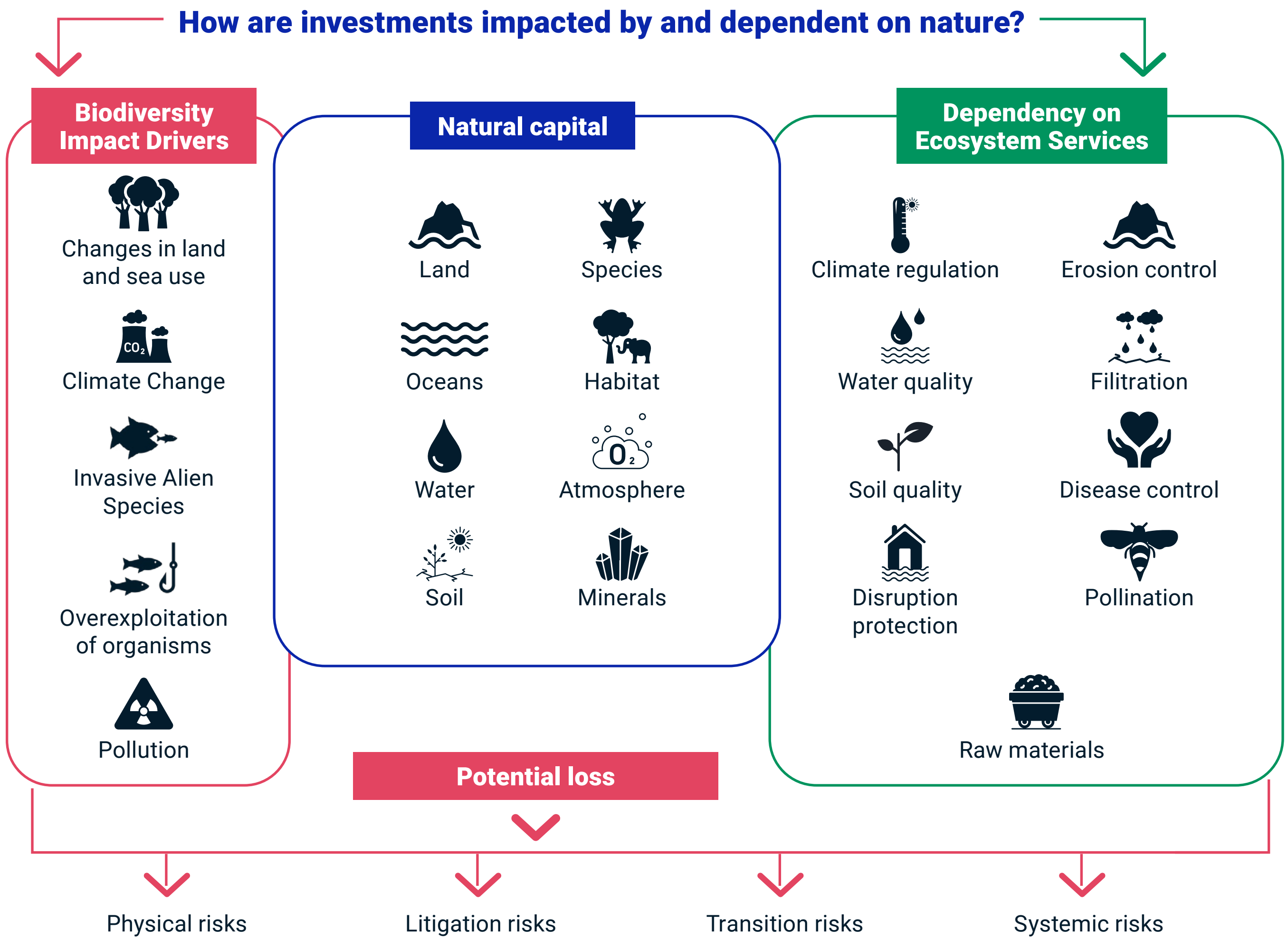
Biodiversity:
The New Frontier of Sustainable Finance

Biological diversity is rapidly declining — and becoming a material risk to investors. That means they need advanced tools to measure impact and manage risk.

Biodiversity, the foundation of life itself, is declining at an alarming rate due to human activity. From habitat destruction and overexploitation of natural resources to pollution and the emission of greenhouse gases resulting in climate change, biodiversity loss poses an existential threat to ecosystems, the global economy and, in turn, to investors.

The need for advanced tools to measure impact and manage risk has never been greater. We can no longer ignore how companies are impacting, and being impacted by, biodiversity loss. Business behavior is increasingly under scrutiny: New regulations on biodiversity are emerging, investors are taking action, and the Task Force on Nature-related Financial Disclosures (TNFD) is developing a risk management and disclosure framework so organizations can report and act on evolving nature-related risk.



