry have been involved in more than 300 related incidents, most of which involve NGO reports naming firms that sell consumer products, such as cosmetics and cleaning products, that contain palm oil and mica sourced from suppliers that allegedly contribute to deforestation and habitat destruction of endangered wildlife. Other commodities associated with relevant consumer goods supply chain incidents include cocoa, timber, pulp, paper and tissue.

Top Right Quadrant

Food Products

Food Products is the only industry in our coverage with more than 5% of its constituents involved in both direct and supply chain incidents related to land use and biodiversity. This industry, which encompasses a variety of subindustries, including Agriculture, Packaged Foods, Tobacco, Soft Drinks, Beer, Wine and Spirits, accounts for 109 direct and 1,009 supply chain incidents related to this issue. As we discussed in a previous edition of our ESG Spotlight Report Series, Food Products incidents that are related to land use and biodiversity tend to be connected to a myriad of other social and environmental issues.[23] Direct incidents have involved conflicts with Indigenous and local communities, and controversies linked to land rights, workers' health and safety, legal and regulatory challenges, false or deceptive marketing practices, emissions to air, discharges and releases. The industry has been involved in supply chain incidents linked to land use and biodiversity that are also tied to other ESG controversies, including bribery and corruption, land rights, violations of employees' human rights, child labour and involvement with entities violating human rights (Exhibit 8).

Responding to Scrutiny

Companies associated with land use and biodiversity controversies have taken different approaches to address the heightened scrutiny they face because of their involvement. In some cases, we have observed companies improving the transparency of their supply chain networks, strengthening related policies and procedures, ceasing to do business with affected suppliers and managing to prevent subsequent events.

Exhibit 8: Examples of Land Use and Biodiversity Incidents in Industries with a Large Percentage of Company Involvement*

Industry	Direct	Supply Chain	Number in Sample	Example
Paper & Forestry	12%	3%	181	A 2021 report by Greenpeace and TreeMap found that the Indonesian pulp and paper company PT Sinar Mas Group was among over 600 companies that set illegal oil palm plantations inside 3.12 million hectares of Indonesia's forest estate, which comprises land previously mapped as habitat for endangered species, including orangutans, elephants and the Sumatran tiger.
Industrial Conglomerates	8%	2%	182	According to the Mighty Earth campaign group, satellite images revealed that operations at the Martabe gold mine in North Sumatra destroyed forests inhabited by the rare Tapanuli orangutan in October 2021. Jardine Cycle & Carriage, a Singaporean conglomerate, owns 50% of PT Astra International, which owns 60% of United Tractors, which operates the mine through a 95% owned subsidiary.
Utilities	7%	0%	1,153	China Yangtze Power operates and owns the Three Gorges Dam on the Yangtze River, the largest hydroelectric dam in the world. A series of academic and NGO publications identified several environmental impacts of the dam, including the flooding of 632 sq km of land, which resulted in landslides, reservoir-induced seismicity, a deterioration in water quality and a loss of biodiversity.
Food Products	6%	6%	1,351	An investigation by Global Witness linked rubber plantations owned by multiple Food Products companies across Central and West Africa to deforestation. The report used Landsat and Sentinel satellite data and determined the plantations cleared around 52,500 hectares since 2000 from Ghana, Gabon, Cameroon, Nigeria and Liberia, reportedly impacting old-growth forests and reserves.
Automobiles	1%	8%	163	The NGO Environmental Investigation Agency reported that several automakers were potentially linked with large-scale illegal deforestation in the Brazilian Amazon through their supply chains for car seats and interiors. It claims that the majority of the automotive industry did not have adequate policies in place to avoid leather linked to deforestation from entering their supply chain.
Food Retailers	1%	7%	366	A Mighty Earth report found that several Food Retailers continued to buy from suppliers engaged in deforestation in the Cerrado tropical savannah in Brazil despite their commitments to stop such purchases after an August 2020 cut-off date. The research found that suppliers sourced soya from Brazilian companies that deforested at least 27,000 hectares between August 2020 and July 2021.
Household Products	2%	6%	196	Several NGO have alleged that Procter & Gamble (P&G) and its suppliers are involved in deforestation and land clearing for oil palm plantations in Indonesia, Malaysia, Papua New Guinea, Canada and Northern Europe. P&G's exposure to deforestation and peatland clearing in its supply chain is estimated to be valued at USD 41 bn. Market access risks are estimated at USD 24 bn. A 2020 shareholder proposal to address forest-related supply chain issues won majority support.
Food Products	6%	6%	1,351	A report by Greenpeace found that around 30 companies, including suppliers of major Food Products firms, had more than 200,000 hectares of fires across their concessions between 2015 and 2019. According to the report, eight companies faced court actions or sanctions over the fires, while 20 companies had their operations sealed by the Indonesian government due to 2019 fires.

