

Supplementary_material_appendix_2.

SECTOR-BASED ANALYSIS

Building on the global analysis, the sector-based exploration reveals the nuances and variability of climate disclosures across industries. This approach allows us to uncover trends obscured in aggregated data, offering richer insights into how sectors with distinct climate risks, opportunities, and regulatory exposures navigate their disclosure practices. By employing an average adjustment for the number of firms in each sector, we mitigated potential sample biases and ensured comparability across industries (*Figure A1*).

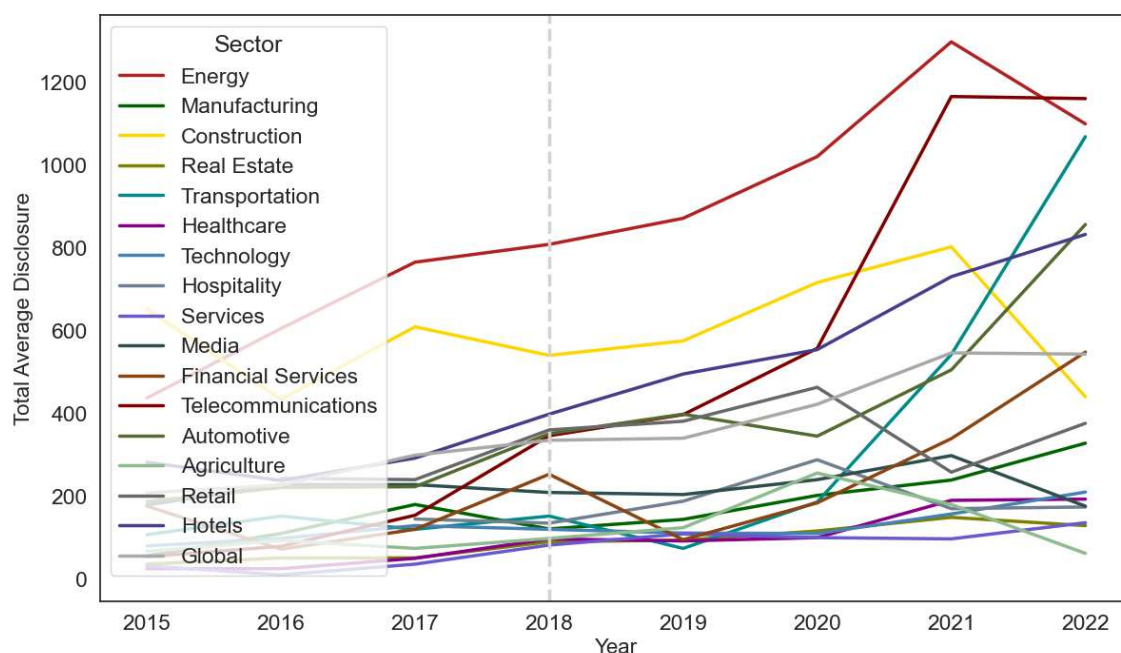


Figure A1: Sector averaged total climate disclosure volume by year.

Source: Authors' own creation

Figure delineates the volume of climate disclosures per sector, showcasing a notable predominance of the Energy and Construction sectors. These high-impact industries, facing significant environmental scrutiny and regulatory pressures, appear to leverage climate disclosures to signal transparency and environmental accountability [111]. Similarly, the Hospitality sector's robust disclosures reflect its direct exposure to climate risks affecting tourism, emphasizing the interplay between sector-specific challenges and disclosure practices.

Conversely, the Telecommunications sector shows a dramatic increase in disclosure volumes post-2020, likely driven by the COVID-19 pandemic's impact on digital infrastructure. Insights from Boston Consulting Group [112] suggest that rising energy consumption from expanded telecommunication networks heightened the sector's carbon footprint, compelling firms to address sustainability concerns to maintain legitimacy. This aligns with legitimacy theory, as firms adapt their disclosures to societal expectations.

Moreover, Automotive and Transportation sectors, much like the Telecommunications sector, have shown an increase in climate disclosures, though to varying degrees. For the Automotive sector, there has been a steady rise in climate disclosures, reflecting the industry's pivot towards sustainable transport solutions and cleaner technologies.

