Quantitative Investment Approaches for ESG Risk - VOLUME 1

ESG Risk Ratings:
A 360° Review

In Partnership with Natixis Investment Managers (NIM) Solutions

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Morningstar | Sustainalytics

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ESG Risk Ratings: A 360° Review

Investor interest in environmental, social and governance (ESG) factors has skyrocketed over the past few years. The current study, the first of a series of three papers, sheds light on the Morningstar Sustainalytics flagship ESG product, the ESG Risk Ratings and aims to examine how ESG risk impact portfolio performance. To this end, we examine the characteristics of ESG risk in a global universe of 12,197 companies from 2014 to 2022 across different regions. We find that ESG risk is not uniformly affecting companies as there are stark differences across countries, market cap sizes and sectors.

Highlights

- In all regions except Europe, more companies fall into the high and severe risk categories than the low and negligible ones. In **Europe**, the opposite applies, with **42%** of companies **in the negligible and low ESG Risk categories** and **20%** under **high and severe risk**.
- **Every sector** in the **European region** averages a **lower ESG Risk** Rating score of **10% or better** when compared to North America. Europe also showcases better average scores across **41 of 42 industries** than North America.
- Large-cap companies have lower average ESG Risk Scores than small-cap companies **in Europe**, North America, Asia Pacific, and World. For example, in Europe, the **average negligible risk** company is **2.4 times the size** of the average severe risk company.
- There are stark differences among subindustries and sectors. The Energy sector is heavily **skewed** towards higher ESG risk, whereas Financials and Industrials tend to be **normally distributed**, highlighting significant **differences** in ESG risk exposure between and **within sectors**.
- The percentage of companies that shift between ESG risk categories within one year has remained **relatively stable** over the past four years, **averaging below 20%**.

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Introduction

ESG integration: A key factor in the decision-making process for investors

There is a growing interest in environmental, social, and governance (ESG) issues over the past years. A study published in 2015 by the Principles for Responsible Investment (PRI) suggests that ESG integration has become a key factor in the decision-making process for investments and concludes that disregarding ESG factors amounts to a failure of fiduciary duty.[2]

With the adoption of the Paris Agreement in 2015, countries have committed to decarbonizing their economies and directing financial flows toward sustainable activities to address increasing material and visible environmental risks.

Broad-based adoption of ESG with the Paris Agreement

As a result, ESG investing has gained prominence in recent years, and by 2026, global ESG assets are projected to reach $33.9 trillion, or about one-third of total assets under management.[3]

In this context, it is key for different stakeholders to consider relevant tools and extra financial data to assess their investments through the ESG lens.

A series of three portfolio research papers in collaboration with Natixis

We have decided to break down this research into a series of three white papers. The present and first paper introduces Morningstar Sustainalytics' ESG Risk Ratings methodology and how ESG Risk Ratings vary across regions, sectors, and market caps. This introductory analysis is a prerequisite for building a consistent risk-return framework. The next two papers written in partnership with Natixis Investment Managers International,[4] will explore the portfolio-construction implications and will also examine the effects of ESG risk on portfolio performance.

The Rationale Behind Incorporating ESG Factors into Investments: Short Synopsis

Proponents of ESG advocate that aligning with ESG standards generates direct economic benefits such as sustainable use of resources, a safer work environment, and opportunities in fast-growing markets. Other indirect benefits include a better reputation and attracting more investors. However, ESG challengers argue that complying with ESG standards is costly and disruptive to a company's business plan. As a result, companies often need to make new investments, adjust production processes, and divest from existing markets.

Integrating ESG criteria into investment decisions facilitates positive impact on society

On average, the positive effects seem to outweigh the negative ones. For example, in a survey published by EDHEC in 2021, Le Sourd and Martellini show that a majority of European investment professionals consider that integrating ESG criteria into investment decisions facilitates a desire to incorporate a positive impact on society (64%) and (ii) reduce long-term risk (61%).[5]

Long term risk-reduction benefits are of top interest

Furthermore, there is a heightened interest in exploring the risk-reduction and diversification benefits of ESG factors. Far from representing only a reduction of the investment universe, we intend to investigate if considering ESG criteria allows for a better understanding of companies' activities, reduces portfolio volatility, and captures risk factors not considered in traditional financial analysis. Moreover, growing evidence suggests that ESG risks—particularly the environmental and social dimensions—are on the rise[6] and likely to hold an important position in risk management policies.

Our ESG Risk Ratings Structure

Lower ESG Risk Rating score equals less unmanaged risk

The ESG Risk Ratings measure the degree to which a company's economic value (enterprise value) is at risk driven by ESG factors or, more technically speaking, the magnitude of a company's **Unmanaged ESG Risks**:[7] Defined as the portion of material ESG risk that is not (yet) managed by a company. In this respect, the ESG Risk Ratings comprise two dimensions: **Exposure** and **Management**, which assess how much unmanaged ESG risk a company is exposed to.

Exposure and management: Key components in determining unmanaged ESG risk

Unmanaged risk is measured by evaluating a unique set of sector-specific material ESG issues as well as a Corporate Governance **Baseline**, based on both the company's exposure to and management of those issues. The resulting unmanaged risk for each issue is then summed up to provide one score representing the company's overall ESG risk. A company's ESG Risk Ratings is comprised of a quantitative score and an **ESG Risk Category** (see page 7). The quantitative score represents units of unmanaged ESG risk measured on an open-ended scale starting at zero (no risk), with lower scores representing less unmanaged risk. Practically, almost all companies score below 50.

Our ESG Risk Ratings Structure

Exposure: A company's sensitivity or vulnerability to ESG risks

Exposure can be considered as a set of ESG-related factors that pose potential economic risks for companies: A company's sensitivity or vulnerability to ESG risks. Exposure considers the specific context by evaluating beta signals at the subindustry level and adjusted at the individual company level. To derive these beta signals, beta indicators were created for four distinct thematic areas: Product & Production, Financials, Events, and Geographic. A company's **Exposure Score** for a particular ESG issue is then calculated by multiplying the subindustry exposure score with the company's **Issue Beta**.

Distinguishing between manageable and unmanageable risks

Unmanageable Risk assesses how well a company is managing its risks. We distinguish between two types of risk, manageable and unmanageable risks. Unmanageable risks refer to those that are outside the boundaries of a company management's control, based on the assumption that the company continues its inherent business. The share of risk that is manageable as opposed to the share of risk that is unmanageable on a material ESG issue is predefined at a subindustry level by a **Manageable Risk Factor (MRF)**. Every **Material ESG Issue (MEI)** has an issue MRF, empirically ranging from 30% (indicating that a high level of the issue risk is unmanageable) to 100% (indicating that the issue risk is considered fully manageable).

Management Gap: Manageable risk yet to be managed by the company

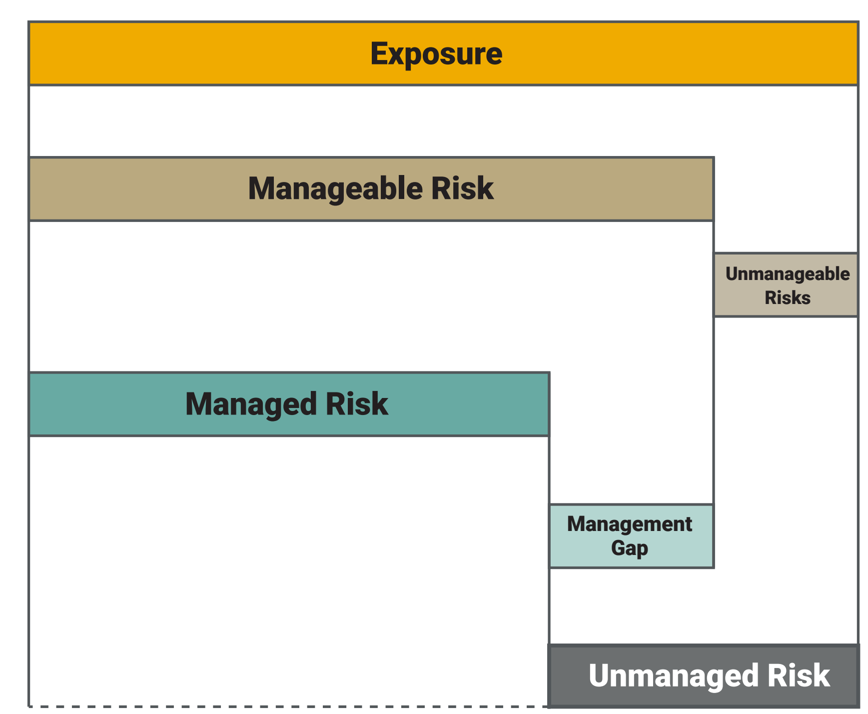
Management Gap refers to the amount of manageable risk that the company could address through policies and programmes, but which has not yet been managed. It is calculated by subtracting the issue **Managed Risk** score from the issue **Manageable Risk** score.

