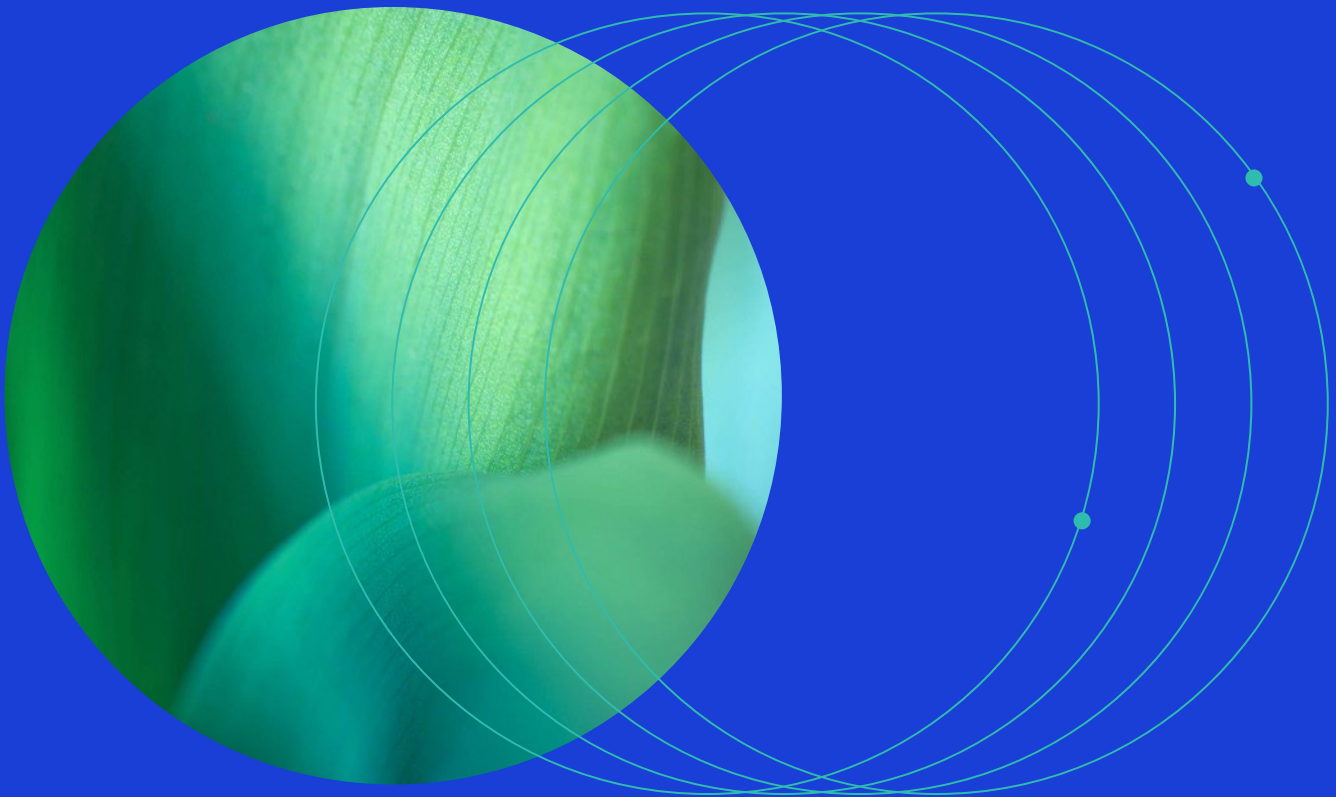


MSCI Biodiversity Risks Screen: Drivers of Biodiversity Loss



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1 Biodiversity Risks

Portfolio-level biodiversity risk reflects the broader exposure created when multiple corporate activities collectively degrade ecosystems. While impacts occur at the firm level, the loss of ecosystem services - such as pollination, water quality, and carbon storage - creates widespread physical and transition risks across the economy. Managing exposure to these corporate impacts is therefore material for managing financial vulnerability.