*Select industries shown.

Sources: Morningstar Sustainalytics, NGO reports[24]

Managing Land Use and Biodiversity Risk

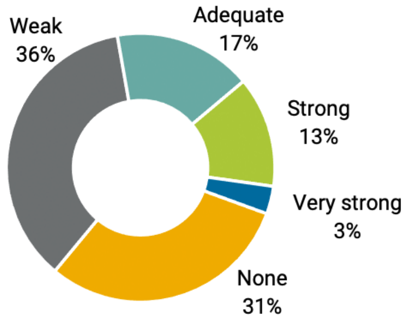
Material ESG Issues

Within Sustainalytics' ESG Risk Ratings framework, we assess companies on two Material ESG Issues (MEIs) corresponding to the two event types noted above: 1) Land Use and Biodiversity, which focuses on the context of a company's own operations, and 2) Land Use and Biodiversity – Supply Chain (SC), which considers the issues in terms of supply chain management. Our evaluation of companies on these MEIs accounts for subindustry and geographical exposure, relevant management initiatives, which vary by industry but often include criteria such as the presence and quality of biodiversity programmes, deforestation policies, environmental management systems and green procurement policies. We also consider a company's involvement in relevant controversies.

Food Products Firms are Underprepared

Many companies in the Food Products industry are unprepared to mitigate risks related to land use and biodiversity, both in terms of their incidents track record and gaps in disclosures on related policies and programmes. As shown in Exhibit 9, based on available evidence, 31% of the Food Products industry has no official deforestation policy and 36% discloses a weak policy or only a general statement on the topic. Adequate deforestation policies include commitments to achieve zero gross deforestation, applying deforestation due diligence and implementing traceability systems. A minority of companies in our sample has a strong (13%) or very strong (3%) policy, which typically includes commitments to apply due diligence to company operations, and direct and third-party

Exhibit 9: Assessing Deforestation Policies of Food Products Companies*



*N=210 companies
Source: Morningstar Sustainalytics

Exhibit 10: Material ESG Issue (MEI) Risk Categories

Risk Category	Range MEI level
Severe Risk	≥ 8
High Risk	6-7.99
Medium Risk	4-5.99
Low Risk	2-3.99
Negligible Risk	0-1.99