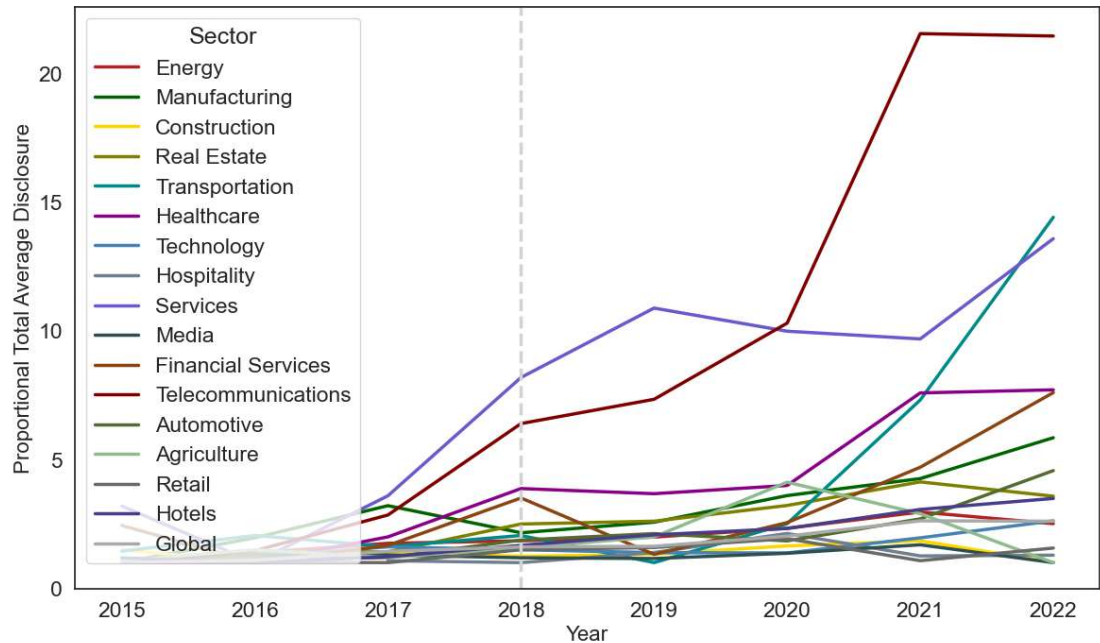


Figure A2: Sector averaged proportional total climate disclosure volume by year.
Source: Authors' own creation

The Transportation sector, starting from a modest base in 2015, experienced a substantial increase in climate disclosures during 2021 and 2022. This surge corresponds to the sector's rising CO2 emissions as transportation activity resumed post-COVID-19 restrictions, as highlighted by the International Energy Agency [113]. The heightened focus on climate disclosures can be interpreted as a strategic response to mounting environmental challenges and regulatory pressures. In line with signaling theory, these disclosures serve as an effort by firms within the sector to differentiate themselves by demonstrating commitment to sustainable practices. This includes aligning with international frameworks such as the 2015 Paris Agreement [114] and regional initiatives like the European Green Deal, which legally mandates climate neutrality by 2050 under the European Climate Law [115]. Similarly, Spanish firms are guided by the Spanish Law of Climate Change and Energy Transition (2021), which reinforces the drive toward net-zero emissions targets [116].

The Automotive sector mirrors this trend, reflecting a steady rise in disclosures as it pivots toward cleaner technologies and sustainable transport solutions. These trends underscore the role of regulatory frameworks in shaping corporate behavior, as firms increasingly integrate long-term environmental objectives into their disclosure practices to meet evolving stakeholder expectations and regulatory mandates.

Figure further corroborates these findings, illustrating the proportional growth in climate disclosures across sectors over preceding years. The Telecommunications, Transportation, and Services sectors emerge as significant contributors to this trend, with the Services sector demonstrating remarkable growth despite a

relatively lower average volume. This sector's expanding engagement highlights its growing recognition of the climate-related implications for service-oriented businesses, driven by the dual pressures of regulatory compliance and stakeholder demands.

The Healthcare sector provides another compelling narrative, maintaining a steady average disclosure volume while experiencing a positive growth trajectory from 2020 onwards. This trend is likely tied to the broader implications of the COVID-19 pandemic, which underscored the interconnectedness of health and climate issues. The global health crisis has likely spurred increased acknowledgment within the sector of the need to address climate-related risks, further emphasizing the intricate links between health, environmental sustainability, and societal well-being.