Broad and diversified indexes representing global markets and sectors may see similar cumulative exposure to risks from the aggregated impacts arising from individual corporate impacts.

For more information, please refer to our research paper: [Sector Based Biodiversity Risk in Investments](#)





















1.1 Mapping Drivers of Biodiversity Loss

Biodiversity risks were defined by MSCI's Climate Risk Center using a proprietary IPBES¹-based mapping methodology. Using this methodology, MSCI formulated the biodiversity risks screen ('Index Screen') reflecting the mapping while bearing in mind practical index construction considerations, which is then refined by using differentiated thresholds based on the assessed level of biodiversity risks.

¹ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services comprises the input of 150 experts, more than 350 contributing authors, and the analysis of more than 15,000 scientific publications, the results of which were accepted by 130+ governments globally.

IPBES. *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Edited by Eduardo S. Brondízio, Josef Settele, Sandra Díaz, and Hien T. Ngo. Bonn, Germany: IPBES Secretariat, 2019.

Table 1. MSCI's Biodiversity Risks Screen includes defined criteria that are linked to IPBES-defined direct drivers of nature loss

	Impact	 Changes in land and sea use	 Overexploitation of organisms	 Climate Change	 Pollution	 Invasive alien species
Arctic oil & gas →	 Very High	✓		✓	✓	
Palm oil →	 Very High	✓			✓	
Soybean →	 Very High	✓			✓	
Thermal coal →	 Very High	✓		✓	✓	
Oil & gas extraction →	 Very High	✓		✓	✓	
Biocides →	 Very High				✓	
Pork →	 High	✓			✓	
Tobacco →	 High	✓			✓	
Fishing & aquaculture →	 High	✓	✓		✓	✓
Shipping →	 High			✓		✓
Agriculture →	 High Sector Harm	✓	✓	✓	✓	✓
Forestry →	 High Sector Harm	✓	✓	✓		
Food products →	 High Sector Harm	✓	✓		✓	
Mining →	 High Sector Harm	✓			✓	
Carbon emissions →	 High			✓		

The Index Screen incorporates the following criteria:

- Commodities such as palm oil, soybean, biocides, pork, and tobacco, which are assessed to have inherent harmful impacts on biodiversity based on typical approaches to produce;
- Activities such as oil and gas extraction, thermal coal mining, shipping, fishing, and aquaculture are assessed as having negative impacts given the associated processes or the scale/volume of activity; and
- Evidence of biodiversity-related breaches in high-impact GICS^{®2} industries or sub-industries.

1.2 Carbon Emissions Criterion in a Biodiversity Risks Screen

Climate change is recognized as becoming an increasingly significant driver of biodiversity loss. This recognition is already seen in some climate indexes that include biodiversity-related considerations. Hence, the Index Screen includes a carbon emissions criterion as part of the baseline screen of indexes without climate considerations but may be treated as optional when such considerations already exist.

² The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Dow Jones Indices. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Dow Jones Indices. For more details, please refer to [The Global Industry Classification Standard \(GICS®\)](#).

2 Biodiversity Risks Screen

2.1 Minimum Standards – Commodities & Activities

The following criteria relate to commodities and activities that are assessed as having very high or high impact on biodiversity, differentiated by their respective thresholds, utilizing MSCI ESG Business Involvement Screening Research (BISR), MSCI Biodiversity Screening Metrics, MSCI Climate Change Metrics, and MSCI Impact Solutions' SDG Alignment data¹.

2.1.1 Arctic Oil & Gas Extraction (Activity)

The framework provides for the screening of all companies deriving more than 0% revenue (either reported or estimated) from offshore or onshore oil and gas production in the Arctic region. The definition of Arctic is geographical and includes production activities north of the 66.5 latitude.

2.1.2 Palm Oil (Commodity)

The framework provides for the screening of all companies deriving 10% or more revenue (either reported or estimated) from palm oil production. It refers to companies that cultivate palm oil trees and harvest fresh fruit bunches (FFBs) used to produce palm oil products.

