Supplier Physical Risk Assessment
Methodology

S&P Global Sustainable1 **–** March 2024

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Introduction and Context

In 2017 the Task Force on Climate-related Financial Disclosures (TCFD) set a precedent for companies by providing a series of recommendations on climate-related financial disclosure; making a formal connection between climate-related risks and opportunities and how these could impact company financial statements.

As part of these recommendations, companies were encouraged to disclose their physical risks (Acute and Chronic). While the TCFD recommendations provided examples of financial impacts caused by physical risks in **companies' supply chains as examples of the content companies might disclose, it was never an explicit** disclosure recommendation.

Consequently, much of the physical risk disclosure from companies to date has focused on their direct operations, with less than a quarter of all physical risks reported to CDP **focusing on companies' value chains** (CDP Climate Change Questionnaire 2022).

However, with the disbandment of the TCFD at the end of 2023 and the creation of derivative reporting frameworks more explicit disclosure requirements on climate related risks in the value chain have emerged, with the ISSB, CSRD and XRB frameworks requiring disclosure of this nature.

The Supplier Physical Risk Assessment aims to support non-financial corporate efforts to disclose information in line with these reporting frameworks, and does so by modeling the exposure and impact of physical risk hazards on **companies'** supplier assets. To do this, it uses the methodologies used to assess the physical risk of **companies'** own operations.[1]

IMPORTANT: This methodology **does not consider how the financial impacts on companies' suppliers cascade** downstream to the client, but instead focuses on the exposure and financial impacts **on a suppliers' assets.**

Typical Use Case

Regulated and Voluntary Reporting

- Support companies in their efforts to disclose information in line with relevant reporting frameworks (ISSB, CSRD ESRS E1, XRB).

Risk Screening

- Identify the location, timing, and magnitude of increases in physical risks from companies' Tier 1 suppliers. This can in turn help inform the prioritization of risk monitoring and risk management activities and processes.

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[1] Please see the Physical Risk Scores and Financial Impact Dataset methodology for the full list of physical risk hazards covered: https://portal.s1.spglobal.com/survey/documents/SPG_S1_Physical_Risk_Methodology.pdf

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Methodology Overview

The Supplier Physical Risk Assessment methodology is a gap-filling, data-consolidation and workflow methodology. Figure 1 sets out the schematic of the standard physical risk methodology[2]. In the Non-Financial Corporate (NFC) use case, asset location information is available for their direct operations However, when assessing companies' Tier 1 suppliers, detailed information on the exact location of the assets from which they are procuring products is not always available.

To address the challenges of collecting this data, S&P Global Sustainable1 (S1) uses other location data inputs, when asset-level information is not available or overly burdensome for companies to collect.

*Figure 1: **S1's approach to** supplier physical risk*
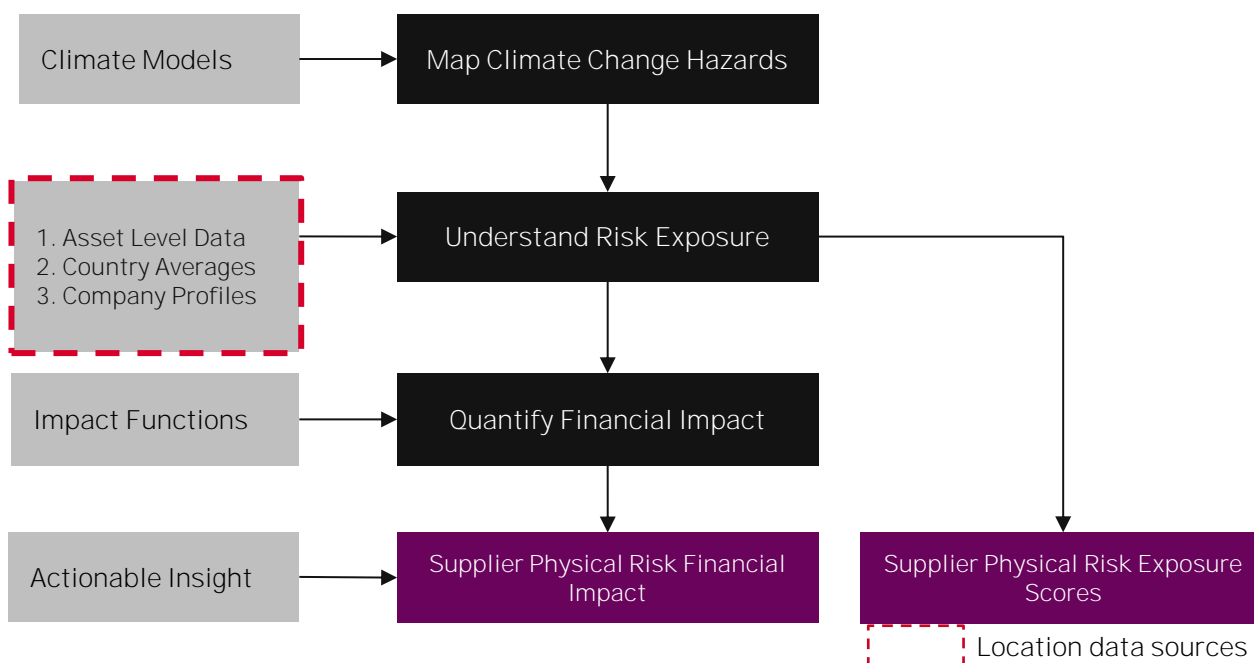
Location Data Sources and Hierarchy

