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

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Climate Risk

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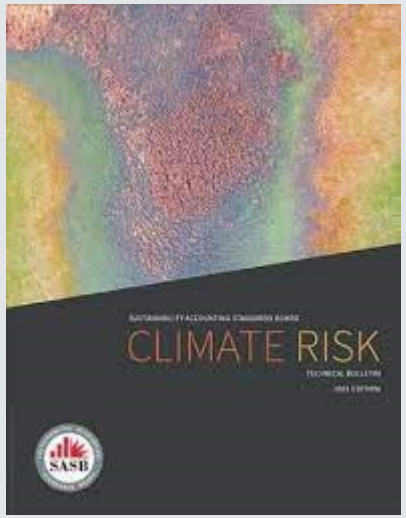
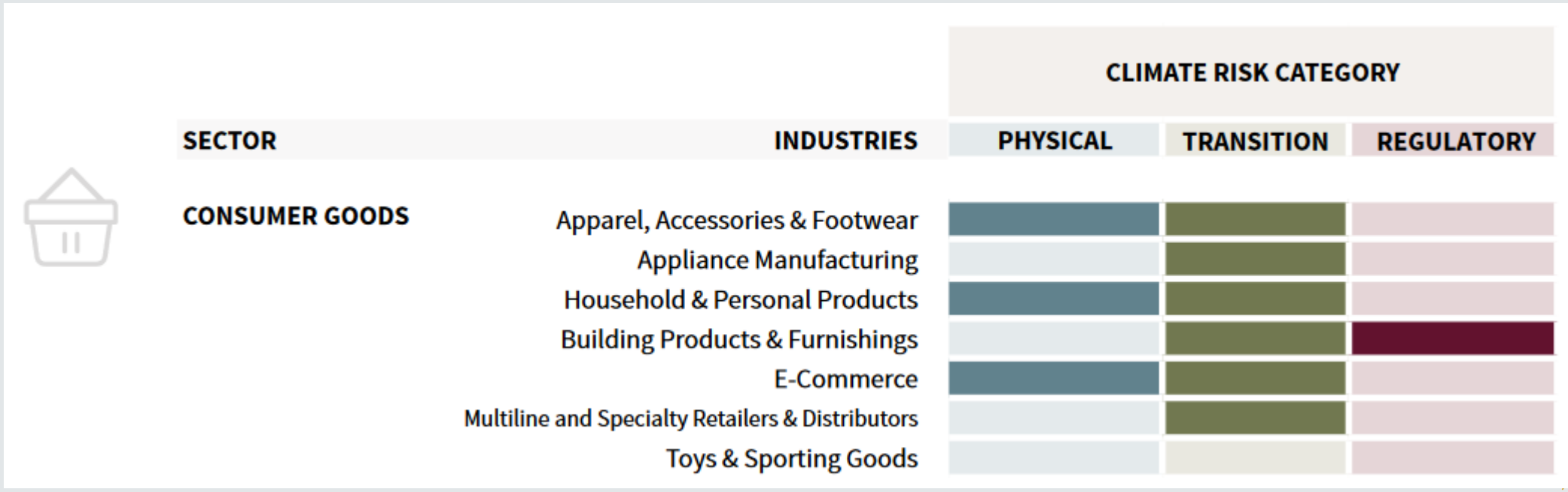


SASB climate risk technical bulletin 2021

SASB's Climate Risk Framework

- Physical Effects
- Transition to a Low-Carbon, Resilient Economy
- Regulatory Risk

SASB Climate Risk Map



SECTOR	INDUSTRIES	CLIMATE RISK CATEGORY		
		PHYSICAL	TRANSITION	REGULATORY
CONSUMER GOODS	Apparel, Accessories & Footwear			
	Appliance Manufacturing			
	Household & Personal Products			
	Building Products & Furnishings			
	E-Commerce			
	Multiline and Specialty Retailers & Distributors			
	Toys & Sporting Goods			

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

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.