STRESS TESTING GUIDELINES FOR BANKS AND FINANCIAL INSTITUTIONS, 2022

(*Made under Section 71 of the Banking and Financial Institutions Act, 2006*)

BANK OF TANZANIA

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	PART I **PRELIMINARY PROVISIONS**
Citation	1. These guidelines shall be cited as "*Stress Testing Guidelines for Banks and Financial Institutions, 2022*".
Application	2. These guidelines shall apply to all banks and financial institutions.
Effective date	3. The Guidelines shall come into operation on the date of signing by the Governor.
Authorization	4. These guidelines are issued under Section 71 of the Banking and Financial Institutions Act, 2006.
Introduction	Stress testing has become an integral part of a bank's risk management system. It is conducted to evaluate potential vulnerability to unlikely but plausible events in the financial and macroeconomic environment. In 2009, the Basel Committee on Banking Supervision (BCBS) issued "Principles on stress testing practices and supervision" to address issues identified during the Global Financial Crisis. In 2018, the principles were revised to set out comprehensive standards on sound governance, design, and implementation of stress testing frameworks for banks and financial institutions. The Bank of Tanzania has a role in ensuring the banking sector's resilience. In executing this mandate, the Bank has issued these guidelines aligned with the Basel Committee of Banking Supervision Stress Testing Principles, 2018.
Interpretation	5. In these Guidelines, unless the context requires otherwise- "**Act**" means the Banking and Financial Institutions Act, 2006; "**Adverse scenario**" means a set of economic and financial conditions designed to stress the performance of the banking sector or an individual bank. The level of stress is significantly stronger than in a baseline scenario that could be drawn from historical events or hypothetically created; "**Bank**" means the Bank of Tanzania; "**banks and financial institutions**" have the meaning ascribed in the Banks and Financial Institutions Act, 2006; "**baseline scenario**" means a set of macroeconomic and financial conditions that are generally consistent with the projection of a likely path for future economic and financial conditions. This state usually does not lead to a stress results; "**bottom-up stress test**" means a stress test carried out using institutions' own internally developed models, data, assumptions or scenarios, with possible use of external data for some additional information; "**Credit risk**" means a risk of an economic loss from a failure of the counterparty to fulfil its contractual obligations; **"Coverage"** means a description of the risk areas being subjected to stress

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	tests, conditions prevailing and assumptions used for the stress tests; "**Exchange rate risk**" means a risk to the value of an institution's on/off-balance sheet position arising from an adverse movement in exchange rates; "**Interest rate risk**" means a risk to an institution's earnings and capital arising from adverse movements in interest rates; "**Liquidity risk**" means potential for loss to an institution arising from either inability to meet the obligation as falling due or fund increase in an asset without incurring unacceptable cost or losses; "**Macroeconomic scenarios**" means a set of assumptions that are developed based on macroeconomic variables affecting the banking sector; "**Market risk**" means a risk of loss in on and off-balance sheet positions as a result of adverse changes in market prices, including interest rates, foreign exchange rates, equity prices, and commodity prices; "**Operational risk**" means current and prospective risk to earnings and capital arising from inadequate or failed internal processes, people and systems or external events; "**Probability of default**" means a percentage of loans that may default over one year; "**Scenario stress tests"** means to assess the impact on the banks and financial institutions' financial position following simultaneous moves in several variables that affect a number of risk factors based on historical or hypothetical but plausible scenarios; "**Sensitivity tests**" means to assess the impact of change in one variable on the bank's financial position, either in a single period or multi-period; and "**Severe scenario**" means a set of scenarios that build on an adverse situation by assessing the inter-linkages between risks and bank-wide impact using professional judgment. The scenarios must be plausibly supported by realistic assumptions subject to iterations. The level of stress is significantly stronger than in adverse scenarios.
Objective	6. The objective is to guide banks and financial institutions in conducting stress tests, using stress test results and preparing mitigation plans.
	PART II **STRESS TESTING FRAMEWORK**
Role of stress testing	7. The banks and financial institutions shall conduct stress testing for: (a) measuring the level of resilience of a bank against scenarios designed under plausible assumptions; (b) preparing mitigation plans to maintain a level of resilience or preparedness against shocks; (c) setting banks and financial institutions' risk tolerance limits; (d) complying with the requirement of the Internal Capital Adequacy Assessment Process (ICAAP); (e) conducting rigorous and forward-looking assessments of risk; and (f) guiding the preparation of the strategic plans.