Table 1 below **sets out the different location data sources that can be used for the analysis of a company's** suppliers. This list also constitutes a data hierarchy of what location data sources are preferred.

Table 1: Location data sources and hierarchy

#	Location data	Description
1	Approach 1 Asset Level Data	▪ Most accurate approach that leverages asset level location data (Latitude / Longitude).
2	Approach 2 Country Average	▪ Derives the physical risk impact for each hazard based on the country and **item/service from a company's purchase ledger.**

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[2] S&P Global Physical Risk Scores and Financial Impact Data Methodology
https://portal.s1.spglobal.com/survey/documents/SPG_S1_Physical_Risk_Methodology.pdf

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		▪ Uses a country average where each pixel (25 x 25km grid) in a country is weighted by GDP to derive climate hazard outputs for each item in the purchase ledger.
3	Approach 3 Supplier Profile	▪ Uses precalculated data of companies in the purchase ledger where there is available coverage in the Physical Risk Scores and Financial Impact Dataset. ▪ Outputs are not specific to country from which the purchase has been made but instead represents the enterprise level risk of the supplier for all countries of operation.
4	Approach 4 Country Average	▪ Identical to Approach 2. The main difference is that the data source for the supplier country comes from the CIQ Country HQ rather than the company's purchase ledger.

With the application of a Physical Risk Assessment for companies' supplier assets, there is a greater emphasis on the location from which products are procured. This is because companies may not be fully exposed to the physical risks that exist across a supplier's entire operations but exposed only to the specific supplier location from which they are procuring products.

Example: A supplier has operations in the US and China. If the supplier's US operations are impacted by a tropical cyclone, this is unlikely to impact the ability of its sites in China to continue operating and producing products for customers. It would therefore be undesirable to attribute the enterprise-level risk of a supplier to a customer in a Supplier Physical Risk Assessment where a company is procuring products from only one supplier location.

This is the why the country average approach (Approach 2) is preferred over the precalculated supplier profiles (Approach 3).

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Supplier Physical Risk Schematic