Source: Morningstar Sustainalytics

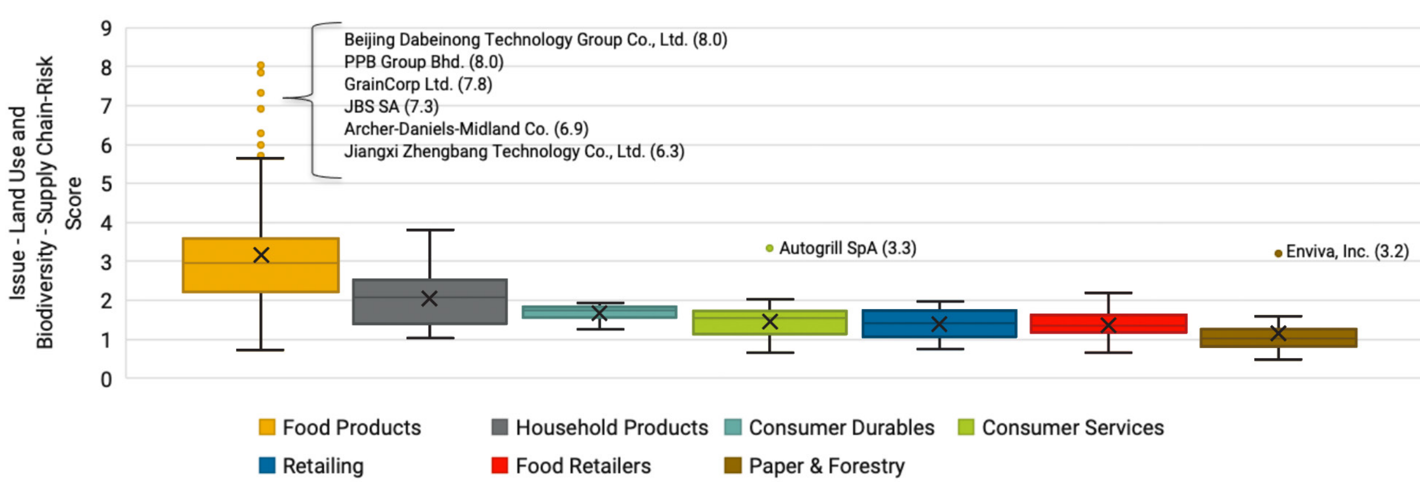
suppliers. Packaged Foods company Barry Callebaut, a Swiss manufacturer and supplier of cocoa and chocolate ingredients, is leading the industry with a strong deforestation policy. Although the firm has been involved in supply chain controversies related to other MEIs, investors and industry peers looking for examples of how to strengthen policies on this topic may look at Barry Callebaut as a case study.

While management indicators can provide an informative assessment of company disclosures related to this and other ESG issues, these data points only provide a partial view of a company's overall capabilities. Based on our analysis of a subset of incidents that occurred in 2022, we found a negligible to low positive correlation between incident impact scores and deforestation policy scores, suggesting that other factors are important to consider when evaluating a company's preparedness.[25]

To provide investors with a broader assessment of a company's approach to managing land use and biodiversity risk, market exposure and its track record on related controversies, we assign companies an MEI risk score corresponding to five levels of risk derived from our ESG Risk Ratings methodology, ranging from negligible to severe (Exhibit 10). MEI risk scores can help inform investors about the degree of risk companies face with respect to a wide range of topics, including land use and biodiversity.

Exhibit 11 plots the range and average Land Use and Biodiversity – Supply Chain MEI risk scores of seven industries exposed to this MEI. The spread in average MEI risk scores among industries is determined by a combination of the exposure to the issue that industry constituents face as well as the strength of their management disclosures. Food Products stands out for being the industry with the highest average risk on this issue (3.2), the widest range of scores (0.7-8.1) and the largest number of outliers (seven). The high average MEI risk score of this industry is primarily driven by: 1) its high exposure scores for the MEI, 2) company involvement in significant controversies and 3) gaps in management initiatives. Beijing Dabeinong Technology, PPB Group and GrainCorp (all of which are in the Agriculture subindustry) are among the companies that score high to severe risk on this MEI. Investors can use this analysis as a reference point for comparing the level of MEI risk of different companies in these industries.

Exhibit 11: Distribution of Unmanaged Risk Scores by Industry, Land Use and Biodiversity - Supply Chain*



*N=441 companies.
A box and whiskers plot graphically represents a numerical distribution through its quartiles. The top, middle and bottom bars of a box represent the upper (Q3), median (Q2) and lower quartiles (Q1), respectively. Top and bottom whiskers represent the maximum and minimum values of the standard normal distribution. Outliers are located outside the whiskers, farther from 1.5 times the interquartile range. The cross represents the mean.

Source: Morningstar Sustainalytics

Model Portfolio Analysis

MEI Integration

To demonstrate how MEI ratings could be integrated into an investment strategy that mitigates land use and biodiversity risks, we developed three model portfolios using a rule-based allocation method, drawing on information that was available to the market prior to each rebalancing date, such that the strategy could have been executed by investors with access to Sustainalytics ESG Risk Ratings. For this exercise, the universe of investable companies for the three portfolios includes all firms under our research coverage that have risk scores for the MEI Land Use and Biodiversity – Supply Chain over the past five years.