2.1.3 Soybean (Commodity)

The framework provides for the screening of all companies deriving 10% or more revenue (either reported or estimated) from the production of soybeans. It refers to companies that cultivate and harvest soybeans including those that operate agricultural lands to produce soybeans.

2.1.4 Thermal Coal Mining (Activity)

The framework provides for the screening of all companies deriving 10% or more revenue (either reported or estimated) from the mining of thermal coal (including lignite, bituminous, anthracite and steam coal) and its sale to external parties. It does not consider revenue from metallurgical coal, coal mined for internal power generation (e.g., in the case of vertically integrated power producers), intra-company sales of mined thermal coal, and revenue from coal trading (either reported or estimated).

2.1.5 Oil & Gas Extraction (Activity)

The framework provides for the screening of all companies deriving 10% or more revenue (either reported or estimated) from the extraction and production of oil and gas.

2.1.6 Biocides (Commodity)

The framework provides for the screening of all companies deriving 10% or more revenue (either reported or estimated) from the production of biocides such as antifouling products and pesticides.

2.1.7 Pork (Commodity)

The framework provides for the screening of all companies deriving 20% or more revenue (either reported or estimated) from the production of pork products, including pig breeding and slaughtering, processed pork, and the production of packaged food products with pork ingredients.

2.1.8 Tobacco (Commodity)

The framework provides for the screening of all companies deriving 20% or more revenue (either reported or estimated) from the production of tobacco products. Tobacco products include nicotine-containing products, including traditional and alternative tobacco smoking products.

2.1.9 Fishing & Aquaculture (Activity)

The framework provides for the screening of all companies belonging to the Packaged Foods & Meats GICS Sub-Industry and deriving 20% or more revenue from fishing or fish products (Derived score of -1).

2.1.10 Shipping (Activity)

The framework provides for the screening of all companies belonging to the Oil & Gas Storage & Transportation and Marine Transportation GICS Sub-Industries and deriving 20% or more revenue (either reported or estimated) from marine freight or marine transport activities (Derived score of -1).

2.2 Minimum Standards – GICS Industries / Sub-Industries

The following criteria relate to GICS industries or sub-industries that are assessed as having very high or high impact on biodiversity, evidenced by potential breaches, utilizing MSCI ESG Controversies data. Hence, they leverage MSCI ESG Research's ESG Controversy Assessment Flags:

- A **Red** Flag (Score of 0) indicates that a company is directly involved in one or more Very Severe Ongoing controversies.
- An **Orange** Flag (Score of 1) indicates that a company has either:
 - Settled most but not all of the stakeholders' concerns related to its direct involvement in one or more Very Severe controversies;
 - Continues to be indirectly involved in one or more Very Severe controversies, or
 - Is directly involved in one or more Severe controversies.
- A **Yellow** Flag (Scores 2 to 4) indicates that a company either:
 - Has been implicated in one or more Concluded Very Severe or Severe controversies;
 - Has settled most or all of the stakeholders' concerns related to its alleged direct involvement in one or more Severe controversies or indirect involvement in one or more Very Severe controversies, or
 - Continues to be indirectly involved in one or more Severe controversies or directly involved in one or more Moderate controversies.

2.2.1 Agriculture

The framework provides for the screening of all companies belonging to the Agricultural Products & Services GICS Sub-Industry that are assessed as having involvement in select environmental controversies that are classified as Red, Orange, or Yellow Flags. Controversies in scope are those related to a firm's use or management of natural resources, related to the environmental impact of a company's supply chain and the sourcing of natural resources, or related to a firm's water management practices.

2.2.2 Forestry

The framework provides for the screening of all companies belonging to the Forest Products or Paper Products GICS Sub-Industries that are assessed as having involvement in select environmental controversies that are classified as Red, Orange, or Yellow Flags. Controversies in scope are those related to a firm's use or management of natural resources or related to the environmental impact of a company's supply chain and the sourcing of natural resources.