Measuring the unmanaged risks: Material ESG risk

The **ESG Risk Ratings** measures the **Unmanaged Risks**: Material ESG Risk that has not been managed by a company and includes two types of risk, as illustrated by Exhibit 1:

- The unmanageable risk, which cannot be addressed by company initiatives and can be calculated by deducting Managed Risk from Exposure.
- The Management Gap, which represents risks that could be managed by a company through suitable initiatives, but which may not yet be managed.

Exhibit 1: Risk Decomposition - Issue Level



Company Exposure	=	Subindustry Exposure	*	Issue Beta		
	=	8	*	1.5	=	12
Manageable Risk	=	Company Exposure	*	MRF		
	=	12	*	90%	=	10.8
Managed Risk	=	Manageable Risk	*	Management Score (as %)		
	=	10.8	*	75%	=	8.1
Unmanaged Risk	=	Company Exposure	-	Managed Risk		
	=	12	-	8.1	=	3.9

*See Exhibit 9 in the Appendix for a company example.

Source: Morningstar Sustainalytics

Examining the ESG Risk Ratings Universe

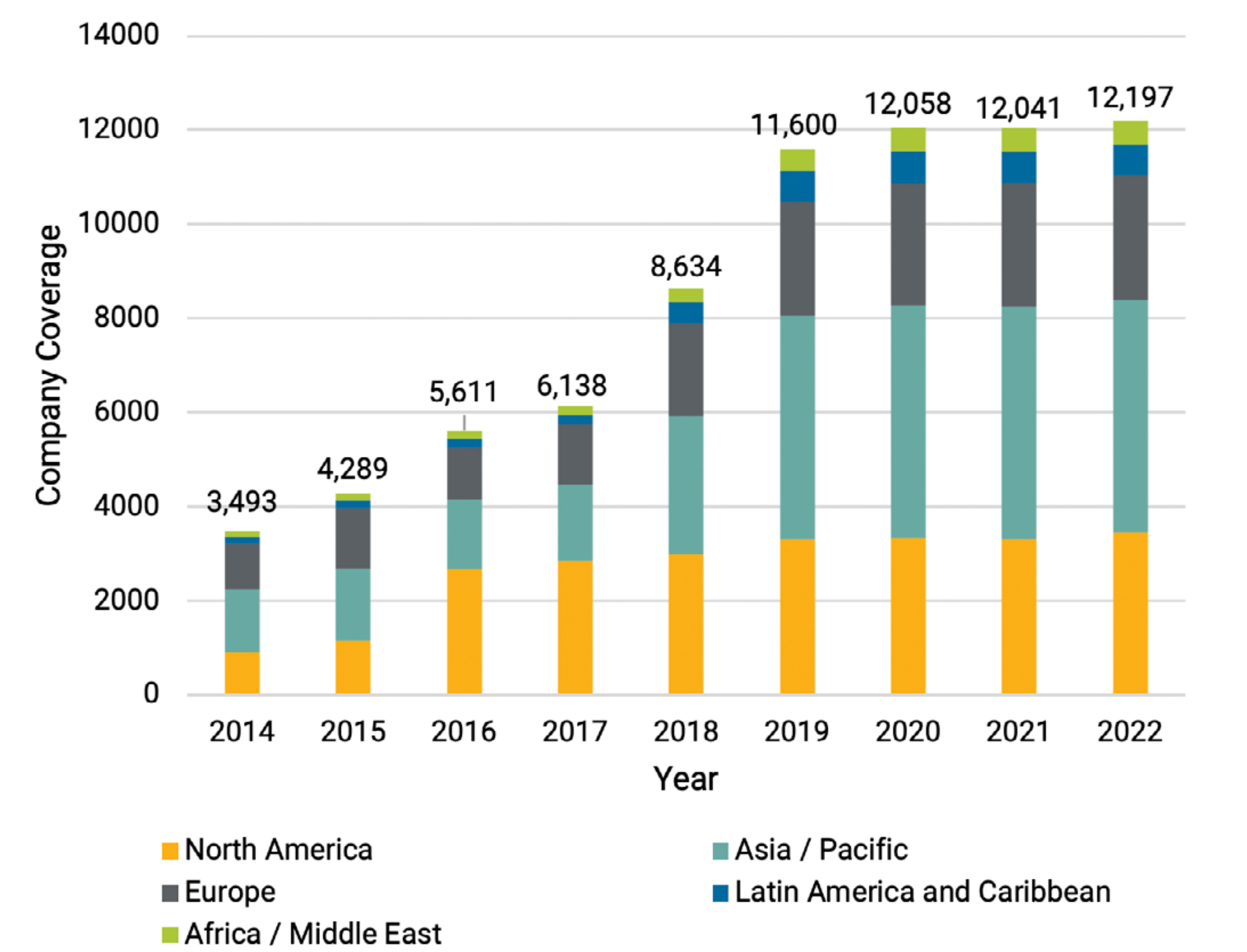
12,197 companies scored at the time of sample collection

In this section, we study the statistical characteristics of the ESG Risk Ratings for the global Ratings+ universe of 12,197 companies (as of September 2022). The motivation is first to build a thorough understanding of the product universe framework and characteristics and measure how scoring is distributed and has evolved across periods. Then, in later papers, we can highlight how we can best employ investment strategies given the characteristics in play.

Company Coverage

Exhibit 2 reports the number of companies with an **ESG Risk Ratings Score** coverage across different regions and shows a steady increase over the years. It is important to note that in Exhibit 2, the periods from 2014 to 2017 use simulated historical data, which are based on predictive and retroactive research to collect model inputs.[8] Notably, Sustainalytics launched the ESG Risk Ratings in October 2018, and it was not until December 3rd that historical data was available.

Exhibit 2: Number of Companies with ESG Risk Ratings Score Across Regions



*Reported data by year accounts for the last available date where historical information is available, with 2022 being as of 7 September 2022.
**The ESG Risk Ratings Simulated Historical Data Model is used for years 2014 to 2017.
Source: Morningstar Sustainalytics

Examining the ESG Risk Ratings Universe

From Negligible to Severe risk

ESG Risk Ratings Categories

A company's ESG Risk Ratings score is assigned to one of five ESG Risk Categories: Negligible, Low, Medium, High, and Severe. For example, a company with an ESG risk score comprised between 0 and 9.99 is considered to have a negligible risk of material financial impacts driven by ESG factors.

