Title	中国の「デュアル・カーボン」ゴールにおける企業のサステナビリティ情報開示の構造的・感情的進化に関する研究—中国上場企業を対象とした実証分析—
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Abstract

International efforts to address climate change have emphasized the necessity for achieving net-zero emissions by 2050. In alignment with these efforts, China introduced the “Dual Carbon” goal as a key climate and energy policy. Since companies are the primary actors in implementing this policy, this study examines the structural and sentiment evolution of sustainability reporting of Chinese-listed companies under the "Dual Carbon" goal, with a focus on changes in keyword emphasis, thematic structure, semantic centrality, and disclosure tone.

Drawing on a sample of 7860 sustainability disclosure (CSR, ESG, SD, and ENV) from 2019 to 2023, this study applies an integrated text analysis approach combining word frequency analysis, latent Dirichlet allocation (LDA) topic modeling, co-occurrence network analysis, and lexicon-based sentiment analysis. These methods enable a multidimensional examination of disclosure evolution from the perspectives of structure and sentiment.

The results show a clear pattern of structural expansion around the “Dual Carbon” goal in corporate sustainability disclosure. First, carbon-related keywords became significantly more prominent following the introduction of the “Dual Carbon” goal, indicating growing attention to climate-related policy concepts. Second, topic modeling results show that Climate & Emission Strategy emerged as the dominant thematic lineage, while Resource Utilization & Pollution Control declined in prominence, suggesting a transition in narrative logic toward climate-oriented strategic disclosure. Third, co-occurrence network analysis demonstrates that “Dual Carbon,” “Carbon Neutrality,” and “Carbon Peaking” evolved into central semantic hubs within disclosure networks, while concepts such as “Digitalization” and “Governance” functioned as key connectors linking climate-related topics with broader organizational and managerial clusters.

On the other hand, the study identifies a pattern of sentiment moderation. Although disclosure tone remained positive, both comprehensive sentiment scores and “Dual Carbon” semantic window sentiment scores exhibited a gradual decline over time. Furthermore, ownership-based analysis shows divergent sentiment trajectories between SOEs and non-SOEs. SOEs maintained a relatively stable disclosure tone, while non-SOEs exhibited a more pronounced decline in sentiment scores, suggesting different communication adjustments under evolving institutional and market conditions.

Overall, the findings suggest that the sustainability disclosure of Chinese-listed companies experienced a multidimensional evolution characterized by structural expansion and sentiment moderation under the “Dual Carbon” goal. From an institutional perspective, this pattern reflects the adjustment of disclosure narratives to align with changing regulatory and normative expectations. From a signaling perspective, it reflects a calibrated communication strategy in which expanded carbon-related disclosure enhances signal visibility, while moderated disclosure tone strengthens signal credibility. In this way, the study provides a comprehensive account of how corporate sustainability disclosure evolves within a policy-driven institutional context.

Keywords: Sustainability Disclosure; Textual analysis; LDA; Co-occurrence Network; Sentiment Analysis; Chinese-listed companies; Institutional Pressure; Signaling visibility and Credibility