2.2.3 Food Products

The framework provides for the screening of all companies belonging to the Packaged Foods & Meats GICS Sub-Industry that are assessed as having involvement in select environmental controversies that are classified as Red, Orange, or Yellow Flags. Controversies in scope are those related to a firm's use or management of natural resources, related to the environmental impact of a company's supply chain and the sourcing of natural resources, or related to a firm's water management practices.

2.2.4 Mining

The framework provides for the screening of all companies belonging to the Metals & Mining GICS Industry that are assessed as having involvement in select environmental controversies that are classified as Red, Orange, or Yellow Flags. Controversies in scope are those related to a firm's use or management of natural resources or related to a company's adverse impact on the environment through air, soil, and water pollution or waste.

2.3 Carbon Emissions³

The framework provides for the screening of all companies with carbon emissions intensity (defined as Scopes 1 and 2 emissions over sales) that are higher than the defined threshold. This threshold is calculated as the 95th percentile (or the highest 5%) carbon emissions intensity among constituents of MSCI ACWI Index. The calculation of the 95th percentile threshold does not consider companies without emissions data.

2.4 Coverage Gap Adjustment

The Index Screen is designed for use in indexes that are based on the MSCI ACWI IMI Index or on any regional or size-segment subsets. The coverage universe for most of the data used includes at least MSCI ACWI IMI Index, except for two datapoints that have smaller coverage universe. Taking into account the importance of capturing the impact of the activities and their respective data considerations, they are treated as follows:

- **Fishing & Aquaculture (Section 2.1.9)**
Given challenges in identifying companies that are specifically involved in fishing or fish products, there is currently no fallback logic applied. This means companies not assessed for involvement in fishing or fish products but belonging to the Packaged Foods & Meats GICS Sub-Industry are not flagged by the Index Screen. As of the August 2025 snapshot, 20 companies belonging to this GICS sub-industry (0.24% of MSCI ACWI IMI Index with a weight of 0.01%) have not been researched.
- **Shipping (Section 2.1.10)**
If a company is not assessed for involvement in freight and transport activities but belongs to the Marine Transportation GICS Sub-Industry, it will be flagged by the Index Screen.

³ See Section 1.2 for the general approach to this screen.

Appendix I: MSCI ESG Research

The Index Screen utilizes information such as company ratings and research produced and provided by MSCI ESG Research LLC (MSCI ESG Research), a subsidiary of MSCI Inc. In particular, the Index Screen uses the following MSCI ESG Research products: MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics, MSCI Impact Solutions: SDG Alignment, and MSCI Nature & Biodiversity Solutions: Biodiversity Screening Metrics.

MSCI ESG CONTROVERSIES

MSCI ESG Controversies provide assessments of controversies concerning the potential negative environmental, social, and/or governance impact of company operations, products and services. The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Global Compact. MSCI ESG Controversies Score falls on a 0-10 scale, with "0" being the most severe controversy.

The MSCI ESG Controversies methodology can be found at:
<https://www.msci.com/legal/disclosures/esg-disclosures>.

MSCI ESG BUSINESS INVOLVEMENT SCREENING RESEARCH

MSCI ESG Business Involvement Screening Research (BISR) aims to enable institutional investors to manage environmental, social and governance (ESG) standards and restrictions reliably and efficiently.

The MSCI Business Involvement Screening Research methodology can be found at:
<https://www.msci.com/legal/disclosures/esg-disclosures>.

MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics provides climate data and tools to support institutional investors seeking to integrate climate risk and opportunities into their investment strategy and processes. This includes investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, alignment with temperature pathways and factoring climate change research into their risk management processes, in particular through climate scenario analysis for both transition and physical risks.