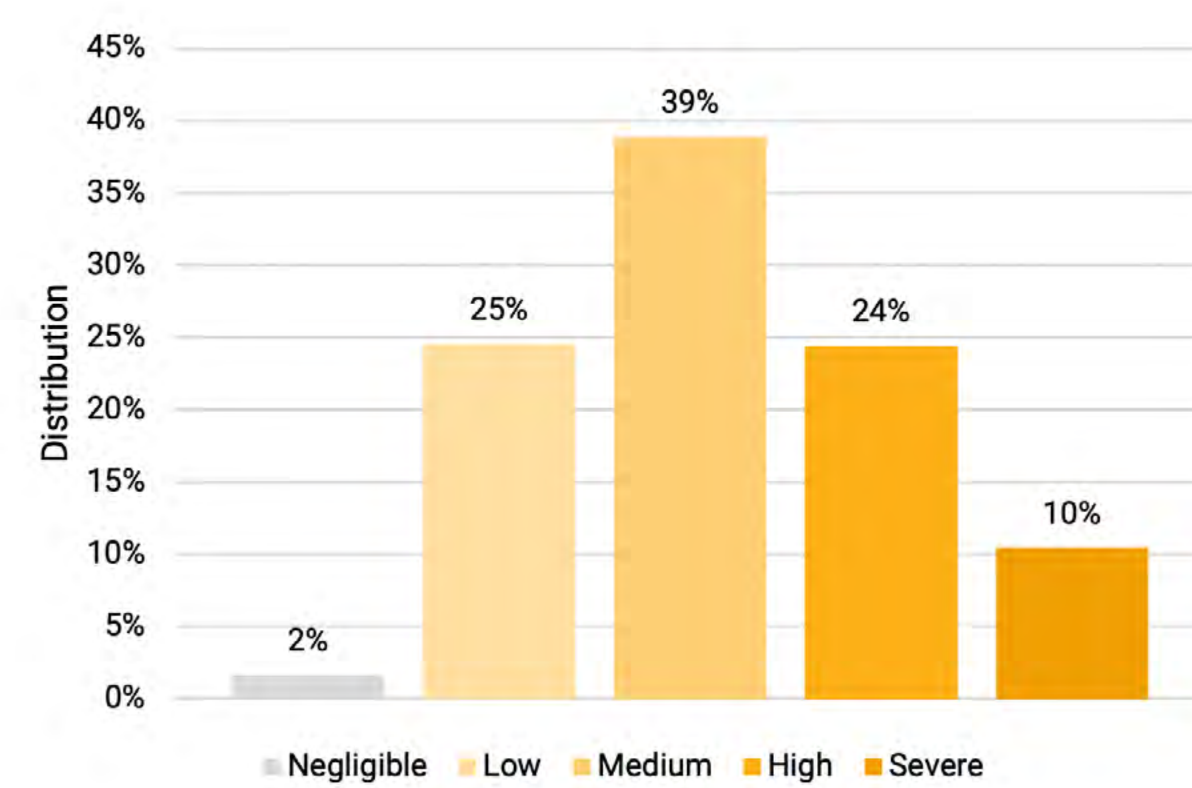
The Five ESG Risk Ratings Categories

- **Negligible risk** (overall score of 0-9.99 points): Enterprise value is considered to have a negligible risk of material financial impact driven by ESG factors.
- **Low risk** (overall score of 10-19.99 points): Enterprise value is considered to have a low risk of material financial impact driven by ESG factors.
- **Medium risk** (overall score of 20-29.99 points): Enterprise value is considered to have a medium risk of material financial impact driven by ESG factors.
- **High risk** (overall score of 30—39.99 points): Enterprise value is considered to have a high risk of material financial impact driven by ESG factors.
- **Severe risk** (overall score of 40 points and above): Enterprise value is considered to have a severe risk of material financial impact driven by ESG factors.

More companies cluster into high and severe risk than low and negligible

Exhibit 3 reports the distribution across ESG Risk Rating categories of the global Ratings+ universe. The distribution is bell-shaped but skewed towards companies having high- and severe-risk categories. The tilt toward high-risk categories highlights the assessed materiality of the ESG risk for a large segment of companies. Notably, Morningstar Sustainalytics does not control for a normal distribution across rating categories and the set thresholds remain static.

Exhibit 3: Distribution of Companies across ESG Risk Rating Categories*



*N = 12,197 - As of 7 September 2022.

Source: Morningstar Sustainalytics

Negligible ESG risk companies are a rare occurrence

Examining the ESG Risk Ratings Universe

A stable ESG signal translates into lower rebalancing frequency and lower trading costs

ESG Risk Ratings Persistence

Exhibit 4 shows the percentage of companies by region that changed ESG Risk Category over two consecutive years. The graph shows that ESG risk categories are relatively stable over time as the percentage of companies that changed category is lower than 20% per year.

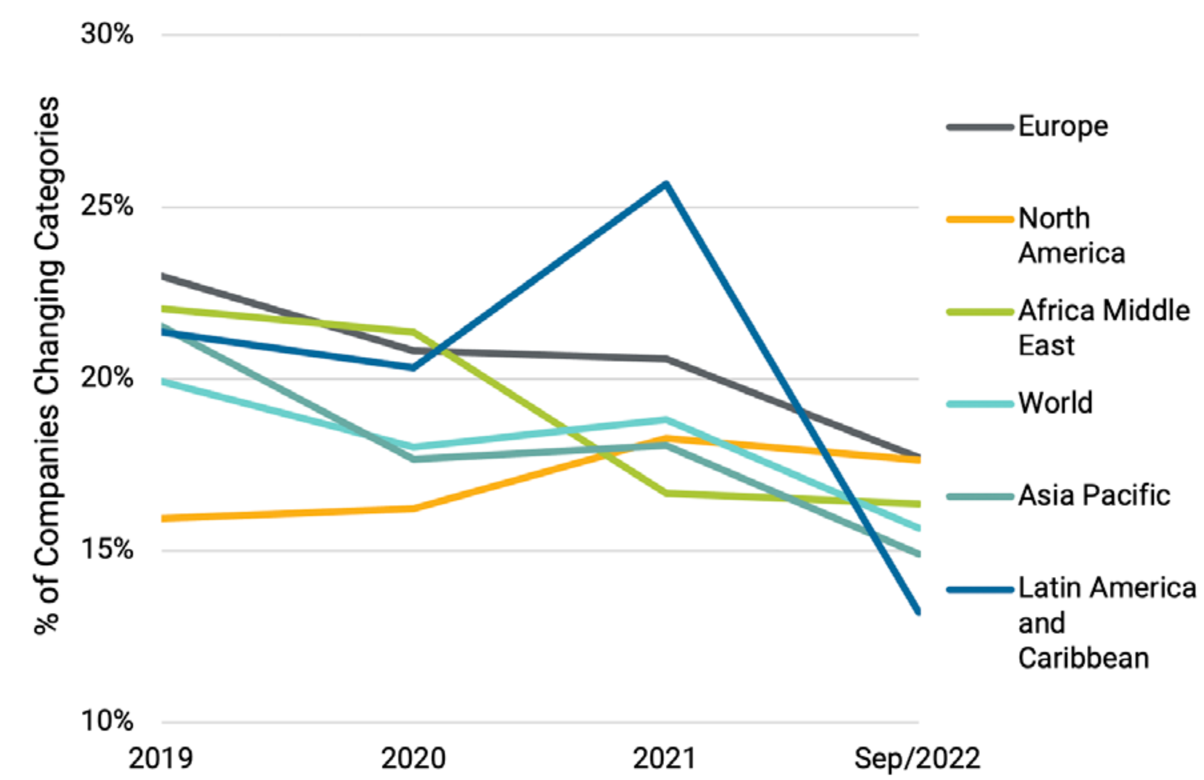
The stability in ESG risk categories is a desirable feature when constructing ESG-based portfolios or setting up long-term strategies, as a more stable ESG signal translates into less frequent rebalancing and lower trading costs. By contrast, managers are likely to rebalance their portfolios more often if companies display a reversal in ESG risk categories across time.

Europe ranks significantly better than other regions for average ESG Risk Rating score

