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The application of climate adaptation algorithm to physical climate risk assessment and management of the TCFD

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The Financial Stability Board (FSB) published “Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)” in 2017 to assist companies in assessing climate-related risks and opportunities and financial disclosure. However, the integration between climate scenarios and the corporate risk management system and the financial quantification of climate-related risks are still the challenges for corporate practice. To collect the climate scenarios mentioned in TCFD and integrate the relevant factors in corporate operations, the study will use the framework of TCFD: Governance, Strategy, Risk management, Metrics and Targets, introduce the first three steps of the Climate Change Adaptation (CCA Steps): "identifying problems and establishing objectives", "assessing and analyzing current risk", "assessing and analyzing future risk", and use climate risk template which use Hazard, Exposure and Vulnerability as risk assessment factors to establish a framework for the evaluation and analysis of risk. After establishing a complete method for climate risk and opportunity assessment, in response to the "financial disclosure", the study will link to the financial statement items, referring to related concepts such as “Value at Risk” and “stranded assets”, to strengthen the integrity and transparency of corporate financial disclosure. At last, the study will select a specific climate physical risk in a industry for case study by the analysis of literature, international reports and historical events and introduce a climate risk assessment framework to verify the practicality of this framework. The study's results will be applied to the risk management of business operations. At the same time, the framework of climate risk can assist companies to put climate change factors into their decisions, maintaining the sustainable competitiveness in a low-carbon economy.

Key words: climate risk assessment, TCFD, enterprise risk management