

February 2023

THE CENTRE FOR RESEARCH ON FINANCIAL MARKETS AND POLICY®

## Sustainable Financing, Climate Change Risks and Bank Stability in Kenya

### Executive Summary

*This study analyses the impact of climate risk indicators on bank stability in Kenya based on descriptive and quantitative approaches on quarterly data covering thirty-five banks over the period 2009 to 2021. The analysis reveals a distinct warming trend, variable rainfall pattern and an increasing trend in greenhouse gas emissions especially in the agriculture and transport sectors. Banks' climate financing for sustainable projects remains low. Empirical findings using dynamic panel estimation reveals adverse impact of temperature changes and rainfall variability on bank stability and credit risk arising from non-performing loans. The stress testing results reveal vulnerability of the banking sector to climate change as the probability of defaulting increases in moderate, severe, and extreme temperature changes. The results affirm banks' vital role in managing financial stability risks while providing sustainable climate financing and the need to strengthen synergies between private and public sustainable financing for target priority sectors.*

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### 1. Context and importance

Climate change continues to dominate the global risk landscape and poses long-term threat to the global economy. The severity of climate change is evident in the persistent occurrences of natural disasters, increasing temperatures and unpredictable weather patterns, which have intensified in the recent past. Developing countries are most vulnerable to climate-related physical risks, yet mitigation and coping strategies remain limited. The implementation of the 2015 Paris Agreement calls for strengthening global responses to climate change by limiting global warming to below 2 degrees Celsius and transition to a low or net-zero greenhouse gas emissions (GHG) by 2050.

Financial institutions are expected to play a fundamental role of transitioning to a low carbon economy by mobilizing and allocating capital and at the same time monitor and manage financial risks arising from climate change. The sector is however, exposed to climate-related risks either directly, through balance sheet of households and climate sensitive sectors or indirectly, through the effects of climate change on the economy and financial system. Drought in Kenya occurs every 3-5 years at an estimated cost of 8 percent of GDP affecting agricultural productivity, the Agri-based industries, and households through higher prices, reduced supplies and incomes (World Bank, 2021). The banking sector exposure is manifest through credit default, asset revaluation and asset stranding (Central Bank of Kenya, 2021).

### 2. Methods and findings

This study analyses the impact of climate risk indicators on bank stability in Kenya using descriptive and quantitative approaches on quarterly data covering thirty-five banks over the period 2009 to 2021. Trend analysis reveals a distinct warming trend with annual temperature change increasing by an estimated rate of 0.21°C per decade to average at 1.3°C in 2021 and is projected to reach 1.5°C in 2030 under business-as-usual scenario (World Bank, 2021; GOK, 2021a).

Precipitation is highly erratic with variable rainfall pattern and amounts. GHG emissions even though lower in comparison to the global levels, it is increasing and is estimated to reach 143 MtCO<sub>2e</sub> by 2030 (GOK, 2021a). The leading emission sector is agriculture accounting for about 40 percent of total national emissions. Despite the increasing effects of climate change physical and transitory risks on the economy, commercial banks' financing to mitigate and adopt climate smart agriculture systems remains low (GOK, 2021b).

Empirical findings using dynamic panel estimation reveals adverse impact of temperature changes and rainfall variability on bank stability and negative credit risk arising from non-performing loans. Temperature and rainfall variability affect productivity of rainfed agriculture, which in turn affects other sectors that are linked to agriculture sector, with implications on bank stability via weakened balance sheets of households and firms. Rainfall variability also disrupts livelihoods especially when it involves landslides and internal migration and damage to physical infrastructure, which affects collateral lending and asset revaluation.



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The stress testing results reveal vulnerability of the banking sector to climate change as the probability of defaulting (PD) increases in moderate, severe, and extreme temperature changes. The baseline increases in temperature of 0.2oC from an average of 1.3o C in 2021 to 1.5o C induces physical damages that undermine the ability to repay leading to a default of about 20.0 percent of the loan in 2022 and 18.6 percent by 2030. The expected loss given default is estimated to be KSh 628 billion. Under the severe scenario, temperatures increase by 0.4o C from the baseline result in a PD increasing to 80 percent in 2022 and thereafter moderating to 69.7 percent with a cumulative banking sector loss of Ksh 839.2 billion. The tendency of banks and borrowers to adapt to elevated temperature mitigates the impact of temperature increase on banks. However, if borrowers and banks fail to adopt to severe temperature changes, elevated temperature will occasion capital erosion due to borrowers defaulting.

### 3. Policy implications

The banking sector in Kenya has an important role to play in managing financial stability risks while providing sustainable climate financing. Climate change mitigation, and adaptation strategies should be entrenched in the banking sector,

and risk assessment frameworks developed to facilitate the analysis of climate change risks. Synergies between private and public sustainable climate financing is important for targeted priority projects.

### References

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