ESG Risk Ratings across Regions

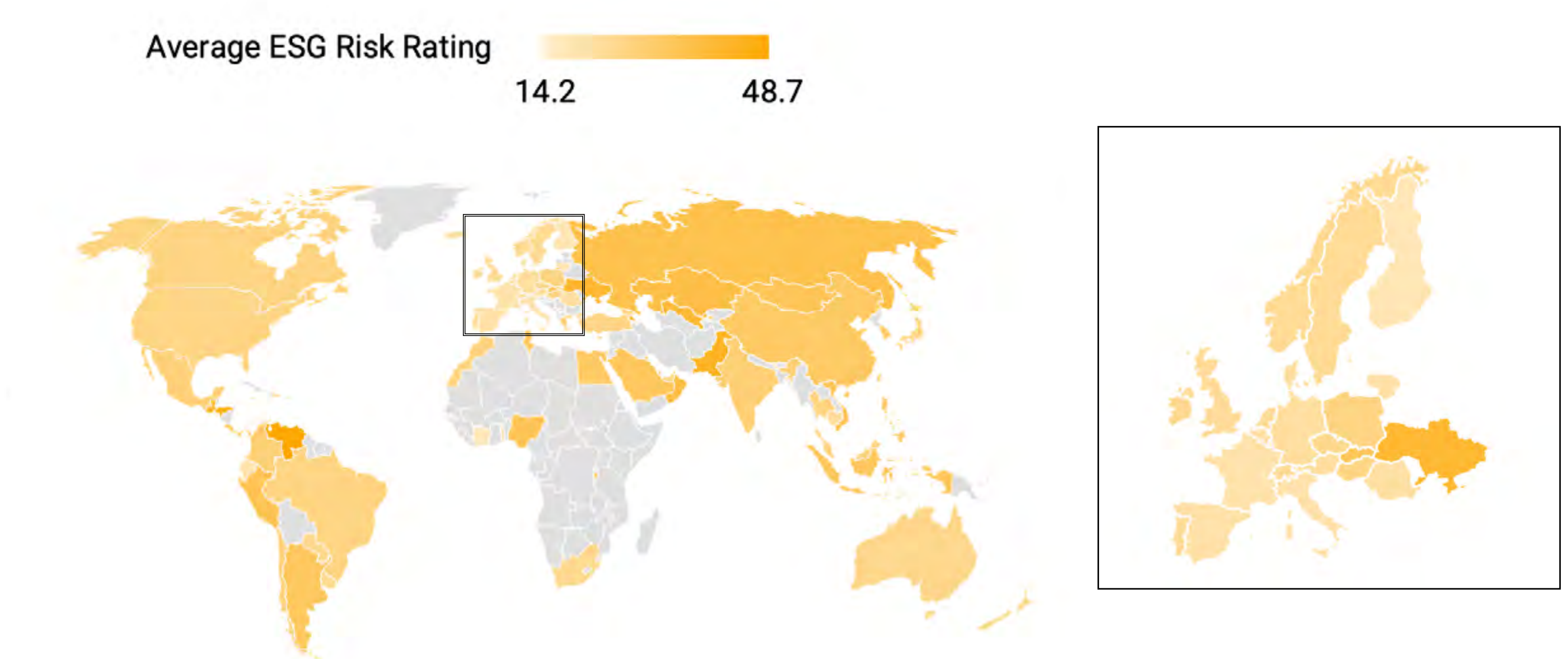
Generally, developed countries average better ESG Risk Rating scores than developing or emerging countries. Exhibit 5 below shows average ESG Risk Ratings scores across regions, where Europe ranks first with an average ESG Risk Rating score of 23.0, well below the global average of 27.0. Next, the United States and Canada rank second with an average score of 26.7. Other regions follow with an almost three-way tie between Asia/Pacific, Latin America and Caribbean, and Africa/Middle East with a score of about 29.0.

Exhibit 4: Percentage of Companies Changing ESG Risk Category Year-to-Year



Source: Morningstar Sustainalytics

Exhibit 5: Average ESG Risk Rating Score by Country*



*Companies are equally weighted in the company average; data as of 7 September 2022.

Source: Morningstar Sustainalytics

Examining the ESG Risk Ratings Universe

ESG regulation in Europe has a definite impact

The lower ESG Risk Rating score across the European region stands out. In fact, as of September 2022, every sector in the European region averages a lower score of 10% or better when compared to North America. Even when drilling down from sector to the industry level, of which there are forty-two industries, Europe averaging lower ESG Risk Rating scores remains true for every industry less one, precious metals.

One reason for Europe averaging significantly better could be attributable to ESG regulation pushed forward by the European Union and European countries.

Analyzing the distribution across ESG risk categories

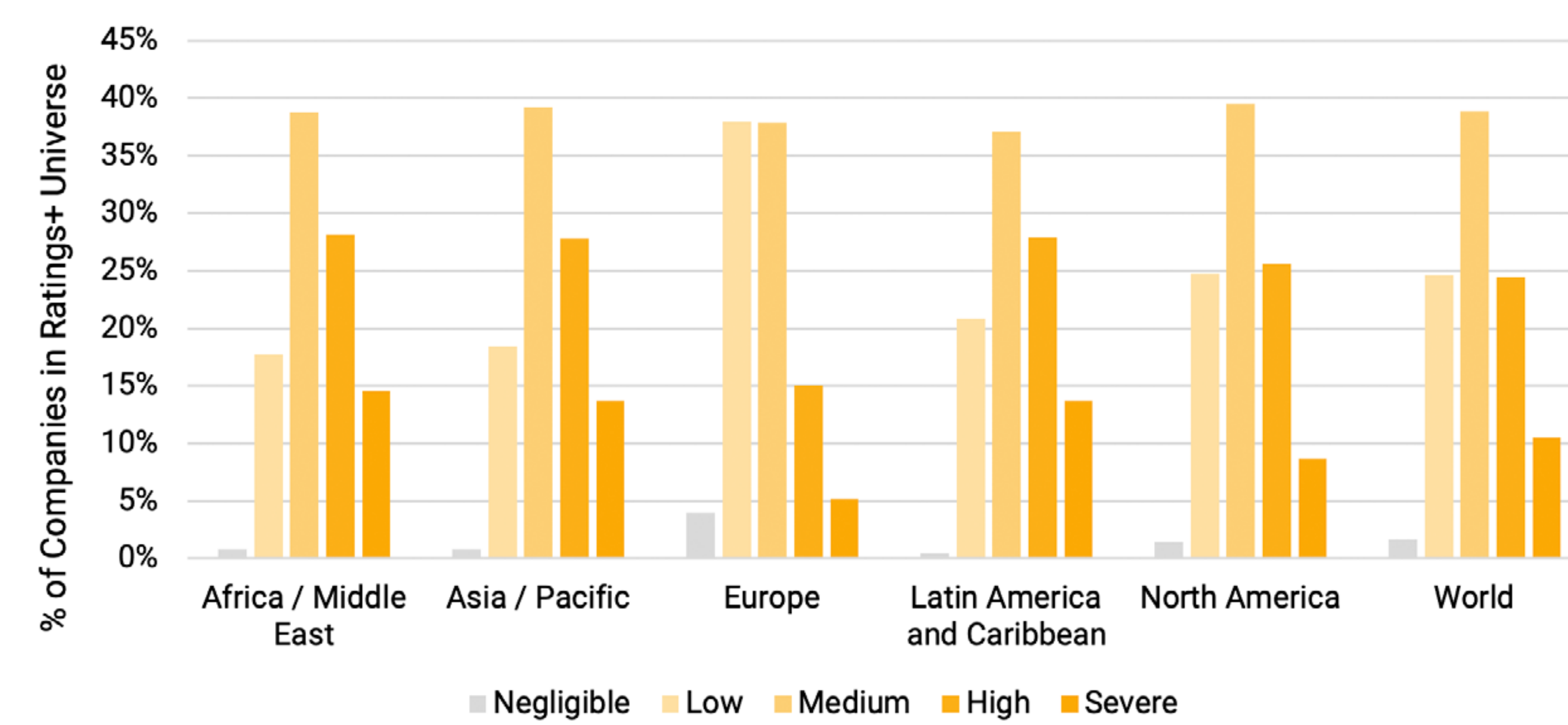
We further examine the differences in ESG Risk Ratings across regions by analyzing the distribution across ESG risk categories. Exhibit 6 illustrates the distribution of ESG risk categories by region for 2022. Overall, the greatest number of companies fall into the medium-ESG Risk Category. The low- and high-risk categories are almost balanced. Nevertheless, ratings in the left and right tail categories differ as the percentage of companies falling into the severe risk category is meaningfully higher than those in the negligible category, a common trend across all regions.

Europe is a notable region with more companies in the low-risk category

Interestingly, Europe is the only region skewed towards companies classified as low (38%) compared to high (15%). As mentioned earlier, this outcome could be due to the fact of ESG regulation adoption in the region.

We can quickly rule out alternative theories, such as sector tilts to lower exposure sectors or industries. We can test for this by reviewing sector allocation differences with added evidence of materially lower average exposure. Another explanation is company size, which is testable by seeing if European companies' average market cap is larger.

Exhibit 6: Distribution of ESG Risk Categories Across Regions*



*Data as of 7 September 2022.

Source: Morningstar Sustainalytics

Exposure and sector are not materially different, while size is a negative factor

We quickly debunk these other two theories: European companies have, on average, a 1% higher exposure and a 28% stronger management score; all while being, on average, 43% smaller than in North America.

Examining the ESG Risk Ratings Universe

North America ranks second

The North American region, which could classify as an early majority ESG regulation adopter, follows with an approximately similar number of companies in the low and high categories. Finally, the remaining regions (Asia/Pacific, Africa/Middle East, and Latin America/Caribbean) are heavily skewed toward companies classified as high-risk compared to low-risk. Moreover, these patterns of skewness have remained relatively stable over the years. Therefore, our forthcoming analysis will consider each region separately to avoid country effects.