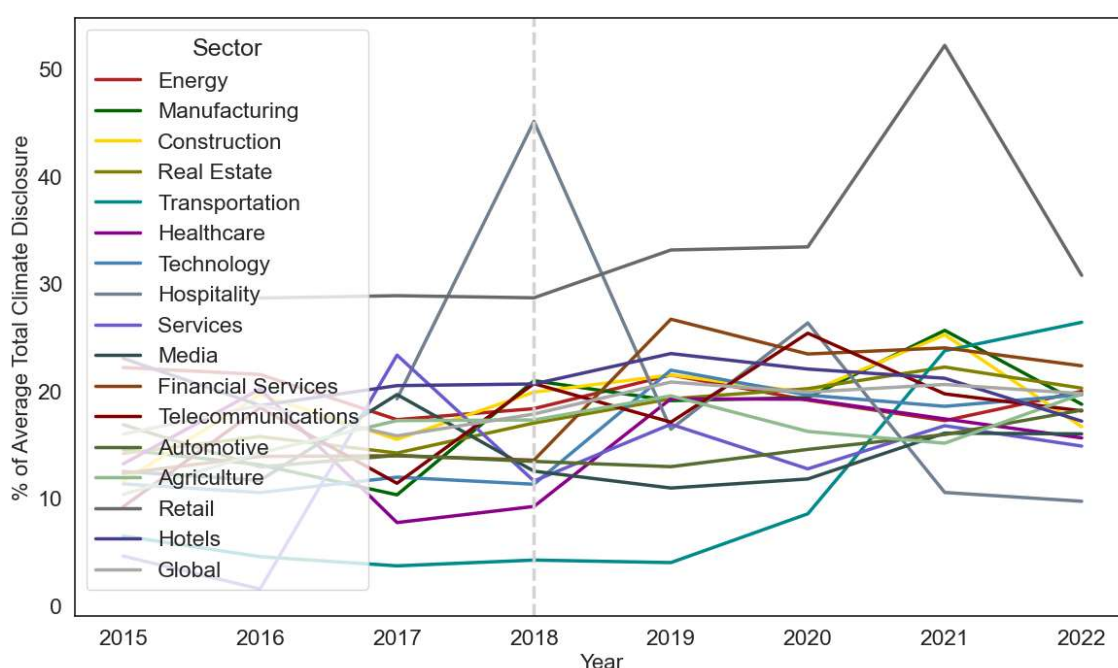


Figure A3: Percentual evolution in the commitment of the sectors' average total climate disclosure.

Source: Authors' own creation

Upon evaluating the commitment levels depicted in *Figure* , we observe that most sectors maintain a consistent range of commitment rates fluctuating between 10% and 25% of their total climate disclosures across the years. This pattern suggests a shared baseline of engagement across industries in addressing climate-related issues, albeit with varying intensity. The persistence of this range highlights a minimum threshold of corporate responsibility influenced by regulatory frameworks and stakeholder expectations, in line with signaling theory, where firms aim to demonstrate proactive environmental stewardship to external stakeholders.

Two sectors stand out from this general trend, illustrating distinctive responses to climate-related pressures.

- Hospitality Sector:** This sector demonstrates a sharp spike in commitment, peaking at 40% in 2018, only to recede significantly to 10% by 2022. This fluctuation may reflect a period of heightened climate-focused activity, potentially driven by regulatory changes like the NFRD or specific industry events. However, the subsequent decline could indicate challenges in sustaining

these efforts, highlighting potential difficulties in embedding long-term climate strategies within an industry heavily influenced by economic cycles and short-term consumer behavior. The variability underscores the importance of ongoing monitoring to assess the durability of such commitments and their alignment with legitimacy theory, as firms may initially respond to external pressures but struggle to maintain substantive action over time.

- **Retail Sector:** In contrast, the Retail sector emerges as a leader, with commitment levels peaking at an impressive 50% in 2021 and generally oscillating around 30% in other years. This high level of commitment likely reflects growing consumer demand for sustainability and recognition within the sector of the competitive advantages linked to climate action [117]. As retail businesses increasingly adopt sustainable practices to meet customer expectations, the sector exemplifies how environmental strategies can align with profitability, reinforcing the idea that value-relevant disclosures can drive both corporate performance and stakeholder trust.

These observations illustrate how sector-specific drivers, such as consumer expectations, regulatory changes, or market dynamics, influence the degree of commitment, emphasizing the need for tailored strategies and sustained efforts to meet both external demands and internal goals.

