

Banking Financial Stability In The Kyrgyz Republic: Macroeconomic, Political, And Environmental Perspectives

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Abstract

Banking system financial stability is a fundamental prerequisite for sustainable economic development, particularly in small open and transition economies. The Kyrgyz Republic faces distinctive stability challenges arising from macroeconomic volatility, institutional constraints, and increasing exposure to climate-related risks. This study examines banking financial stability in the Kyrgyz Republic through an integrated macroeconomic, political-institutional, and environmental management framework.

Using system-wide banking indicators, financial stability is assessed across three dimensions: asset quality, capital strength, and profitability, measured by non-performing loans (NPL), capital adequacy ratio (CAR), and return on assets (ROA), respectively. Macroeconomic conditions, governance quality, and climate vulnerability are incorporated as explanatory factors based on data from the National Bank of the Kyrgyz Republic, the World Bank, Worldwide Governance Indicators, and ND-GAIN.

The results indicate that while the Kyrgyz banking system maintains relatively strong capital buffers and profitability, credit risk remains elevated. Economic growth is associated with improved asset quality and profitability, whereas exchange rate depreciation exerts a

destabilizing effect. Governance quality demonstrates a stabilizing role across all financial stability indicators. Importantly, climate vulnerability is found to amplify credit risk and weaken banking resilience, while stronger environmental governance mitigates these adverse effects.

The findings suggest that environmental management and climate risk are integral to banking financial stability in climate-sensitive emerging economies. Policymakers should incorporate climate-related risks into macroprudential supervision, strengthen institutional governance, and promote sustainable finance to enhance long-term banking system resilience.

Keywords Banking financial stability; Macroeconomic factors; Governance quality; Climate risk; Environmental management; Kyrgyz Republic

1. Introduction

Banking system financial stability is a critical prerequisite for sustainable economic development, particularly in small open and transition economies. In such contexts, banks are often exposed to heightened macroeconomic volatility, institutional constraints, and external shocks that jointly shape systemic resilience (International Monetary Fund [IMF], 2023). The Kyrgyz Republic exemplifies these challenges due to its exposure to exchange rate fluctuations, dependence on climate-sensitive sectors (e.g., agriculture and hydropower), and evolving governance capacity. These structural characteristics imply that banking stability is not only a function of internal bank management but also an outcome of broader macroeconomic, political, and environmental conditions.

Traditional analyses of banking stability emphasize macroeconomic fundamentals, including economic growth, inflation, and monetary conditions (Gorton & Metrick, 2012). In emerging and transition economies, exchange rate movements are often especially consequential because they can affect borrowers' repayment capacity through balance-sheet effects and can influence funding stability through depositor expectations and dollarization dynamics. Nevertheless, macroeconomic explanations alone may be insufficient to account for the observed patterns of systemic risk, particularly during periods when political uncertainty, regulatory credibility, or external constraints alter the behavior of financial institutions and market participants.

Accordingly, recent research highlights the growing importance of political governance and environmental management in shaping financial risk transmission. Governance quality influences supervisory effectiveness, regulatory compliance, market confidence, and crisis-management credibility, thereby affecting both risk accumulation and shock absorption capacity. At the same time, climate vulnerability and environmental management affect credit risk through real-sector disruptions, collateral valuation, and sectoral concentration in climate-sensitive activities (Network for Greening the Financial System [NGFS], 2019). For the Kyrgyz Republic, environmental considerations are not peripheral: climatic variability

and disaster risks can influence agricultural output, infrastructure reliability, and household income stability—factors that directly condition default probabilities and loan performance. Moreover, the global transition toward greener investment and stricter environmental standards may introduce transition risks that reprice assets and alter sectoral profitability, with implications for bank portfolios and capital adequacy.

Given these interdependencies, an integrated approach is needed to clarify how macroeconomic conditions, governance quality, and environmental management jointly determine banking system financial stability in the Kyrgyz Republic. Figure 1 presents the conceptual framework guiding this study, which models these factors as interacting drivers that transmit through core banking risk channels (credit risk, liquidity risk, and market/transition risk) to influence stability outcomes such as non-performing loans (NPLs), capital adequacy (CAR), and profitability (ROA).