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Stress testing framework	8. Every bank shall put in place a stress testing framework. The framework shall ensure: (a) clear objectives that are documented and approved by the board or an appropriately senior-level governance body; (b) effective governance structure, which is clear, comprehensive and documented; (c) roles and responsibilities for all aspects of the stress testing framework, including frequency, scenario development and approval, model development and validation, reporting and challenge of results and the use of stress test outputs are identified; (d) collaboration of all necessary stakeholders and the appropriate communication to stakeholders of the stress testing assumptions, methodologies, scenarios and results; and (e) As determined by a sound risk identification process, material and relevant risks are captured.
Board responsibilities	9. (1) The board of directors of a bank or financial institution shall have the ultimate responsibilities to: (a) approve stress testing framework and policy; (b) approve stress testing assumptions and scenarios; and (c) provide directives on the implementation of stress testing results. (2) Board shall assess the potential impact of the stress situations on the bank's earnings and capital position and develop or choose appropriate strategies for mitigating and managing those situations.
Senior management responsibilities	10. (1) Senior management of a bank or financial institution shall: (a) develop and review stress testing framework and policy; (b) develop and review stress testing assumptions and scenarios; and (c) review and assess stress testing results. (2) Senior management shall assess the potential impact of the stress situations on the bank's earnings and capital position and develop or choose appropriate strategies for mitigating and managing the effects of those situations.
Scope for undertaking stress testing	11. (1) The scope of stress testing may range from simple portfolio level sensitivity or individual risk level analyses to comprehensive institution-wide scenario stress testing. (2) Notwithstanding the above, stress testing by banks and financial institutions shall focus on; (a) institutional level; (b) portfolio; (c) line of business; and (d) risk type covering credit, liquidity, interest, and exchange rate risks. (3) In addition, banks and financial institutions may conduct counterparty and operational risks stress tests.
Types of stress testing	12. Banks and financial institutions shall be required to use the following types of stress testing every quarter: - (a) sensitivity stress test; and (b) scenario stress test.
IT infrastructure	13. Banks and financial institutions shall: - (a) Put in place a flexible infrastructure capable of retrieving data and

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and data	modifying methodologies for stress testing; and (b) ensure data for stress testing purposes are accurate, granular, timely, and consistent with the overall risk management framework.
Models used for conducting stress tests	14. Banks and financial institutions shall have models that adequately define the coverage, types of risk, segmentation, and granularity of data required in line with the objectives of the stress test framework;
Frequency of stress testing	15. (1) Banks and financial institutions shall conduct single or multi-period stress testing every quarter. (2) Stress testing scenarios shall be prepared semi-annually or as the Bank may deem necessary.
	PART III **STRESS TESTING PROCESS**
States of the scenarios	16. (1) Banks and financial institutions shall conduct stress testing using baseline, adverse and severe scenarios. (2) Generally, scenarios shall; (a) address all the material risk types of a bank, including credit risk, market risk, interest rate risk and liquidity risk; (b) address main risk factors the bank may be exposed to; (c) address significant bank-specific vulnerabilities, taking into account regional and sectoral characteristics of a bank, specific products or business line exposures and funding policies; (d) contain narrations, which shall include various trigger events, such as monetary policy, financial sector developments, commodity prices, political events, climate change, and natural disasters; and (e) be forward-looking and include severe outcomes.
Factors for assumptions	17. (1) In developing assumptions for conducting stress testing exercises, banks and financial institutions shall cover the following: - (a) macroeconomic factors (interest rates, foreign exchange rates, inflation, GDP growth, unemployment rate, asset prices); (b) geo-political factors, including the health of other economies, vulnerabilities to external events, contagion effects; (c) financial market conditions; (d) concentration status such as depositors, borrowers, sector, regions, investments; (e) borrower characteristics that would affect obligor risks and increase the default probabilities (for example, borrower type, demographics, industry); (f) transaction-type (product, collateral, loan to value ratio, guarantees); and (g) Other operations. (2) In conducting stress testing, banks and financial institutions shall observe risk areas, events, and prevailing conditions for assumptions.
Magnitude of shocks	18. (1) Banks and financial institutions shall determine the magnitude of shocks to administer using historical or hypothetical events with at least one business cycle time interval. (2) Shocks in a scenario shall be forward-looking and have some relevance to the current events or circumstances.
Risk types for Stress Testing	19. (1) In conducting stress testing, the banks and financial institutions shall consider the following risks: -