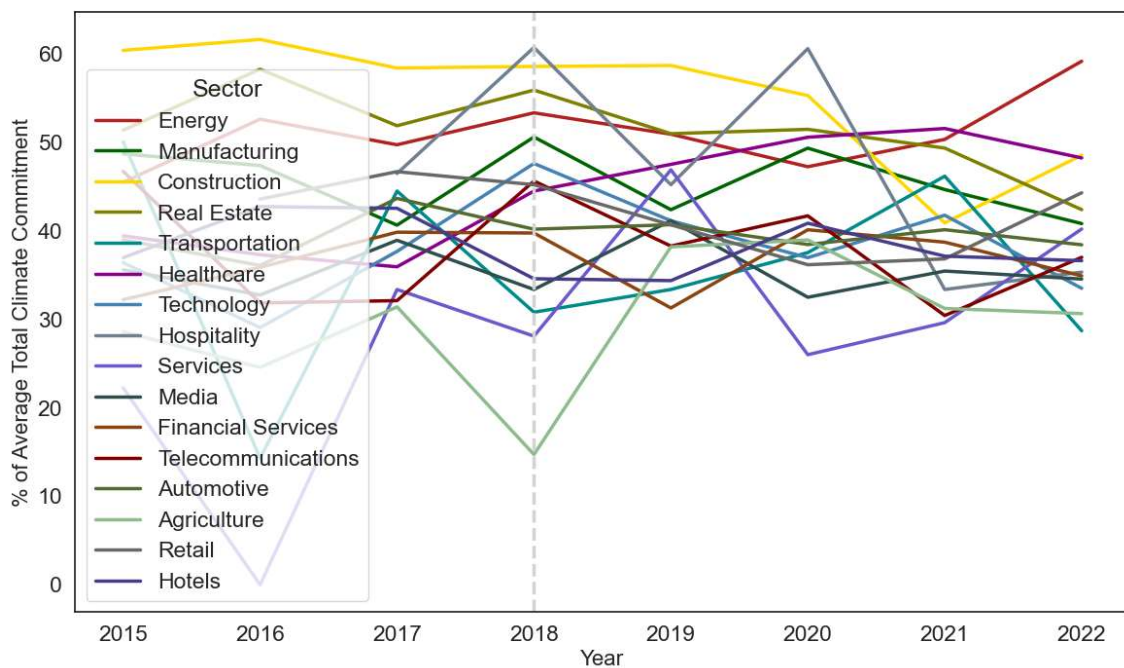


Figure A4: Percentual evolution in the specificity of the sectors' average total climate disclosure.
Source: Authors' own creation

When examining the specificity within commitment-related texts, as represented in *Figure* , we observe a prevalent trend emerging across most sectors, with specificity levels ranging between 30% and 50%. This mirrors the results of our global analysis, where the mean specificity consistently hovered around 40%, indicating a baseline level of detail provided in climate disclosures. Specificity is a critical measure of disclosure quality, reflecting the degree to which firms provide actionable, detailed, and decision-useful information rather than generic or symbolic statements.

However, deviations from this trend highlight the challenges certain sectors face in maintaining high levels of specificity:

- **Transport and Services Sectors:** In 2016, these sectors experienced a steep decline in specificity, dropping to 10% and 2%, respectively. This drop may be attributed to the unique challenges and climate risks faced by these industries, such as fluctuating market conditions or evolving regulatory landscapes. The Services sector, in particular, may struggle to articulate detailed climate commitments due to the intangible nature of many of its activities, which can complicate efforts to quantify and report specific actions.
- **Construction Sector:** This sector demonstrates a higher average specificity of 60% but faced fluctuations, with a drop to 45% in 2021 before recovering to 50% in 2022. These variations likely reflect the dynamic nature of climate challenges within construction, such as the adoption of green building practices or adaptation to stricter environmental standards.
- **Energy Sector:** As a significant contributor to global emissions, the Energy sector has maintained specificity levels around 50%, dipping in 2020 before rallying to 60% in 2022. This resilience highlights the sector's response to regulatory pressures, such as ESRS (E1) and TCFD guidelines, which demand greater transparency and precision in addressing climate risks and strategies.

To delve deeper into the inter-sector variability in specificity, we turn to *Figure* , exemplifying the Transportation sector. This sector-specific boxplot analysis allows us to examine the dispersion and spread of specificity percentage, offering valuable insights into how uniform or diverse the disclosure practices are within the sector.

Generally, across all sectors, post-2018, a decrease in data dispersion is observed, reflected in smaller boxplot interquartile ranges for sectors such as Transportation, Hotels, Agriculture and Health Care. This trend suggests a move towards more standardized climate disclosure practices within these sectors. However, significant dispersion still persists in sectors like Telecommunications, indicating a lack of uniformity in disclosure practices. The latter is crucial to note, as our global analysis may have been biased due to potential overrepresentation of sectors like Energy, Manufacturing or Real Estate.