To ensure coherence between purpose and inquiry, the study pursues the following objectives:

1. To profile the current financial stability condition of the Kyrgyz banking system using core stability indicators (NPL, CAR, ROA) and key macro-financial context measures.
2. To examine the association between macroeconomic conditions and banking stability, with emphasis on growth and exchange rate dynamics as major transmission channels in small open economies.
3. To evaluate the role of political governance in banking stability, focusing on how governance quality relates to systemic resilience through regulatory credibility and confidence channels.
4. To incorporate environmental management and climate vulnerability into the stability assessment, determining whether environmental factors materially relate to banking risk outcomes and whether they amplify or dampen traditional macro-financial channels.
5. To derive policy-relevant implications for regulators and stakeholders, emphasizing macroprudential supervision, governance strengthening, and climate-risk integration into financial oversight.

Consistent with the above objectives, this study addresses the following research questions:

RQ1: What is the recent financial stability profile of the Kyrgyz banking system as reflected in NPL, CAR, and ROA indicators?

RQ2: How are key macroeconomic conditions—particularly GDP growth and exchange rate movements—associated with banking system stability indicators (NPL, CAR, ROA) in the Kyrgyz Republic?

RQ3: To what extent is governance quality associated with banking system stability, and which stability dimensions (credit risk, capital buffers, profitability) appear most sensitive to governance conditions?

RQ4: How do environmental management capacity and climate vulnerability relate to

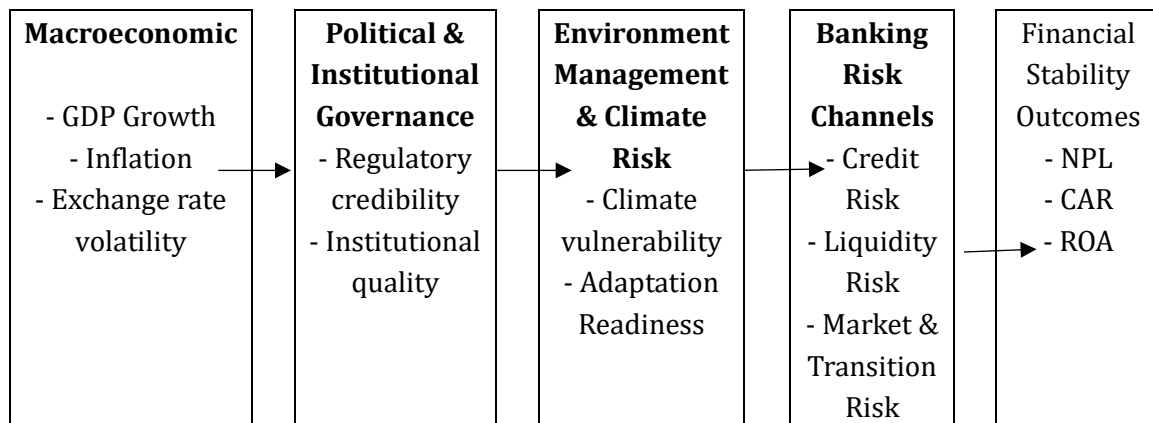
banking stability indicators, and do environmental factors strengthen the explanatory framework beyond macroeconomic and governance variables?

RQ5: What regulatory and policy implications follow from the integrated macro-political-environmental assessment for strengthening banking system resilience in the Kyrgyz Republic?

Traditional analyses of banking stability emphasize macroeconomic fundamentals, including economic growth, inflation, and monetary conditions (Gorton & Metrick, 2012). However, recent research highlights the growing importance of political governance and environmental management in shaping financial risk transmission. Governance quality influences regulatory credibility and depositor confidence, while climate vulnerability and environmental management affect credit risk through real-sector disruptions (Network for Greening the Financial System [NGFS], 2019).

Figure 1 presents the integrated conceptual framework guiding this study.

Figure 1 Integrated Macro-Political-Environmental Framework for Banking Financial Stability in the Kyrgyz Republic.



Note. The framework illustrates how macroeconomic conditions, political governance, and environmental management interact through banking risk channels to influence financial stability outcomes.

Figure 1 presents the integrated conceptual framework guiding this study, illustrating how macroeconomic, political, and environmental factors jointly shape banking system financial stability through core risk transmission channels.

2. Literature Review

2.1 Macroeconomic Factors and Banking Stability

The macro-financial literature consistently shows that macroeconomic conditions shape

banking stability through both borrower-side and bank balance-sheet channels. During periods of strong economic growth, household income and firm revenues typically rise, improving borrowers' repayment capacity and lowering default probabilities. This macro environment tends to reduce non-performing loans (NPLs), increase interest income, and improve overall profitability, which in turn supports capital accumulation through retained earnings (Demirgüç-Kunt & Huizinga, 2010). By contrast, economic downturns weaken cash flows, increase credit delinquencies, and force banks to raise loan-loss provisions, which compresses profitability and may erode capital buffers. From a financial stability perspective, these dynamics imply that credit risk is strongly procyclical: it often builds during expansions and materializes during contractions.

