

# Energy-related Financial Risk Assessment Framework – Application to Gas-fired Power Plants

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## Abstract

After the Paris Agreement, leaders from financial and business sectors are eager to understand the relationships between those risks in macro-global scale and micro-organizational level. In this context, the Financial Stability Board (FSB) established Task Force on Climate-related Financial Disclosures (TCFD) to develop voluntary, consistent climate-related financial risk disclosures. This paper, based on the reviews of current methodologies of financial impact, sustainability and risk assessment, is intended to develop an integrated assessment framework to illustrate the flow of climate-related financial assessment at organization level. In the context of energy transition to cleaner renewables, we further select the gas-fired power plant of Taipower as the case study and discuss manufactured capital. The result indicates that the common treatment of impairment of asset is not sufficient. The manufactured capital, by incorporating the environmental externality in the global scale, can expand the perspectives of accounting and business valuation. We thus suggest that the organizational financial reporting needs to consider both manufactured capital and EVA along with the VaR analysis at the same time. The integrated assessment framework proposed can also assist in informing the decision-makers of how potential energy-related scenarios will impact the power generation industry and can be beneficial to improve the decision quality.

**Keywords:** Manufactured capital, Intensity of emission per turnover, Value at Risk (VaR),  
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