Figure 2 sets out a schematic of the methodology and the various data inputs and datasets used to produce the final outputs and how these vary by the approach taken.
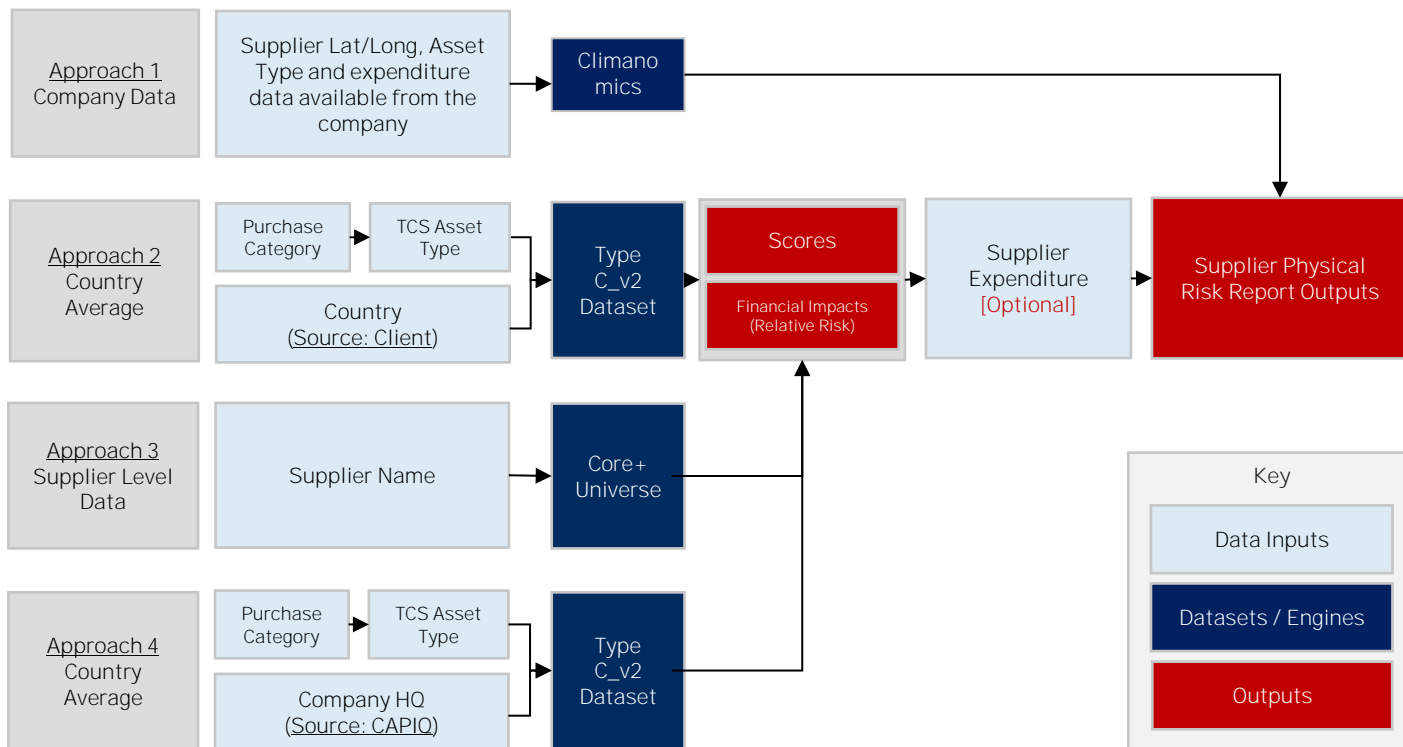
Figure 2: Supplier physical risk schematic

Table 2: Input data descriptions

Datasets	Description
Climanomics	S&P Global Sustainable 1 Climanomics® platform enables users to quantify the future financial Impacts of climate change by integrating terabytes of climate and socioeconomic data on climate-related hazards and translating risk into financial terms to provide decision-relevant insights.
Type C Dataset	The Type C dataset contains GDP weighted average physical risk exposure scores and financial impacts (relative risk) for 238 countries and 306 asset type combinations. This dataset is used to attribute country level risk profiles to supplier assets where more specific location data is not available.
Core+ Universe (Physical Risk Scores and Financial Impact Dataset)	The Sustainable1 Physical Risk Scores and Financial Impact Dataset quantifies exposure to nine hazard types across four climate change scenarios and eight decades and includes both physical risk exposure scores and financial impacts. The dataset includes a database of asset locations linked to corporate owners and ultimate parent entities that is maintained by S&P Global, covering 146,000+ companies and encompassing 3.1 million+ assets.

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Outputs and Metrics

The analysis is built on two key metrics: exposure scores and relative risk. These are calculated at the Supplier | Country level for exposure scores and Supplier | Country | Purchase Category level for the relative risk metrics.

Table 3: Supplier Physical Risk Metrics

Metrics	Description
Exposure Score	Exposure to each hazard within the geographic boundaries of each issuer relative to global conditions and expressed as a 1 (least exposed) to 100 (most exposed) score.
Relative Risk (%)	This is a function of hazard and vulnerability. Reported as a percentage of asset value (Calculated as MAAL/asset value). It provides a perspective on exposure and vulnerability across assets, independent of their value.

The details of the various levels at which these metrics have been aggregated can be found in Table 4.

Table 4: Supplier Physical Risk Detailed Metrics

Metrics Aggregation	Exposure Scores	Relative Risk
Enterprise Level	✓	✓
Hazard Level	✓	✓
Decade	✓	✓
Purchase Categories	✗	✓
Supplier Level	✓	✓
Country Level	✓	✓
Supplier	Country	Purchase Category	✗	✓
% Supplier spend by hazard and physical risk classification	✓	✓

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Monitoring and Review

All new methodologies and any material changes to existing methodologies are reviewed and approved by an independent methodology governance committee.

Related Documentation

S1 Methodology Dependencies	Document Name	Methodology Link
Climanomics	Climanomics Methodology Document 2023	See here
Physical Risk Scores and Financial Impact Dataset	Methodology Document	See here

Significant Updates

- 14/03/2024: Naming convention for Approach 3 updated.

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