Study Period and Sample

Our study period is January 2019 (when we launched the Sustainalytics ESG Risk Ratings) to the end of October 2023, when we began the present analysis. Our full sample for this analysis includes all companies that were covered by this MEI during the study period. The stocks in all three portfolios were weighted according to their relative total market capitalization and rebalanced annually to account for changes in market capitalization, MEI risk scores and the expansion of the research universe coverage over time.[26] The number of sampled firms expanded from 172 in 2019 to 315 in 2023.[27] Since this MEI is only applicable to a selection of industries, the sample consists mainly of companies in the Consumer Defensive and Consumer Cyclical sectors. As a result, the model portfolios are only representative of investment strategies in the Consumer Goods space, which is generally more exposed to this issue than most other sectors.

The Lower MEI Risk Portfolio

The first portfolio (Lower MEI Risk) contains stocks that have MEI risk scores below the sample median. The thesis that underpins this strategy is similar to that which motivates ESG integration more broadly: firms exposed to less ESG risk may be better managed and able to deliver shareholder value over the long run. Although this sample includes consumer goods companies that face less risk on this MEI relative to their sector peers, an alternative approach could further reduce risks by avoiding investments in sectors that are exposed to this MEI all together. However, the Lower MEI Risk portfolio could be an effective way to minimize risk for investment strategies that focus on these sectors or as part of a suite of strategies that require broad sector exposure.

The Higher MEI Risk Portfolio

The second portfolio (Higher MEI Risk) contains stocks that have MEI risk scores above the median. For the purposes of this study, we use this model as a benchmark for assessing the financial performance of the Lower MEI Risk portfolio in terms of its cumulative total return.

The Long-Short Portfolio

The third portfolio (Long-Short) holds long positions in stocks with MEI risk scores below the sample median and short positions in stocks with MEI risk scores above the median. This strategy is long-biased, following the 130/30 allocation ratio that is popular among hedge funds because it allows fund managers to use leverage to improve capital efficiency, offering the potential of enhancing active returns.[28] We allocate 130% of the weight to the lower MEI risk group and -30% to the higher MEI risk group. The cash earned from short-selling higher MEI risk stocks was invested in lower MEI risk stocks, generating greater exposure to lower MEI risk companies than the long-only portfolio. We include this model portfolio to address the growing market interest in incorporating ESG signals into alternative investments, including hedge funds.

Exhibit 12: Model Long-Short Portfolio Allocation

	Net Value	Net Weight
Low-risk group	13,000	130%
High-risk group	-3,000	-30%
Portfolio	10,000	100%

Source: Morningstar Sustainalytics

For example, if the initial value of the portfolio were USD 10,000, we would first short sell higher MEI risk score companies to generate an additional USD 3,000 cash flow, assuming no costs are associated with the short sale or maintaining the short position.[29] Then, we would invest in the lower MEI risk score companies using the total capital of USD 13,000 (the initial USD 10,000 plus the USD 3,000 short sale proceeds, Exhibit 12). The portfolio would then be rebalanced each year. The overall 130/30 allocation strategy remains unchanged, with 130% of the total value of the portfolio allocated in lower-scoring companies and -30% in higher scoring-companies. The specific weights of each stock within the 130% or -30% group will vary based on each year's MEI scores and companies' market capitalization.