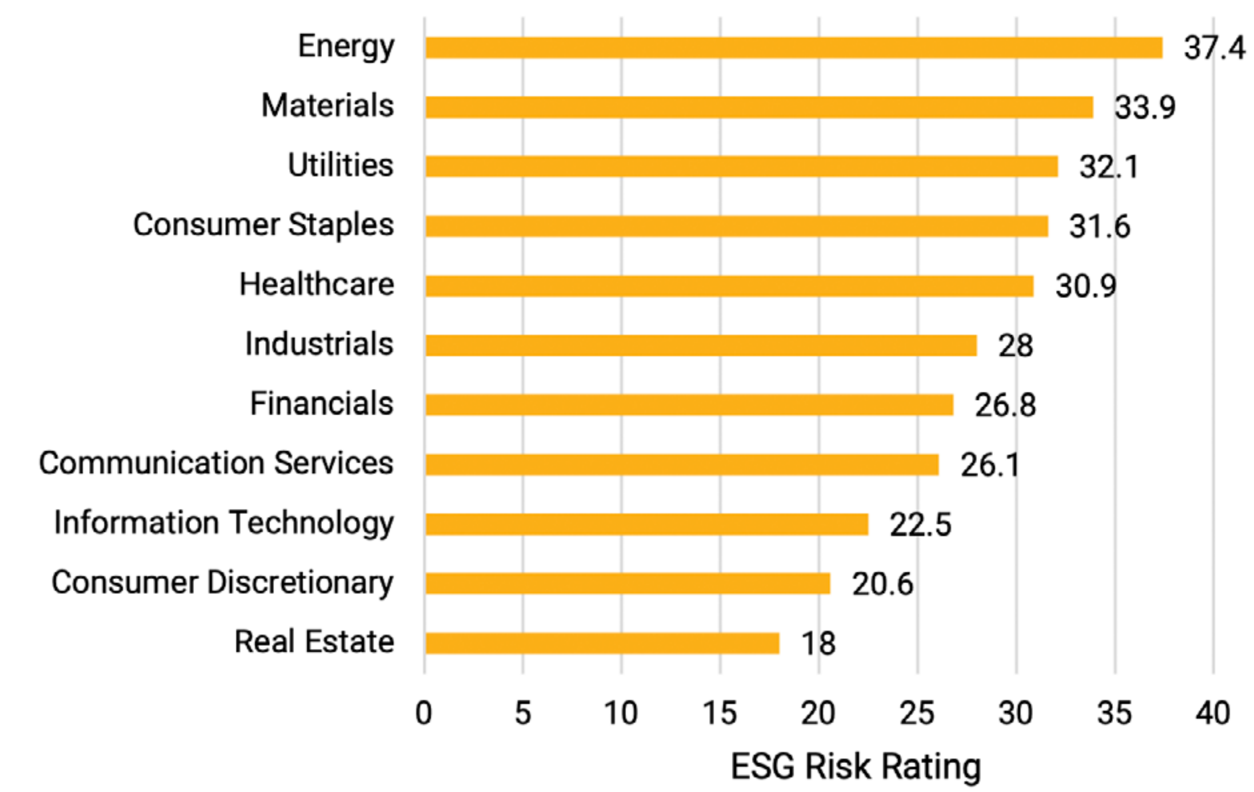
Notably, the negligible ESG Risk Category contains very few companies, highlighting that most companies have varying and material levels of unmanaged ESG risk. One notable exception is Europe, where about 4% of companies belong to the negligible ESG Risk Category. Similarly, Europe has the lowest fraction of companies in the severe ESG Risk Category (5%), whereas, for Africa/Middle East and Asia/Pacific, this fraction is about 15%.

Assessing the average ESG Risk Rating score by sector

ESG Risk Ratings across Sectors

Exhibit 7 depicts the average ESG Risk Rating score by sector. Energy, Utilities, and Materials are sectors that include companies with high ESG Risk Rating scores. In contrast, Real Estate, Communication Services, Consumer Discretionary, and Information Technology comprise, on average, companies with lower ESG Risk Rating scores.

Exhibit 7: Average ESG Risk Ratings by Sector*



*Data as of 7 September 2022.

Source: Morningstar Sustainalytics

The average Energy sector company is more than double the risk of the average Real Estate company

Examining the ESG Risk Ratings Universe

Sectors break down into industries, and industries are broken down further into subindustries

The distribution of the ESG risk categories within the sectors is specific for each, as depicted in Exhibit 8 below. For example, the Energy sector is heavily skewed towards higher ESG risk, whereas Financials and Industrials tend to be normally distributed, highlighting significant differences in ESG risk exposure between sectors and within the sectors themselves. This is due to differing ESG risks that are unique across specific industries and subindustries that make up each sector. Therefore, investors need to be mindful that investing in better ESG performers within sectors could result in making concentrated industry or subindustry bets.

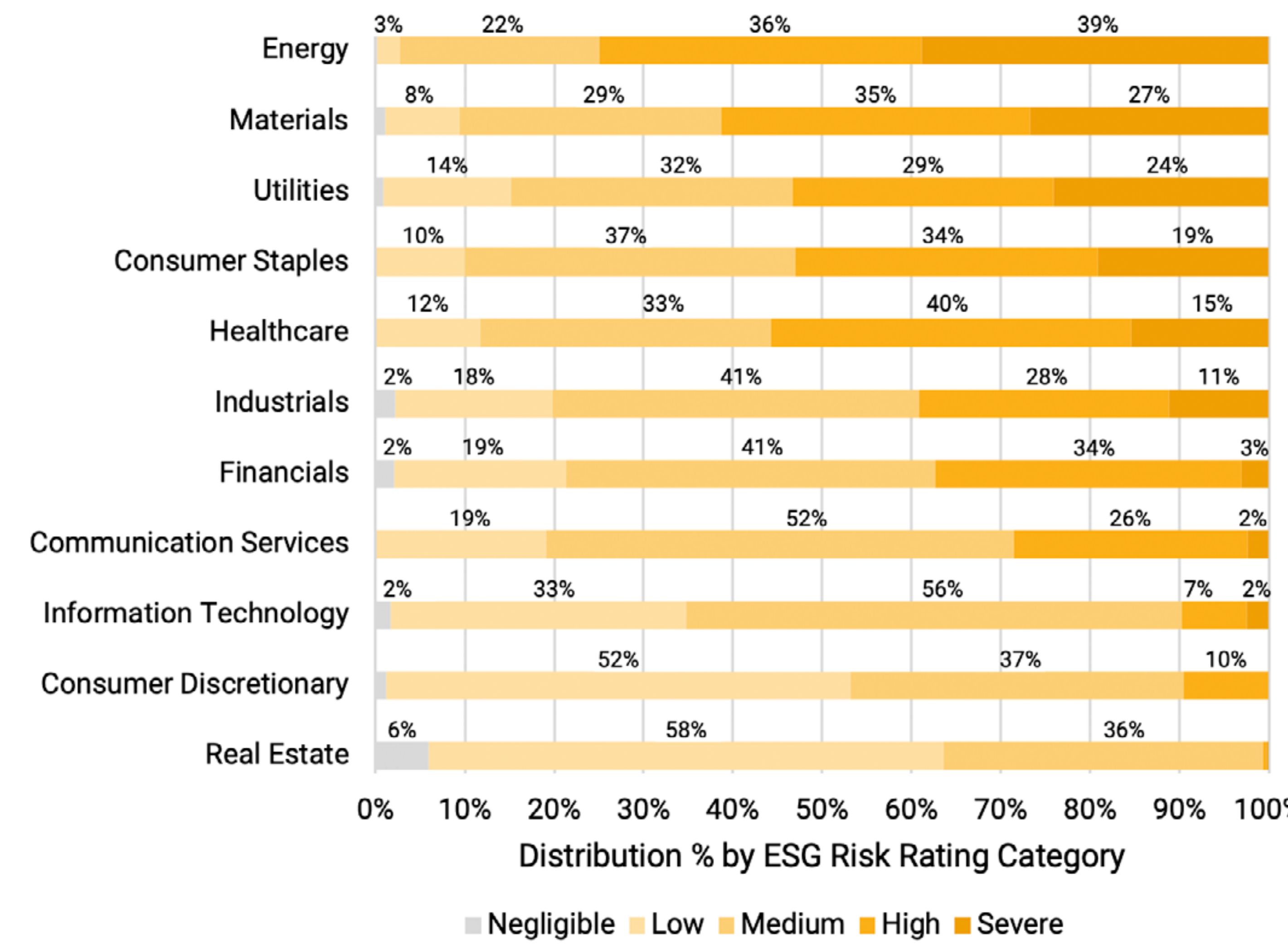
The Industrials sector contains a divergent scoring spectrum

For example, when we analyze two subindustries in the Industrials sector, Conglomerates, and Industrial Gases, we see that Conglomerates have nearly twice the exposure score and almost three times the ESG Risk Rating score than Industrial Gases.