The dataset spans across the four dimensions of a climate strategy: transition risks, green opportunities, physical risks and 1.5° alignment.

a) Fossil Fuels and Power Generation Metrics

MSCI ESG Research identifies companies involved in fossil fuel-related assets and activities including fossil fuel reserves, resource extraction, power generation and generation capacity, revenue from such assets and activities and capital investments in such assets and activities. The metrics are based on disclosed activities, disclosed revenue and estimates of revenue that are extrapolated from company disclosures and eligible third-party sources (such as NGOs).

b) Greenhouse Gas (GHG) Emissions

MSCI ESG Research collects reported emissions and uses proprietary estimation methodologies that follow the GHG Protocol in including carbon dioxide (CO₂) and the five other principal GHGs: hydrofluorocarbons (HFCs), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Emissions of these other gases are accounted for in terms of the quantity of CO₂ that has an equivalent global warming potential.

For more details on MSCI Climate Change Metrics, please refer to <https://www.msci.com/legal/disclosures/climate-disclosures>.

MSCI IMPACT SOLUTIONS: SDG ALIGNMENT

MSCI Impact Solutions' SDG Alignment is designed to provide a holistic view of companies' net contribution – both positive and negative – towards addressing each of the 17 UN Sustainable Development Goals (SDGs). SDG Alignment assessments and scores include analysis of companies' operations, products and services, policies, and practices and their net contribution – positive and adverse – to addressing key global challenges.

The MSCI SDG Alignment framework provides 17 SDG Net Alignment scores and 17 SDG Net Alignment assessments (including Strongly Aligned, Aligned, Neutral, Misaligned and Strongly Misaligned) for each of the 17 global goals. In addition, the model offers assessments and scores for two dimensions, product alignment and operational alignment, for each company and for each of the 17 goals.

The MSCI SDG Alignment methodology can be found at: <https://www.msci.com/legal/disclosures/esg-disclosures>.

MSCI NATURE & BIODIVERSITY SOLUTIONS: BIODIVERSITY SCREENING METRICS

MSCI Biodiversity Screening Metrics is designed to help investors integrate biodiversity considerations into investment decisions. It provides tools, metrics, and datasets that capture risks, impacts, and opportunities linked to biodiversity and nature loss, while also supporting alignment with disclosure requirements under emerging regulations and voluntary reporting frameworks. The dataset includes indicators that flag companies with potential deforestation-related risks. These risks may arise from the production (direct contribution) or use (indirect contribution) of key commodities such as palm oil, soy, beef, and timber, from direct operations in high-risk deforestation areas, or from involvement in deforestation-related controversies. It also contains data to assess whether a company's assets are located near biodiversity-sensitive areas, enabling investors to evaluate geographic exposure to biodiversity risks.

For more details on MSCI Biodiversity Screening Metrics, please refer to <https://www.msci.com/data-and-analytics/sustainability-solutions/msci-sustainability-and-climate-methodologies>.

Appendix II: Relevant MSCI ESG Research data fields

As of July 2025, the relevant underlying data fields used in the Index Screen as provided by MSCI ESG Research are:

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of July 2025
ARCTIC_OIL_MAX_REV_PCT	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) greater than 0% that a company derives from Arctic Oil production. The definition of Arctic is geographical and includes production activities north of the 66.5 latitude. This factor includes offshore or onshore oil production.
ARCTIC_GAS_MAX_REV_PCT	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) greater than 0% that a company derives from Arctic Gas production. The definition of Arctic is geographical and includes production activities north of the 66.5 latitude. This factor includes offshore or onshore gas production.
PALM_PROD_MAX_REV_PCT	BISR	The recent-year percent of revenue, or maximum estimated percent, a company has derived from the production of Palm Oil.
SOYBEAN_PROD_MAX_REV_PCT	Nature & Biodiversity Solutions: Biodiversity Screening Metrics	The percentage of revenue, or maximum estimated percentage, a company has derived from the production of soybeans in the most recent year.
THERMAL_COAL_MAX_REV_PCT	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) greater than 0% that a company derives from the mining of