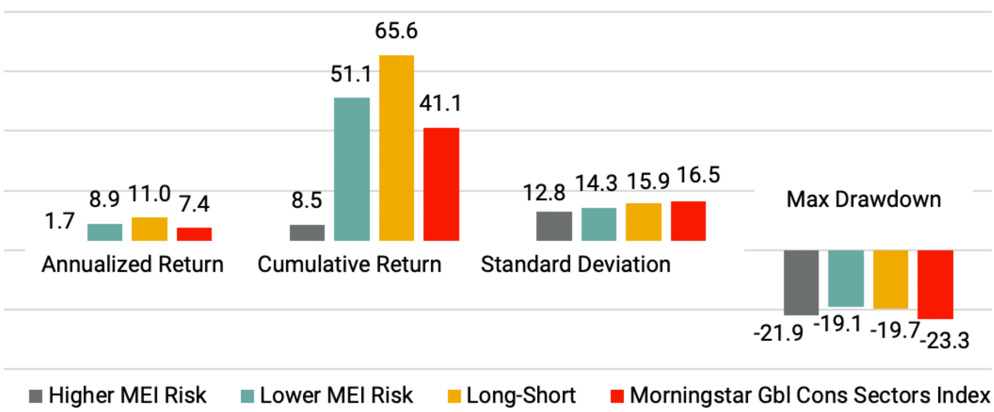
Comparing Total Returns

As shown in Exhibit 13, the Lower MEI Risk portfolio had a cumulative return of 51.1% between January 2019 and October 2023, significantly outperforming the Higher MEI Risk portfolio and the Morningstar Global Consumer Sectors Index, which returned 8.5% and 41.1%, respectively, over the same period. The Long-Short portfolio outperformed the Higher MEI Risk portfolios with a cumulative return of 65.6%. The overarching pattern of the Lower MEI Risk and Long-Short portfolios outperforming the Higher MEI Risk portfolio and the consumer goods sector also held on an annualized return basis.

Assessing Risk

The Higher MEI Risk portfolio was less volatile than the other two portfolios, with a standard deviation of 12.8%, compared to 14.3% for the Lower MEI Risk portfolio and 15.9% for the Long-Short portfolio; however, it also had a deeper maximum drawdown at 21.9%. The Long-Short portfolio had the largest Sharpe ratio, at 0.57, compared to 0.48 for the Lower MEI Risk portfolio, 0.32 for the index and -0.04 for the Higher MEI Risk portfolio. These results suggest that the Lower MEI Risk and Long-Short portfolios could have provided some protection against downside financial risk.

Exhibit 13: Measuring the Performance and Risk of Three Model Portfolios (%)*



*Portfolios built using the Land Use and Biodiversity – Supply Chain MEI. Study period: 1/1/2019 to 10/31/2023. **Source:** Morningstar Sustainalytics

Focusing on ESG Issues

Determining whether factors specifically connected to land use and biodiversity contributed to the differentials in the returns of these portfolios and their constituent stocks is beyond the scope of this study; these results may be due to overlapping correlations among multiple variables, such as a quality factor tilt, rather than a causal relationship between this MEI and stock performance. However, financial metrics can serve as a starting point for assessing what companies with strong performance are doing to address ESG issues.

Sector Allocation and Selection Effects

As shown in Exhibit 14, the outperformance of the Lower MEI Risk portfolio relative to the Higher MEI Risk portfolio on an annualized return basis (8.9% versus 1.7%) is mainly attributable to the effects of stock selection in Consumer Defensive (4.7%) and sector allocation effects in Consumer Cyclical (4.5%). The relevant attribution results were positive in three of the five years for consumer cyclical allocation, and four of the five years for consumer defensive stock selection, providing some confidence that the aggregate results for the full period were not driven by just one very strong year. The attribution analysis of the Long-Short portfolio has similar values for the sector allocation and stock selection.

Exhibit 14: Attribution analysis, Lower MEI Risk (Portfolio) vs Higher MEI Risk (Benchmark)*

	Rescaled Weights %		Return %		Contribution %		Attribution Effect			
	Lower MEI Risk	Higher MEI Risk	Lower MEI Risk	Higher MEI Risk	Lower MEI Risk	Higher MEI Risk	Allocation %	Selection %	Interaction %	Active Return %
Basic Materials	3.57	0.02	2.73	-93.03	0.23	-0.06	-0.97	0.07	1.00	0.09
Consumer Cyclical	23.27	0.48	15.78	6.75	3.24	0.01	4.49	-0.13	-0.49	3.88
Consumer Defensive	72.86	98.59	7.73	1.77	6.13	1.79	1.02	4.67	2.48	8.17
Industrials	0.30	0.91	4.99	-3.31	0.00	-0.05	0.15	0.01	-0.01	0.14
Attribution Total	100.00	100.00	8.91	1.69	8.91	1.69	0.18	4.68	3.67	8.53
Total					8.91	1.69				

*Data based on the annualized returns from 1/1/2019 to 10/31/2023. Attribution data treats the Lower MEI Risk sample as the portfolio and the Higher MEI Risk sample as the benchmark.

Source: Morningstar Sustainalytics, Morningstar Direct

Top Contributors to the Lower MEI Risk Portfolio

Exhibit 15 lists the 10 companies that contributed most to the outperformance of the Lower MEI Risk portfolio relative to the Higher ESG Risk portfolio. As yesterday's performance is not an induction of tomorrow's return, we also include forward looking data points, including each company's price to fair value ratio, star rating and market capitalization, along with current MEI and overall ESG Risk Rating scores.