Source: MSCI ESG Research, December 2021, based on ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) 2021; IPBES. 2019. "Global assessment report on biodiversity and ecosystem services."

Integrating biodiversity into your investment decisions

At MSCI, we have spent decades developing metrics and data for global investors to measure risks and opportunities related to climate change and environmental, social and governance (ESG) factors. MSCI ESG Research rates over 16,000 issuers and more than 785,000 equity and fixed income securities globally (as of April 2022). MSCI ESG Controversies and ESG Sustainable Impact Metrics cover over 10,000 corporate equity and fixed income issuers[1] while MSCI SDG Alignment assesses over 9,500 issuers (as of November 2022)[2].

We apply that experience and expertise to the biodiversity space, with tools that overlay our ESG data onto geospatial data to isolate risks and identify opportunities resulting from biodiversity loss.

This wide range of tools and data enable investors to address a variety of needs from **integrating ESG factors** to **achieving net-zero goals** to **aligning with values or regulatory requirements.**

ESG integration

MSCI ESG Ratings cater to those looking to integrate ESG data to help identify potential risks or opportunities in their portfolios. We review companies' exposure and management of biodiversity-linked Key Issues such as biodiversity and land use, raw material sourcing, and toxic emissions and waste.

MSCI ESG Controversies helps investors identify companies involved in controversies related to illegal logging, soil pollution or financing of projects of environmental concern.

Other tools such as MSCI ESG Sustainable Impact Metrics and MSCI SDG Alignment help investors identify companies with the potential to counter biodiversity loss through products focused on areas such as sustainable agriculture or pollution prevention.

1 https://www.msci.com/documents/1296102/16472518/ESG_ImpactMetrics-cfs-en.pdf/7a03ddab-46fd-cef7-5211-c07ab992d17b

2 https://www.msci.com/documents/1296102/20848268/MSCI-SDG-Net-Alignment.pdf/3dd59d08-3de3-e7e0-7f94-f47b5b93a9ed

Net-zero solutions

Our biodiversity metrics within the net-zero solutions can be used to measure companies' exposure to and impact on biodiversity, helping investors identify companies involved in high-impact industries and operations from a biodiversity perspective.

Investors gain greater clarity and focus by layering in our proprietary geolocation data to help pinpoint an organization's operations with our Biodiversity-Sensitive Areas and Deforestation Screening Metrics. Investors can address risks in their portfolios or manage their reputational risk related to biodiversity by identifying companies with operations in ecologically-sensitive areas or with exposure to potential direct and indirect involvement in deforestation.

Investors can also capture green opportunities by identifying green revenues from products that are positively impacting biodiversity.

Regulatory and values alignment

MSCI ESG Business Involvement Screening Research provides information on global equity and fixed income issuers involved in specific business activities that could be linked to biodiversity loss such as the production of biocides, palm oil or fossil fuels.

Our MSCI EU Sustainable Finance Module includes Sustainable Finance Disclosure Regulation (SFDR) Adverse Impact Metrics and EU taxonomy data and metrics for over 10,000 corporate equity and fixed income issuers to support and simplify reporting requirements. It may also help clients navigate regulatory requirements such as the new EU SFDR and Article 29 of the French Law on Energy and Climate, which requires all financial institutions to disclose biodiversity-related risks using the concept of double materiality.

Overall, MSCI provides access to over 300 metrics related to biodiversity and natural capital, designed to help investors identify and measure the impact of potential portfolio risks, report to their clients and stakeholders, and engage with companies.

Powerful screening tools to assess **biodiversity risks**

While investors are at various stages of integrating ESG factors into their decision-making, they may experience more downside-resilient and future-ready investments by considering biodiversity factors within ESG factors.

MSCI's Biodiversity Screening Metrics for biodiversity-sensitive areas and deforestation capitalize on MSCI's broad coverage universe, vast data repositories and rigorous methodology. They enable investors to address biodiversity risks in their portfolios, identify companies with operations in ecologically sensitive areas, or assess exposure to potential direct and indirect involvement in deforestation.

These tools combine asset data points, overlayed with location-specific biodiversity data, to give investors greater clarity. The nuanced information helps them make more informed decisions, boost engagement, and prepare for new regulation.