Some subindustries have limited exposure to certain operational risks

Conglomerates are an ideal example of a subindustry with many material ESG issues. Commonly, they are known for their extensive operational breadth and numerous risks due to being widely involved across several industries. Conversely, Industrial Gases typically sell products with less exposure to issues like effluents and waste, consume fewer resources, and are comparatively more operationally concentrated, resulting in fewer risks to manage (for an Industrial Gas company example see the Appendix).

Exhibit 8: Distribution of ESG Risk Categories across Sectors* **



* Data Labels <2% are not shown.
**Data as of 7 September 2022.

Source: Morningstar Sustainalytics

Examining the ESG Risk Ratings Universe

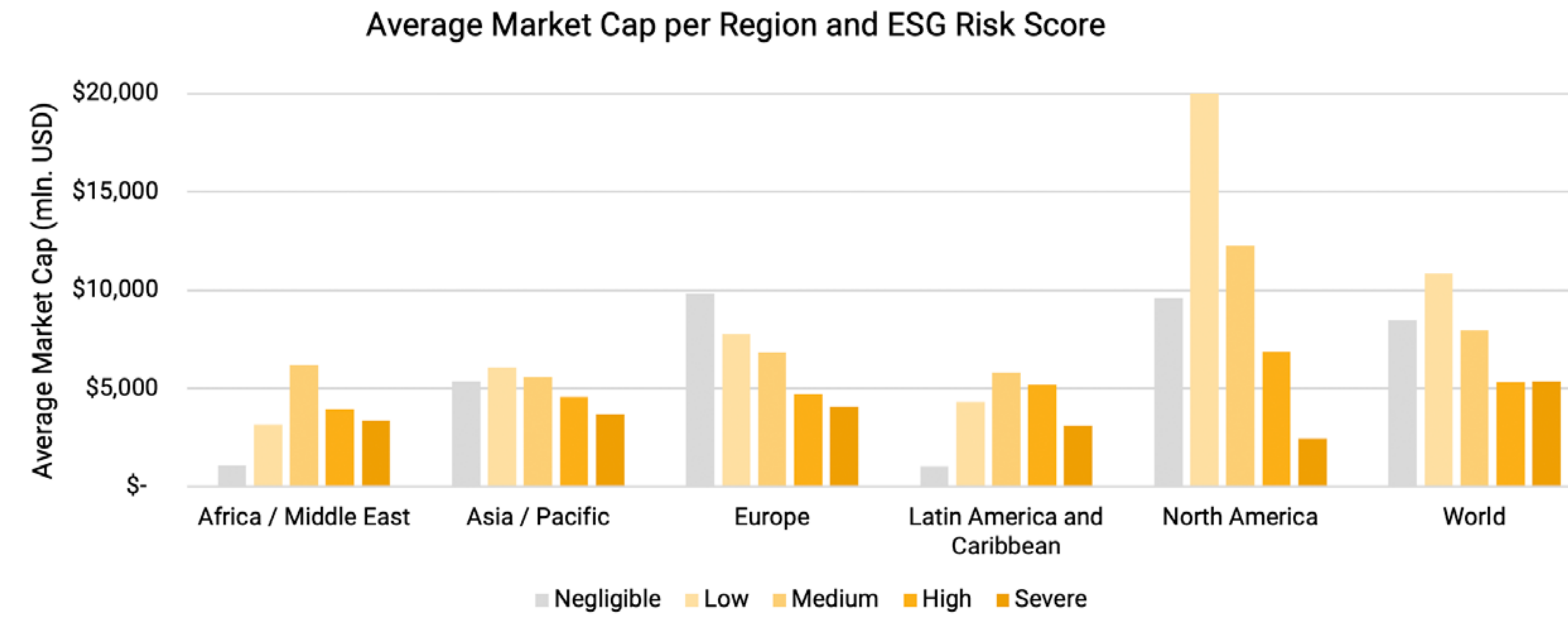
Smaller companies average higher ESG RR scores, but this is not uniform across all regions

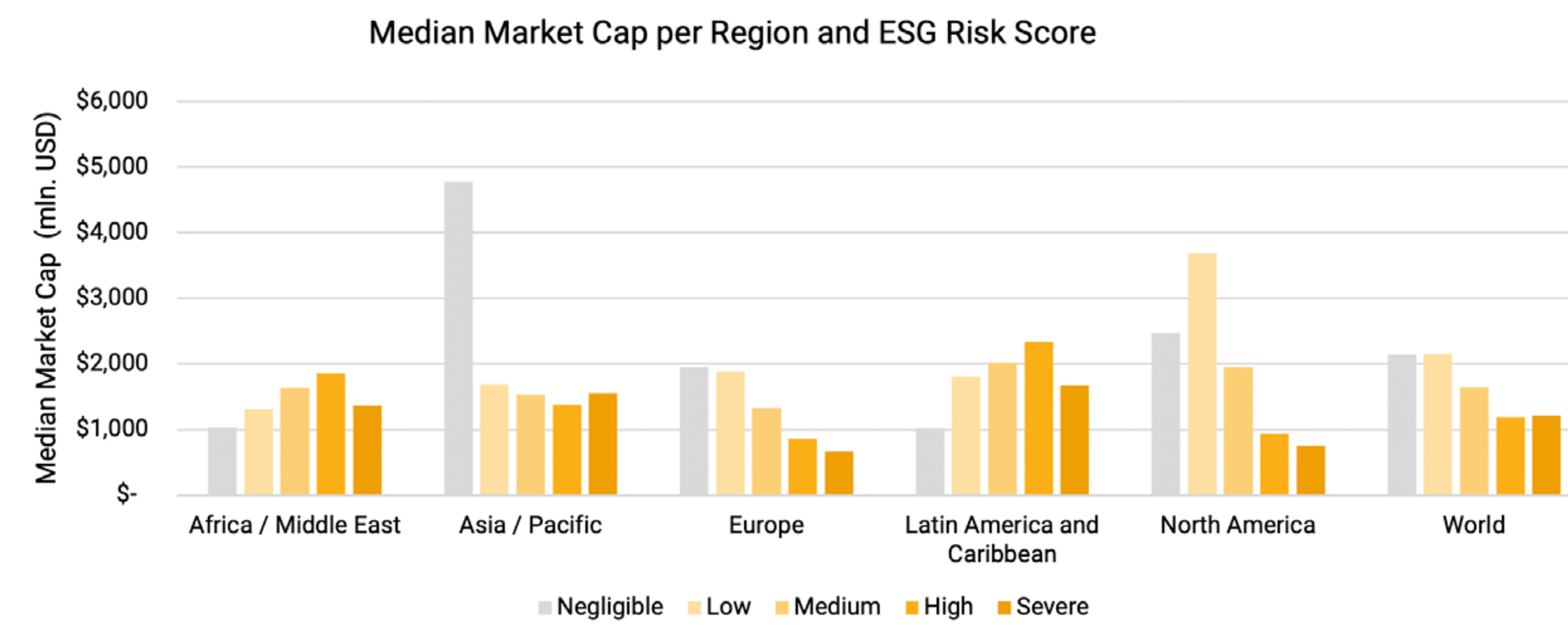
ESG Risk Ratings and Market Cap

Exhibits 9 & 10 illustrate the average and median market caps of companies within each ESG Risk Category and region for 2022. There is a negative relationship between market caps and ESG risk categories in Europe, North America, Asia Pacific, and World.

On average globally, companies with lower ESG Risk score (i.e., belong to the negligible and low-risk categories) tilt towards being larger market cap companies than those with higher ESG Risk scores (i.e., high, severe). We find opposite results for Africa/Middle East and Latin America and Caribbean, in which companies with higher ESG risk have larger market caps.

Exhibits 9 & 10: Distribution of Market Cap per Region and ESG Risk Score*





*Data as of 7 September 2022.