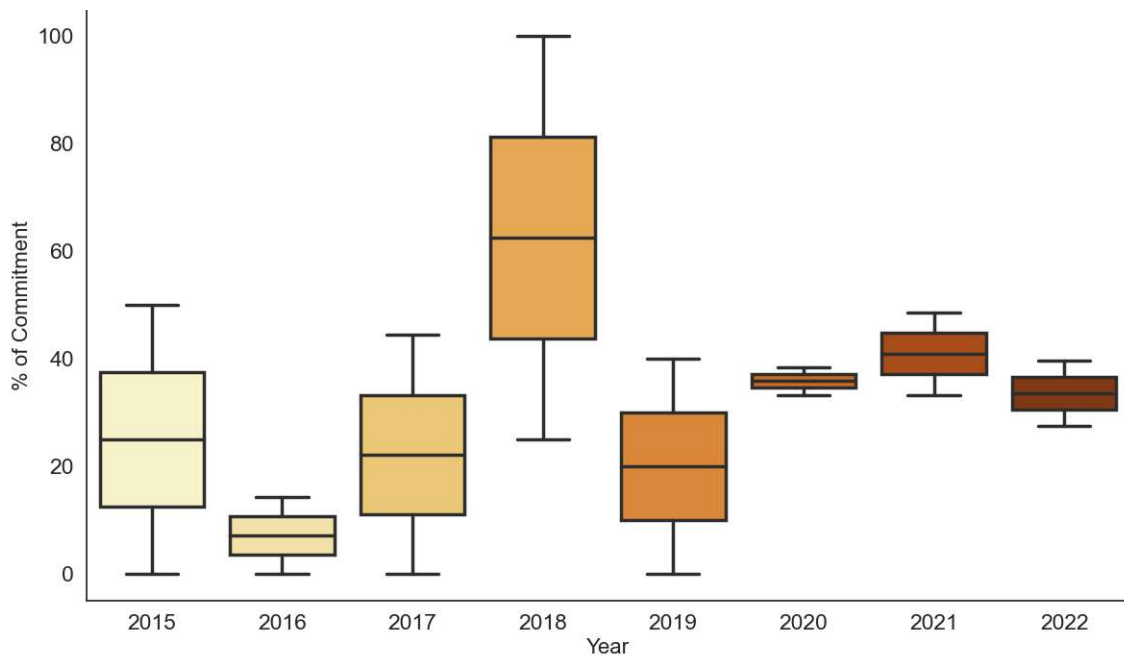


Figure A5: *Percentual evolution in the variance of specificity level of the committed-classified Transportation sector climate disclosure.*
Source: Authors' own creation

These sector-specific insights reinforce the notion of divergence that we noted in our broader analysis. Distinct climate risks faced by different sectors likely contribute to the varying levels of specificity in their climate-related commitments. This once again underscores the importance of taking into consideration sector-specific factors while interpreting and evaluating corporate climate disclosures.

When analyzing the sentiments expressed in climate-related disclosures, we attempted to discern any notable differences between sectors. Interestingly, our findings point to a considerable degree of homogeneity across sectors, mirroring the results seen in the global analysis.

Generally, the proportions observed in the global analysis are reflected within each sector, indicating a consistency in sentiment across different industries. We find that climate-related disclosures of all sectors predominantly feature 'Opportunity'-related texts, accounting for between 70-90% of the total and that 'Risk'-related texts constitute a smaller portion of the climate disclosures, making up less than or around 20% in each sector.

In terms of the topics addressed in the sector-specific climate reports, the distribution of TCFD categories also largely parallels the distribution observed in the global analysis. The majority of disclosures are concentrated around two primary categories, with approximately 60% of texts falling into Risk Management and 30% into Metrics and Targets. The remaining 10% is split between the last two categories, Strategy and Governance.

While slight variations exist between sectors, these discrepancies do not appear to be significant. Such a pattern suggests a level of consistency in the focus areas of climate-related disclosures across different sectors, potentially reflecting the impact of TCFD guidelines or other disclosure standards in shaping the topics addressed in these reports.

Overall, our sectoral analysis in these two dimensions reveals a substantial degree of similarity with our global analysis results, indicating pervasive patterns in the sentiments expressed and topics addressed in climate-related disclosures across various industries. This uniformity may be indicative of broader, overarching trends in corporate climate reporting influenced by global norms, guidelines, and societal expectations.

Reference List of Appendix 2. Sectoral Analysis

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[117] Bhargava A, Hoffman S, Jakic N (2022) Climate sustainability in retail: Who will pay? McKinsey & Company, May 04. <https://www.mckinsey.com/industries/retail/our-insights/climate-sustainability-in-retail-who-will-pay>