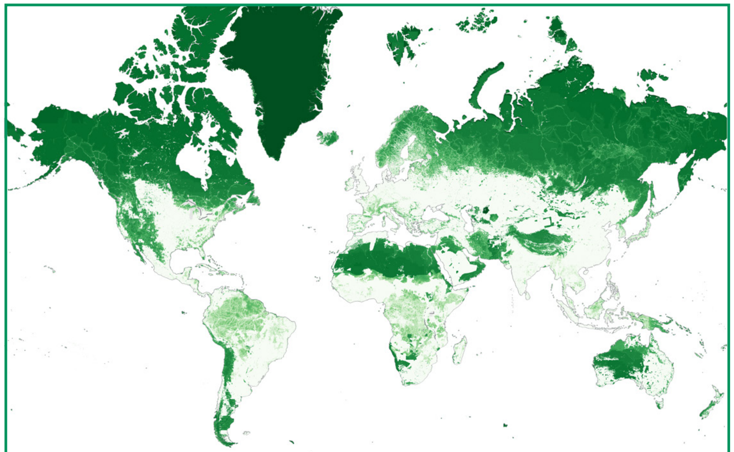
MSCI's Biodiversity-Sensitive Areas Screening Metrics

It enables investors to identify companies with physical assets in areas of high biodiversity relevance, such as healthy forests, prime areas for conservation, deforestation fronts or species-rich areas.

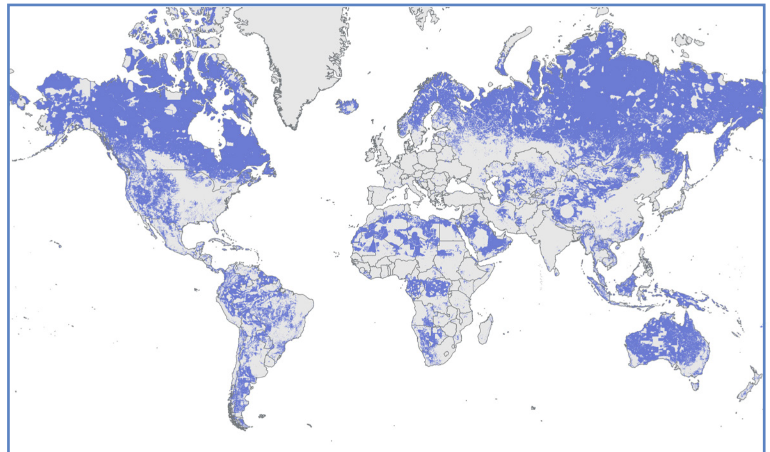
How it works

1. Identify companies from MSCI ACWI Investable Markets Index (IMI) at risk of contribution to nature loss
2. Capture companies with operations in biodiversity sensitive regions
3. Flag for potential involvement in biodiversity sensitive areas, including healthy forests, areas with intact biodiversity, prime areas for conservation, and deforestation fronts

Biodiversity Sensitive Area Layers: Biodiversity Intactness, Prime Areas for Conservation



Biodiversity intactness
Mean species abundance: above average (>=0.56)



Prime areas for conservation
(Global safety net layers by Global Safety Net - One Earth)

Note: MSCI Biodiversity-Sensitive Areas Screening Metrics uses Global Safety Net (GSN)[3] data to identify prime areas for conservation. A select set of the GSN layers is used to represent Distinct Species Assemblages, Rare Phenomena, and Biodiversity Intactness.

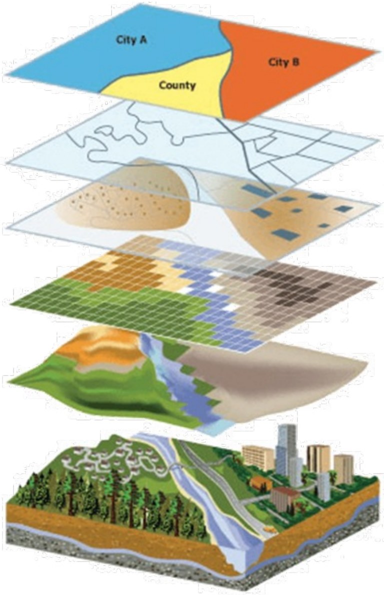
Source: Schipper, Aafke M., "Projecting terrestrial biodiversity intactness with GLOBIO 4", November 3, 2019, Dinerstein, E. et al., "A "Global Safety Net" to reverse biodiversity loss and stabilize Earth's climate", September 4, 2020.

3 Global Safety Net (GSN) is developed by the non-profit organization One Earth to support the goal to protect 30 percent of the Earth's lands and waters by 2030 and 50 percent by 2050. The six layers making up the GSN cover approximately 50 percent of the Earth's land and can act as a blueprint to address the twin crises of biodiversity loss and climate change.

Capitalize on geospatial science to derive site-level metrics

- Biodiversity is inherently site-based, lending itself to geospatial analysis
- Combine asset characteristics and geographic exposure using MSCI's Asset Location Database (ALD)
- Site level metrics can be aggregated to the issuer, portfolio and fund level
- Geospatial analysis allows for easy use of multiple data layers, which is applicable to the complexity and multifaceted nature of biodiversity

Using geospatial science to derive site-level metrics



Stacked layers containing different data that are all georeferenced to true geographic space is the foundational concept of spatial analysis

Source: Image and summary from Harder, Christian and Brown, Clint, The ArcGIS Book, Second Edition: 10 Big Ideas about Appling the Science of Where. "Redwood, CA: ESRI Press, 2017.