Source: Morningstar Sustainalytics

Conclusion

Setting up the scene

The paper sets the scene for our analysis of ESG Risk Ratings. As a first of a series of three articles, the current document studies how ESG risk varies across countries, regions, sectors, and market caps. In line with the idea that ESG risk is becoming scrutinized more by investors, we find that many firms rank in the high and severe risk categories. At the same time, proportionally few companies are assigned to the negligible risk category.

Assessing how ESG risk varies across countries, regions, sectors, and market caps

ESG risk is also not uniformly affecting companies as we find stark differences across sectors, countries, and market cap sizes. For example, within the Industrials sector, Conglomerates display the highest ESG risk scores, while Industrial Gases display the lowest values. Similarly, on average, companies in Europe and North America have lower ESG risk than those in Asia, Latin America, and Africa. Lastly, large companies tend to have lower ESG risk than their small-cap peers.

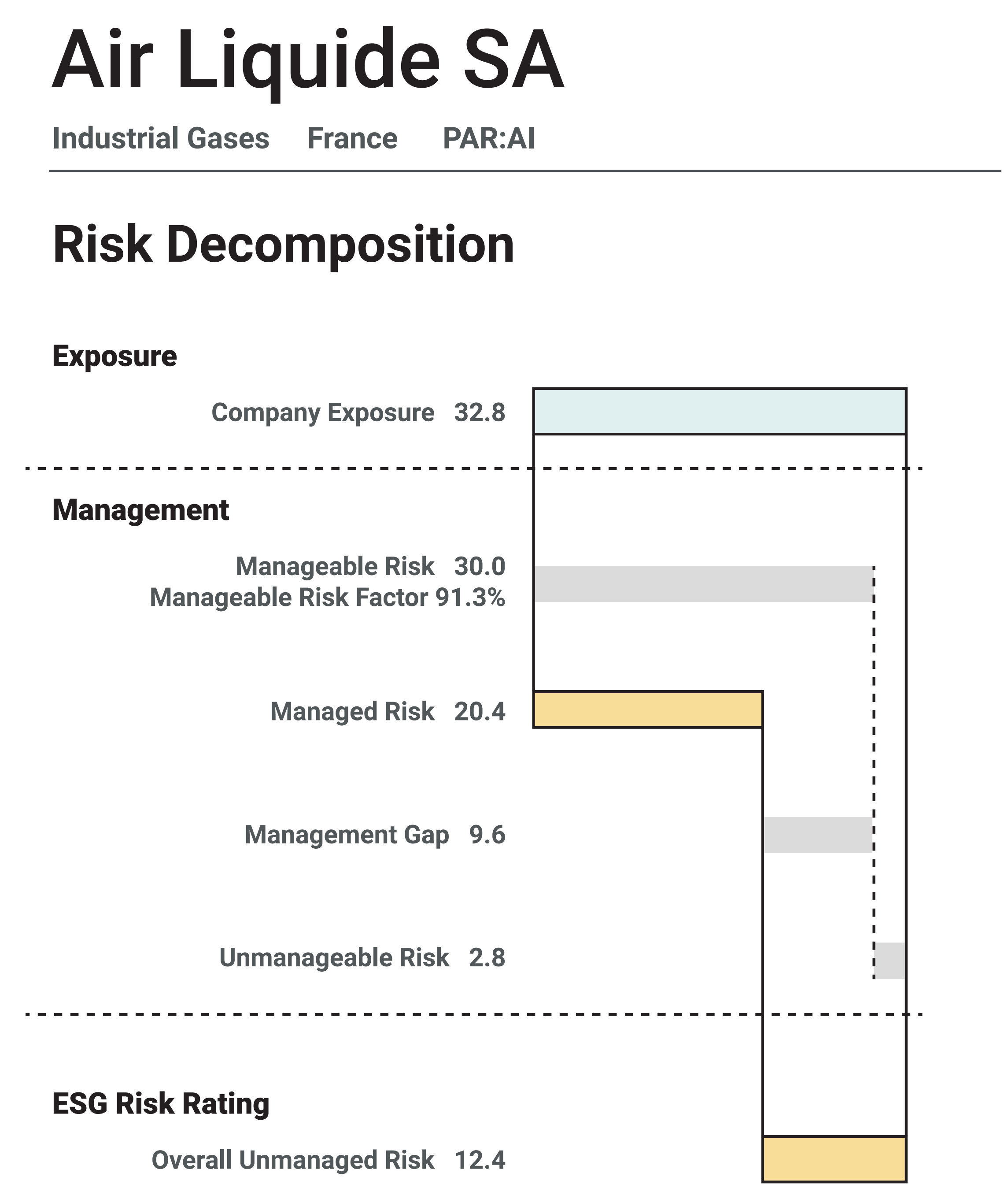
Our study confirms widely shared beliefs that ESG risks impact companies differently. As a result, corporations and investors should accurately measure those risks and find ways to manage them better. In addition, when constructing portfolios, investors should consider the ESG risk dimension and assess the differences in exposure across different markets.

Next, we will examine how ESG risk impacts portfolio performance and risk

Our future papers will examine how ESG risk impacts portfolio performance and risk. In doing so, we will assess different measures of risks, evaluate associated factor bets, and run the analysis for different countries and sectors.

Appendix

Exhibit A1: Example of Air Liquide ESG Risk Ratings Decomposition



*Data as of 4 January 2023.

Source: Morningstar Sustainalytics

Glossary of Terms

Baseline
Refers to Corporate Governance as the foundational building block in the ESG Risk Ratings.

ESG Risk Category
A company's ESG Risk Ratings score is assigned to one of five ESG Risk Categories in the ESG Risk Ratings:

The Five ESG Risk Ratings Categories

- **Negligible risk** (overall score of 0-9.99 points): Enterprise value is considered to have a negligible risk of material financial impact driven by ESG factors.
- **Low risk** (overall score of 10-19.99 points): Enterprise value is considered to have a low risk of material financial impact driven by ESG factors.
- **Medium risk** (overall score of 20-29.99 points): Enterprise value is considered to have a medium risk of material financial impact driven by ESG factors.
- **High risk** (overall score of 30—39.99 points): Enterprise value is considered to have a high risk of material financial impact driven by ESG factors.
- **Severe risk** (overall score of 40 points and above): Enterprise value is considered to have a severe risk of material financial impact driven by ESG factors.

Note: Because ESG risks materialize at an unknown time in the future and depend on a variety of unpredictable conditions, no predictions on financial or share price impacts, or on the time horizon of such impacts, are intended or implied by these risk categories.

ESG Risk Ratings Score (Overall Unmanaged Risk Score, ESG Risk Ratings)
The company's overall score in the ESG Risk Ratings; it applies the concept of risk decomposition to derive the level of unmanaged risk for a company, which is assigned to one of five risk categories. Scores are greater or equal to 0, with 0 indicating that risks have been fully managed (no unmanaged ESG risks). There is no boundary on the upper end but practically speaking scores are always less than 100 and this can be considered the highest level of unmanaged risk. It is calculated as the difference between a company's overall exposure score and its overall managed risk score, or alternatively by adding the Corporate Governance unmanaged risk score to the sum of the company's issue unmanaged risk scores.

Exposure Score (Exposure)
One of the two dimensions of the ESG Risk Ratings, this dimension reflects the extent to which a company is exposed to material ESG risks. Exposure can be considered as a sensitivity or vulnerability to ESG risks. Its final outcome is expressed in the Overall Exposure score.

Issue Beta (Beta, β)
A factor that assesses the degree to which a company's exposure deviates from its subindustry's exposure on a material issue. It is used to derive a company-specific Issue Exposure score for a material issue. It ranges from 0 to 10, with 0 indicating no exposure, 1 indicating the subindustry average (as represented by the subindustry exposure score), and 2 indicating exposure that is twice the subindustry average. Betas above 2 are rare.

Manageable Risk
Refers to the material ESG risk that can be influenced and managed through suitable policies, programmes and initiatives. It is expressed as a score that is calculated by multiplying the Overall Exposure score by the Overall Manageable Risk Factor. The score ranges from 0 to the company's overall exposure score with 0 indicating that no risk is manageable and the score equalling the company's overall exposure score indicating that the company's exposure is fully manageable.

Note: Fully manageable does not mean that Morningstar Sustainalytics believes there are no challenges or difficulties to managing the issue; rather, fully manageable indicates that there are no evident physical or structural barriers that make it impossible to fully manage the issue. Furthermore, fully managed does not mean that there is never a problem; it means that a problem can be dealt with proactively to avoid material risks.