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	(a) **Credit risk**; Banks and financial institutions shall assess at minimum the following; (i) impact of the increase in provisions due to an adverse shift in the overall loan portfolio; (ii) default of top 10 borrowers; (iii) migration of loan classifications; and (iv) changes in default rates of particular sectors. (b) **Interest Rate Risk** Banks and financial institutions shall assess at minimum the following; (i) mismatches between assets and liabilities (re-pricing risk); (ii) pricing assets and liabilities using different key markets rates (basis risk); and (iii) adverse shift in the yield curve. (c) **Foreign Exchange Risk** Banks and financial institutions shall assess the impact of change in the exchange rate on the value of an institution's on-balance sheet assets, liabilities, or off-balance sheet positions and impact its capital requirements. (d) **Liquidity Risk** Banks and financial institutions shall assess the impact of the following: - (i) inability to convert assets into cash at current market prices (asset liquidity risk); and (ii) inability to access sufficient funds to meet payment obligations promptly (funding liquidity risk). Banks and financial institutions' primary focus of liquidity risk shall be deposit run-offs in a specific event. (2) Notwithstanding Guideline 19 (1), banks and financial institutions may assess: - (a) **Operational Risk** Banks and financial institutions may assess the impact of various factors, including internal or external fraud, system failure and security risks on the banks and financial institutions' financial position; (b) **Counterparty Risk** Banks and financial institutions may assess the impact of default on counterparty obligations from the credit, investment and trading transactions, among others, on banks and financial institutions' financial position;

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Results of Stress Test	20. (1) Banks and financial institutions shall report the results of stress testing, including the impact on: - (a) liquidity; (b) profitability; and (c) capital adequacy. (2) In addition to the stress test results, banks and financial institutions shall report the stress testing processes to the Bank.
Mitigation planning.	21. Banks and financial institutions shall develop and review contingency plans to address situations that may arise under adverse circumstances revealed by stress testing results.
Usage of stress testing results	22. Banks and financial institutions shall identify credible usage of stress test results. The use shall include the following: - (a) review of internal risk appetite and risk limits; (b) review of the use of risk mitigation techniques; (c) revision of policies, such as those related to liquidity and funding or capital adequacy; (d) reduction of distributions to shareholders; (e) changes in the overall strategy and business plan; and (f) raising of capital or funding.
	PART IV **GENERAL PROVISIONS**
Review and Audit stress testing models, results and frameworks	23. (1) Internal audit function shall review the banks and financial institutions' stress testing process to ensure that the regulations, policies, procedures, and operational guidelines are followed and escalate significant exceptions to the Audit Committee of the Board of Directors. (2) The review shall be in line with the internal audit programs of banks and financial institutions and directives issued by the Bank. (3) Regular review of the stress testing process shall include validation and other independent review of the key individual components of the stress testing process, such as a review of the methodologies, scenarios, assumptions, and estimations of the stressed losses, revenues, and liquidity forecasts. (4) The reviewing process shall include an assessment of the exercise's overall adequacy, including backtesting or other benchmark comparisons, and an analysis of the sensitivity of the results based on the assumptions used.
Submission of stress testing report	24. Banks and financial institutions shall submit stress testing reports quarterly within 45 days after each quarter as prescribed by the Bank. At a minimum, the report shall contain: (a) Scenarios used; (b) Assumptions; (c) Magnitude of shocks; (d) Risk types; and (e) Results based on sensitivity and scenario stress test stress approaches.
Disclosure of stress testing results	25. Banks and financial institutions may opt to disclose their stress test results to reduce the risk that market participants may perceive from ill-informed conclusions about the resilience of banks and financial institutions.
Communication of stress testing practices and	26. (1) Banks and financial institutions shall have processes to support regular communication and coordination between group-level stress testing functions and individual banking subsidiaries or other relevant legal entities (within or