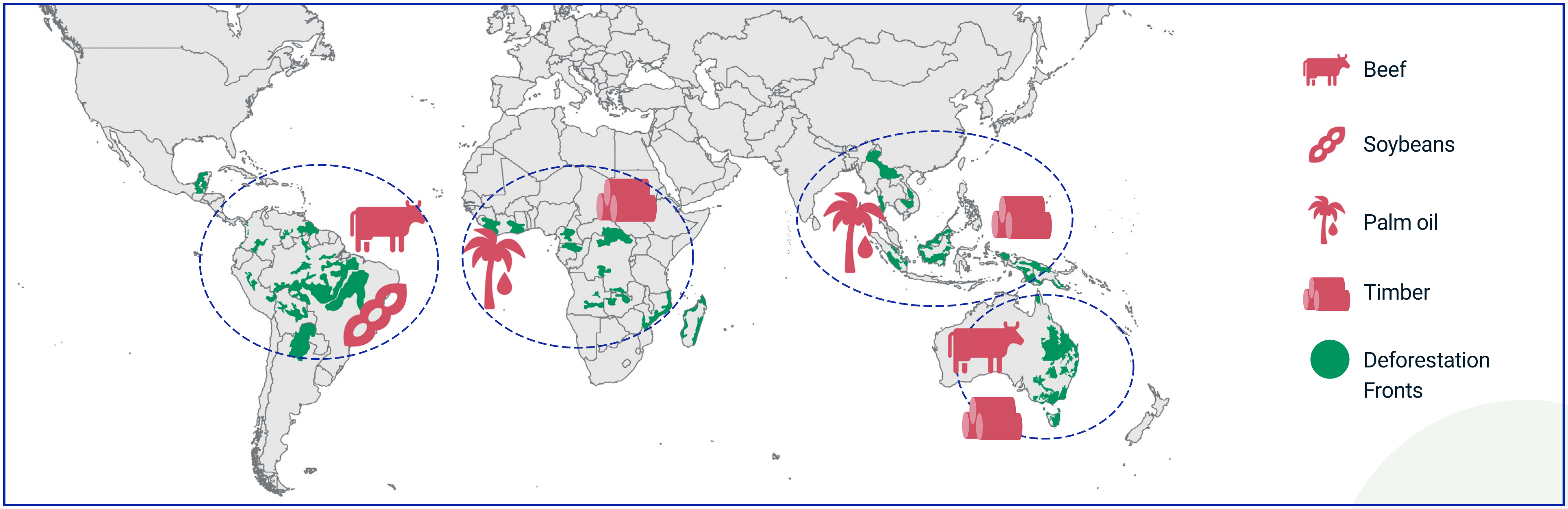
MSCI's Deforestation Screening Metrics

It pinpoints companies exposed to deforestation-related risks, including those that may directly or indirectly contribute to deforestation. This could be a result of direct operations in areas of risk, such as the tropics, or by the production or reliance on commodities considered key drivers of deforestation, such as palm oil, soybeans, beef or timber.

How it works

1. Identify companies in the MSCI ACWI IMI that are at risk of contributing toward deforestation
2. Capture companies involved in controversial commodities, high-risk industries operating in deforestation fronts and deforestation-related controversies
3. Flag for potential direct or indirect contribution to deforestation

Main production locations for deforestation prone commodities and deforestation fronts



Sources: "Deforestation fronts: Drivers and responses in a changing world report". World Wide Fund For Nature (WWF). 2021. "Global assessment report on biodiversity and ecosystem services." IPBES. 2019.

How investors can use
MSCI's Biodiversity-Sensitive Areas and Deforestation Screening Metrics

Asset managers	Asset owners	Insurers	Banks
» Identify companies at risk of contributing toward deforestation » Risk management » Engagement » Exclusion-based investing » Regulatory reporting	» Identify holdings at risk » Regulatory reporting » Risk management » Engagement	» Assess the impact of biodiversity risk in general account » Better understand potential liabilities » Risk management	» Gain insight into risk profile of loans and investments to better identify and manage risk of contributing toward deforestation » Regulatory reporting

About MSCI ESG Research products and services

MSCI ESG Research products and services are provided by MSCI ESG Research LLC, and are designed to provide in-depth research, ratings and analysis of environmental, social and governance-related business practices to companies worldwide. ESG ratings, data and analysis from MSCI ESG Research LLC. are also used in the construction of the MSCI ESG Indexes. MSCI ESG Research LLC. is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc.

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

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