Manageable Risk Factor (MRF)
Refers to the overall percentage of risk that can be managed by a company. The Overall MRF ranges between 0% and 100%, with a low percentage indicating that a high level of the issue risk is considered unmanageable and 100% indicating that the issue risk is considered fully manageable.

Managed Risk
One of the two dimensions of the ESG Risk Ratings, this dimension measures a company's handling of Material ESG issues through policies, programs, quantitative performance, and involvement in controversies, as well as its management of Corporate Governance.

Management Gap
Represents the total amount of risk which the company could be managing but which it is not yet managing. It is expressed as a score that is calculated by subtracting the Managed Risk score from the Manageable Risk score. The score ranges from 0 to a company's overall manageable risk score, with 0 indicating that all of a company's manageable risk has been managed, and a score equalling a company's overall manageable risk score indicating that none of the company's manageable risk has been managed.

Material ESG Issue (MEI)
A core building block of the ESG Risk Ratings. An ESG issue is considered to be material within the rating if it is likely to have a significant effect on the enterprise value of a typical company within a given subindustry and its presence or absence in financial reporting is likely to influence the decisions made by a reasonable investor. Material ESG issues were determined at a subindustry level in the consultation process but can be disabled for a company if the issue is not relevant to the company's business. A disabled material ESG issue has a weight of 0. Note that no specific predictions about financial impacts at the company level are implied by the presence or absence of an issue as a material ESG issue.

Unmanageable Risk
Material ESG Risk inherent from the intrinsic nature of the products or services of a company and/or the nature of a company's business, which cannot be managed by the company if the company continues to offer the same type of products or services and remains in the same line of business. For example, a coal company cannot fully manage the carbon emission risks of coal without exiting the coal business, as coal will continue to emit carbon when burned, regardless of a company's management initiatives. The only option to fully manage this risk would be to diversify out of the coal business. This risk cannot be meaningfully modelled by assessment of management indicators and is therefore regarded as unmanageable.

Unmanaged ESG Risk
Refers to a company's overall score in the ESG Risk Ratings that measures the extent to which enterprise value is at risk driven by ESG factors. It is assessed as that part of exposure that a company does not manage based on available information regarding policies, programs, quantitative performance and event track record. The overall unmanaged risk score is measured on an open-ended scale starting at zero (no risk) and, for 95% of cases, a maximum score below 50.

Endnotes

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[2] The UN PRI study "Fiduciary Duty in the 21st Century" mentions that "Failing to consider all long-term investment value drivers, including ESG issues, is a failure of fiduciary duty"; accessed (31.08.2022) at: https://www.unpri.org/fiduciary-duty/about-the-fiduciary-duty-in-the-21st-century-programme/6539.article

[3] PwC (2022); "ESG-focused institutional investment seen soaring 84% to US$33.9 trillion in 2026, making up 21.5% of assets under management: PwC report"; PwC; accessed (14.03.2022) at: https://www.pwc.com/gx/en/news-room/press-releases/2022/awm-revolution-2022-report.html#:~:text=London%2C%2010%20October%202022%20–%20Asset,in%20less%20than%205%20years

[4] Natixis Investment Managers International is a portfolio management company authorized by the Autorité des Marchés Financiers (French Financial Markets Authority - AMF) under no. GP 90-009, and a public limited company (société anonyme) registered in the Paris Trade and Companies Register under no. 329 450 738. Registered office: 43 avenue Pierre Mendès France, 75013 Paris.

[5] EDHEC-Risk Climate Impact Institute (2021); "Does ESG Investing improve risk-adjusted performance?"; EDHEC; accessed (19.10.2022) at: https://climateimpact.edhec.edu/does-esg-investing-improve-risk-adjusted-performance

[6] Howard A (2022); "Outlook 2022: Sustainable investment"; Schroeders; accessed (03.04.2023) at: https://www.schroders.com/en-us/us/individual/insights/outlook-2022-sustainable-investment/

[7] Text that is highlighted in bold indicates a term that is explained in the Glossary of terms in the Appendix.

[8] ESG Risk Ratings Simulated Historical Data Model Reduced Core Framework – The Simulated Historical Data Model for the ESG Risk Ratings was intended to be used for broad subindustry, industry, and index comparisons and for analyzing trends over time, rather than as a historical score reference for any single company. Note that:

- The nature of the calculations within the model may result in different scores than would be obtained if a full ESG Risk Ratings model (full indicator set) was applied retroactively.
- The historical data provided by the model will differ from the actual historical ESG Risk Ratings data that continues to be collected by Sustainalytics since the product's market launch in September 2018.
- The model is intended to fulfill client needs for testing the Risk Ratings but must be used with consideration of the fact that it is a predictive model that reasonably estimates historical scores rather than a compilation of actual historical scores over time.

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25+
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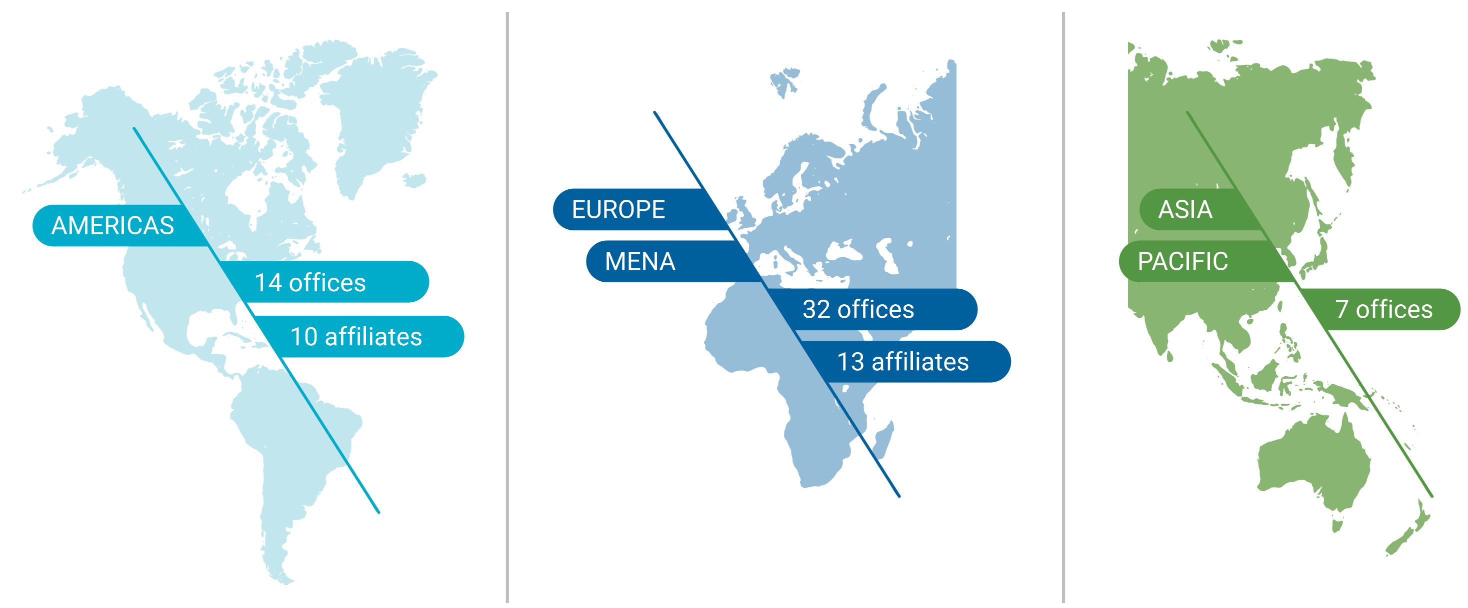

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[1] Cerulli Quantitative Update: Global Markets 2022 ranked Natixis Investment Managers as the 18th largest asset manager in the world based on assets under management as of December 31, 2021.
[2] Assets under management ("AUM") of affiliated entities measured as of December 31, 2022 are $1,151.3 billion (€1,078.8 billion). AUM includes AlphaSimplex Group, LLC ($8.2 billion / €7.7 billion), which was acquired by Virtus Investment Partners, Inc., effective April 1, 2023. AUM, as reported, may include notional assets, assets serviced, gross assets, assets of minority-owned affiliated entities and other types of non-regulatory AUM managed or serviced by firms affiliated with Natixis Investment Managers.

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