

A NLP-Based Analysis of Alignment of Organizations' Climate-Related Risk Disclosures with Material Risks and Metrics

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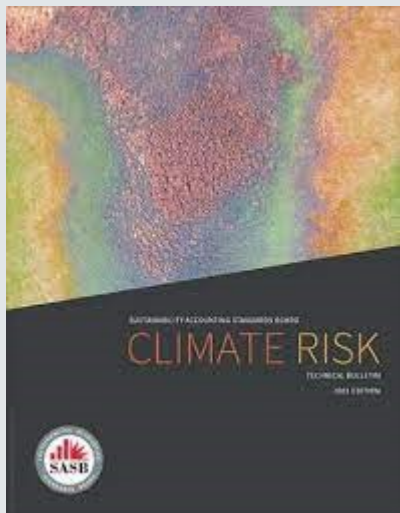
Cedric B Robert



Climate Risk



Sustainability Accounting Standards Board



SASB climate risk technical bulletin 2021

SASB's Climate Risk Framework



Physical Effects

The diagram consists of three horizontal chevron-shaped boxes pointing to the right, stacked vertically. Each box has a colored vertical bar on its left side: teal for the top box, olive green for the middle box, and dark brown for the bottom box. The background is light gray with decorative wavy lines in the corners.

Transition to a Low-Carbon,
Resilient Economy

Regulatory Risk

SASB Climate Risk Map



SECTOR

CONSUMER GOODS

INDUSTRIES

Apparel, Accessories & Footwear

Appliance Manufacturing

Household & Personal Products

Building Products & Furnishings

E-Commerce

Multiline and Specialty Retailers & Distributors

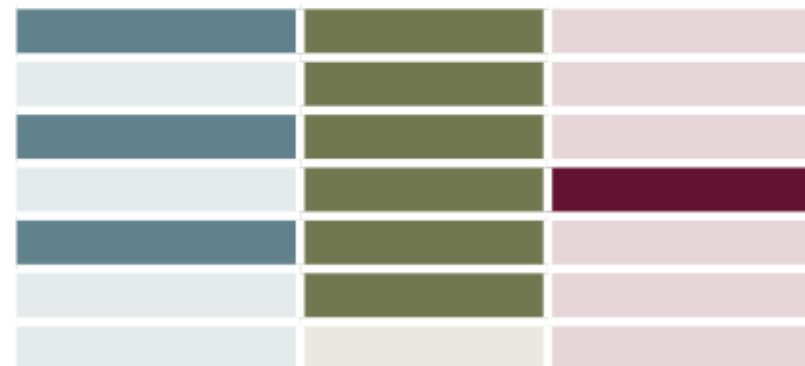
Toys & Sporting Goods

CLIMATE RISK CATEGORY

PHYSICAL

TRANSITION

REGULATORY



Methodologies (literature)

Extract climate risk information from company text data:

- 1) Keyword-based approach (Doran, K. L., et al. 2008, Berkman, H., et al, 2019)

Drawback: can't cover the context and interpretation of topics

- 2) Statistical approach (Sautner, Z. et al. 2020)

Drawback: can't extract and measure contextualized information

- 3) Contextual AI-based approach (Kölbel, J. et al. 2021)

Drawback: needs a large amount of labeled data

The background features a light blue-grey gradient. On the left, there are several wavy, dashed lines in a golden-yellow color. In the top-left corner, a portion of a white circle is visible. In the bottom-right corner, another portion of a white circle is visible, with a solid red line curving upwards towards it.

Our methodology and contributions:

- ✓ a combination of both keyword and context based approaches
- ✓ a climate risk glossary – both unigram and bigrams – trained on 30M words
- ✓ a classification of text data as physical risk, transition risk, regulatory risk and non-climate related.
- ✓ a text extraction from disclosures found in annual reports as well as sustainability, climate reports, corporate social responsibility, and ESG reports.
- ✓ an analysis based on if specific language is used in explanation of climate risk in each industry or sector in addition to if companies disclose material climate risk, topics, and metrics in their reports.