Eight of the Top 10 Stocks Outperformed the Market

Over the study period, eight of the 10 companies (with the exception of Mondelez and Estée Lauder) outperformed the consumer goods market with annualized returns ranging from 8.5% (Philip Morris) to 46.7% (Walmart). For comparison, during the same period, the Morningstar Global Consumer Sectors Index yielded an annualized return of 7.4%. While it is beyond the scope of this study to assess the specific drivers of each stock's financial performance, we outline several aspects of their disclosures that make them relatively well positioned on this MEI.

Accounting for MEI Risk Score Changes

During the study period, some stocks moved from one portfolio to another, depending on changes to their MEI risk scores. For example, Mondelez was held in the Lower MEI risk portfolio from 2019-2021 and then moved to the Higher MEI risk portfolio in 2022. Since it was held in the Lower MEI Risk portfolio for longer and performed well during that time, on average, it was still among the top contributors to the portfolio's outperformance.

Home Improvement Retail Leaders

Home Depot and Lowe's stand out as two peers in the Home Improvement Retail subindustry that significantly outperformed the market during this period, respectively yielding annualized returns of 13.7% and 18.4%, and contributing 1.9 and 1.0 percentage points to the portfolio's return. As major buyers of wood materials, companies in this subindustry are exposed to environmental issues of deforestation, wildlife habitat degradation and biodiversity loss through their supply chains. To manage these risks, companies can embed environmental considerations into procurement policies and contractual requirements, preferentially selecting suppliers with more sustainable environmental practices. While both Home Depot and Lowe's disclose strong supplier environmental programmes, Lowe's leads the subindustry with a best-in-class green procurement policy that includes initiatives to engage with suppliers to improve environmental performance and policies to address related product and process requirements. In May 2022, shareholders of Home Depot voted to align its wood purchasing policy with sustainable forest standards after 59 environmental organizations alleged that the firm was profiting from the destruction of ecologically sensitive forests.[30]

Seeking Low MEI Risk and High Value

Estée Lauder is currently the most undervalued stock in our sample, with a Morningstar price to fair value ratio of 0.52 and a five-star rating. As a company in the Personal Products subindustry, Estée Lauder faces scrutiny regarding land use and biodiversity issues in its supply chains, especially regarding the sourcing of wood pulp and palm oil. The firm manages these risks with initiatives including attaining Forest Stewardship Council (FSC) sourcing certification for 95% of its fibre cartons as of FY2022 and implementing strong supplier environmental and sustainable agriculture programmes, and a deforestation due diligence policy that applies to all of its operations and third-party suppliers. However, we find that the company still has a weak deforestation programme.

Exhibit 15: : Top 10 Contributors to the Annualized Returns of the Lower MEI Risk Portfolio

Name	Subindustry	Weight	Contribution	Annualized Return	Price / Fair Value	Star Rating	Market Cap (bn) USD	Overall ESG Risk Score	ESG Risk Rating	MEI Score
The Home Depot Inc	Home Improvement Retail	9.58%	1.93%	13.73%	1.08	★★★	284	13.3	Low	1.1
Procter & Gamble Co	Personal Products	9.46%	1.63%	13.61%	1.10	★★	354	28.6	Medium	1.8
L'Oréal SA	Personal Products	6.52%	1.33%	14.82%	1.02	★★★	224	17.8	Low	1.2
Lowe's Companies Inc	Home Improvement Retail	3.92%	1.05%	18.37%	0.89	★★★★	110	11.8	Low	1.2
Fomento Economico Mexicano SAB de CV	Food Retail	2.02%	0.48%	20.85%	1.17	★★	203	26.1	Medium	1.9
Walmart Inc	Food Retail	0.68%	0.46%	46.72%	1.13	★★	440	25.3	Medium	1.0
Philip Morris International Inc	Tobacco	3.51%	0.44%	8.47%	0.87	★★★★	138	28.4	Medium	0.7
The Estée Lauder Companies Inc	Personal Products	3.35%	0.35%	6.96%	0.52	★★★★★	46	25.5	Medium	1.3
Mondelez International Inc	Packaged Foods	2.79%	0.34%	0.71%	0.95	★★★★	90	22.0	Medium	2.3
Costco Wholesale Corp	Food Retail	0.88%	0.31%	21.71%	1.20	★★	245	26.4	Medium	1.3

*Portfolio weight and contributions based on study period averages, 1/1/2019 - 10/31/2023. Morningstar equity and ESG ratings as of 10/31/2023.