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of July 2025
		thermal coal (including lignite, bituminous, anthracite and steam coal) and its sale to external parties. It excludes: revenue from metallurgical coal; coal mined for internal power generation (e.g. in the case of vertically integrated power producers); intra-company sales of mined thermal coal; and revenue from coal trading.
OG_REV_EXTRACTION_PROD	Climate Change Metrics	Identifies the maximum percentage of revenue (either reported or estimated) that a company derives from the extraction and production of oil and gas.
BIOCIDE_PRODUCER_MAX_REV_PCT	BISR	The company's reported revenue (or, where not disclosed, maximum estimated revenue) from biocides as a percentage of total revenue in its most recently completed fiscal year. Expressed as a percentage, where a value of 1.0 represents 1%.
PORK_PROD_MAX_REV_PCT	BISR	The company's reported revenue (or, where not disclosed, maximum estimated revenue) from the production of pork products as a percentage of total revenue in its most recently completed fiscal year. Expressed as a percentage, where a value of 1.0 represents 1%.
TOB_PROD_MAX_REV_PCT	BISR	The company's reported revenue (or, where not disclosed, maximum estimated revenue) from the production of tobacco products as a percentage of total revenue in its most recently completed fiscal year. Expressed as a percentage, where a value of 1.0 represents 1%. Tobacco products include nicotine-containing products,

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of July 2025
		including traditional and alternative tobacco smoking products.
SDG_14_OPER_ALIGNMENT_FISH_AND_AQUA	Impact Solutions: SDG Alignment	Indicates if the company is involved in fishing or fish products. Possible values are -1 if the company has 20% or more business exposure to fishing or fish products or 0 if not.
SDG_14_OPER_ALIGNMENT_MARINE_TRANSPORT	Impact Solutions: SDG Alignment	Indicates if the company is involved in freight and transport activities. Possible values are -1 if the company has 20% or more business exposure to marine freight or marine transport or 0 if not.
SDG_RESEARCHED	Impact Solutions: SDG Alignment	Issuer is in the standard SDG Net Alignment coverage universe, has been researched and has SDG Net Alignment assessment and scores.
ENVIRONMENT_LAND_SCORE	ESG Controversies	This indicator measures the severity of controversies related to a firm's use or management of natural resources. Factors affecting this evaluation include, but are not limited to, a history of involvement in natural resource-related legal cases, involvement in environmental impact-related legal cases, widespread or egregious impacts due to the firm's use of natural resources, , impacts due to direct or indirect use of the firm's products or services, resistance to improved practices, and criticism by NGOs and/or other third-party observers.
ENVIRONMENT_SUPPLY_SCORE	ESG Controversies	This indicator measures controversies related to the environmental impact of a company's supply chain and the sourcing of natural resource. Factors affecting this

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of July 2025
		evaluation include, but are not limited to, a history of widespread or egregious environmental impacts in a firm's supply chain, legal cases, resistance to improved practices, and criticism by NGOs and/or other third-party observers.
ENVIRONMENT_WATER_SCORE	ESG Controversies	This indicator measures the severity of controversies related to a firm's water management practices. Factors affecting this evaluation include, but are not limited to, a history of involvement in water use-related legal cases, widespread or egregious impacts due to emissions, resistance to improved practices, and criticism by NGOs and/or other third-party observers.
ENVIRONMENT_TOXIC_SCORE	ESG Controversies	This indicator measures the severity of controversies related to a firm's non-GHG emissions. Factors affecting this evaluation include, but are not limited to, a history of involvement in land or air emissions-related legal cases, widespread or egregious impacts due to hazardous emissions, resistance to improved practices, and criticism by NGOs and/or other third-party observers.
CARBON_EMISSIONS_SCOPE_12	Climate Change Metrics	This figure represents the company's most recently reported or estimated Scope 1 + Scope 2 greenhouse gas emissions (if available). Scope 1 emissions are those from sources owned or controlled by the company, typically direct combustion of fuel as in a furnace or vehicle. Scope 2 emissions are those

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of July 2025
		caused by the generation of electricity purchased by the company.
CARBON_SALES_INTENSITY_RECENT	Climate Change Metrics	This figure represents the company's sales (USD million) used to calculate the most recent Scope 1, 2, and 1+2 Carbon Intensity.

Contact us

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