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findings		across a jurisdiction). (2) Banks and financial institutions with subsidiaries shall aggregate and report stress test results across legal entities, and they shall seek to establish consistency of approaches and impacts across jurisdictions.
Sanctions	27.	(1) Where a bank or financial institution fails to submit stress testing processes and results as required under these Guidelines, it shall be liable to a civil money penalty of one million shillings for every day in which the failure continues. (2) Where a bank or financial institution makes a misrepresentation of information on any of the stress testing reports, it shall be liable to a civil money penalty of one million shillings for every day in which the misrepresentation continues.

Appendix 1: Examples for Sensitivity Tests

Category	Description
Interest Rates	(a) Parallel yield curve shift (b) Change of yield curve slope (c) Shift of curve and changing slope
Equities	(a) Shocks to levels and volatilities (b) Shocks to levels/volatilities only
Exchange Rates	(a) Shocks to levels only (b) Shocks to levels and volatilities
Credit	Shocks to credit spreads
Others	Shocks to various volatilities

Appendix 2: Examples of Stress Test Scenarios

Category	Stress Test Scenarios
Credit Risk	**(a) Movement in Non-Performing Loans (NPLs)** (i) Increase in NPLs (ii) Migration among NPL categories (iii) Default of large borrower/s (iv) Default in a specific sector **(b) Change in impairment** (i) Probability of defaults (PD) for an individual counterparty, portfolio or sector (ii) Loss given defaults(LGD) for specific facility types (iii) Change in expected cash flows **(c) Credit concentration to a;** (i) single borrower/ group of borrowers (ii) sector (iii) region/district **(d) Collaterals** (i) Factors affectingan unencumbered position of collaterals/guarantees (ii) Limits on the degree of reliance, e.g.; illiquid nature of collaterals (iii) Concentration of collaterals **(e) Ratings** (i) Impact on internal/external rating migrations **(f) Economic and financial movements** (i) Changes in macro-economic and financial variables, e.g., rise in commodity prices, global/country-specific slowdowns, international market risk, interest rate, exchange rate, political instability etc.
Interest Rate Risk	**(a) Banking Book (Investment Portfolio)** (i) Parallel shifts in the yield curve/yield curve twists (ii) Basis changes (iii) Option and prepayment
	(a) Trading Book (Trading Portfolio) **(i) Market moves** a. decline in the market value of financial instruments due to adverse changes in market prices b. volatility in the term structure c. changes in credit spreads of securities d. contagion effect due to adverse market direction; e.g., global tightening (focusing on increasing short-term and long-term interest rates) **(ii) Model assumptions** a. Historical trend b. correlations, i.e. positive, negative, perfect or uncorrelated

	(iii) Product complexity a. derivative instruments when the market is illiquid b. structured products with multiple embedded risks
Foreign Exchange Risk	Adverse movement in exchange rates; e.g., the impact of net open position on major currencies, the effect of major customers with substantial foreign exchange position.
Liquidity Risk	(i) Liquidity crisis (ii) Credit tightening (bank specific, market specific or combination of both) (iii) Speed and period to act

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