Source: Morningstar Sustainalytics, Morningstar Direct

Broader Considerations

While many of the companies in the Lower MEI Risk portfolio are leading their subindustries on managing land use and biodiversity issues, investors interested in this theme may also want to consider other criteria that can affect the environment, society and the performance of their portfolios. For example, according to our ESG Risk Ratings model, Philip Morris International faces negligible risk related to this MEI, but since the company produces tobacco, it faces significant regulatory, litigation and business ethics risks stemming from the health impacts of its products. Investors developing strategies related to land use and biodiversity can consider a wide range of factors, including a company's financial performance, exposure to other risks related to product involvement and opportunities associated with sustainable solutions.

Economic Moats

Currently, nine out of these 10 companies have a wide economic moat (with the exception of narrow moat Fomento). Our forward-looking view is that these firms continue to maintain a competitive advantage in the market over the long run due to a combination of factors, including their network effects, intangible assets, cost advantages, efficient scale and switching costs.[31]

Investing in Forests for More Than the Trees

Focused on Industry Involvement

This report surveyed the material risks that investors can face by owning companies that are involved in controversial activities linked to land use and biodiversity loss. While many commodities companies are directly involved in such activities, even more are exposed through their supply chains. Investors interested in mitigating related risks can develop portfolio strategies targeting sectors that are highly exposed to this issue. Industries at the centre of land use and biodiversity incidents include Food Products, Paper & Forestry, Oil & Gas Producers, Industrial Conglomerates, Utilities, Automobiles, Food Retailers, Textile & Apparel and Household Products. Key points that investors can focus on are portfolio exposure to at-risk industries and markets, company involvement in relevant controversies and related management initiatives, such as green procurement programmes, sustainability certifications and deforestation policies.

Preliminary Steps in Portfolio Construction

This study also illustrated how investors could potentially incorporate MEI analysis into their decision-making process by designing portfolio strategies based on Land Use and Biodiversity – Supply Chain MEI risk scores. Although the three model portfolios that we developed comprise only a preliminary step in addressing this issue, our results suggest that investing in companies that face less risk on this issue than their sector peers can coincide with strong financial performance.

Further Research

Further research on this topic could draw on other data points, such as companies' involvement in other types of incidents, their sustainable solutions offerings and specific management initiatives. Other lines of analysis could compare the financial performance and management approaches of firms within specific subindustries that face similar levels of exposure to the issue. Investors may also expand on our approach by developing other strategies that invest in sectors outside the scope of this study – including those that face less risk on this issue and, as a result, fall outside the scope of our MEI assessments.

Endnotes

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[27] The sample distribution expands by year as follows:
2019 – 172 total, median score 2.1630; 86 low, 86 high
2020 – 200 total, median score 2.2601; 100 low, 100 high
2021 – 207 total, median score 2.2596; 105 low, 102 high
2022 – 271 total, median score 2.1300; 136 low, 135 high
2023 – 316 total, median score 1.9729; 158 low, 157 high

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About Morningstar Sustainalytics

Morningstar Sustainalytics is a leading ESG data, research, and ratings firm that supports investors around the world with the develop-ment and implementation of responsible investment strategies. For more than 30 years, the firm has been at the forefront of developing high-quality, innovative solutions to meet the evolving needs of global investors. Today, Morningstar Sustainalytics works with hundreds of the world's leading asset managers and pension funds who incorporate ESG information and assessments into their investment pro-cesses. The firm also works with hundreds of companies and their financial intermediaries to help them consider material sustainability factors in policies, practices, and capital projects. Morningstar Sustainalytics has analysts around the world with varied multidisciplinary expertise across more than 40 industry groups. For more information, visit www.sustainalytics.com.

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