Inflation and monetary conditions further influence stability by affecting both the cost of funds and the real value of debt. High or volatile inflation can increase interest rate uncertainty, weaken long-term credit pricing, and reduce the predictability of repayment capacity. Tighter monetary conditions can raise debt servicing costs and increase borrower stress, particularly for variable-rate loans. In emerging economies, however, the most prominent macro channel often operates through the exchange rate, especially when foreign-currency borrowing and partial dollarization are present. Exchange rate depreciation is particularly destabilizing because it raises the local-currency value of foreign-currency liabilities, increasing debt burdens and default risk among unhedged borrowers. This "balance-sheet effect" tends to worsen NPL ratios and may simultaneously pressure bank capital through higher provisioning and risk-weighted assets. Exchange rate volatility can also affect depositor behavior, reinforcing liquidity risk if depositors shift toward foreign-currency holdings or withdraw funds in response to depreciation expectations.

Overall, the macroeconomic literature suggests a clear expectation: stronger growth is generally associated with improved asset quality and profitability, whereas adverse macro shocks—especially currency depreciation—are likely to weaken both credit quality and banking system resilience.

2.2 Political and Institutional Factors

Political economy perspectives emphasize that institutional quality is not merely a background condition but a structural determinant of financial stability. Strong governance enhances regulatory enforcement, reduces uncertainty, and supports market confidence, which can improve banks' incentives for prudent risk management (Acemoglu & Robinson, 2012). In practical terms, higher-quality institutions strengthen the credibility of supervision, reinforce compliance with prudential standards, and facilitate timely corrective action when vulnerabilities emerge. Conversely, weak institutions may intensify systemic fragility by enabling regulatory forbearance, increasing political interference in credit allocation, and weakening accountability mechanisms.

In transition economies, governance effects are particularly salient due to evolving

regulatory frameworks, uneven enforcement capacity, and potential constraints on supervisory independence. Supervisory effectiveness shapes the extent to which banks internalize risk, maintain adequate capital buffers, and accurately recognize and provision for losses. Credible supervision can reduce the buildup of hidden vulnerabilities (e.g., underreported NPLs or excessive concentration in specific sectors), while weak supervision may permit risk accumulation that remains latent until an external shock triggers rapid deterioration.

Institutional quality also influences financial stability through expectations and confidence channels. When governance credibility is strong, depositors and investors are more likely to view the system as reliable and predictable, which supports stable funding conditions. When political uncertainty rises or governance credibility weakens, banks may face increased funding volatility, higher risk premia, and reduced access to external finance. Furthermore, in environments where cross-border financial linkages and correspondent banking relationships matter, institutional quality can affect compliance capacity and reputational risk, indirectly shaping access to international payment channels and foreign liquidity.

Taken together, the literature implies that governance strengthens banking stability by supporting supervisory credibility, reducing uncertainty, and anchoring confidence—while weak institutions amplify the transmission of macro shocks into systemic stress.

2.3 Environmental Management and Climate Risk

Recent research identifies climate risk as a material financial stability concern and a growing priority for prudential authorities. Climate-related risks are commonly categorized into physical risks and transition risks. Physical risks involve acute events and chronic shifts that disrupt economic activity and weaken borrower repayment capacity. Transition risks arise from policy changes, technological shifts, and market revaluation as economies move toward lower-carbon development pathways. Both risk types can affect banking stability by altering sectoral profitability, collateral values, and default probabilities (Batten et al., 2020).

In climate-sensitive economies, physical climate shocks can generate credit losses through real-sector disruption. For example, agriculture-dependent households and firms may experience income shocks from droughts or flooding, while infrastructure disruptions can reduce productivity and affect SME operations. These shocks increase the probability of delinquency and can raise NPL ratios. In addition, climate risk can affect banks indirectly through macro channels, such as reduced growth, higher inflation (e.g., food prices), and external balance pressures, thereby reinforcing the traditional macro-financial transmission pathway.

Environmental management capacity plays a moderating role in this relationship. Weak environmental management—reflected in limited adaptation readiness, inadequate infrastructure resilience, and weak enforcement of environmental regulation—can amplify

both the frequency and severity of climate-related losses. Over time, this can raise structural credit risk and hinder banking resilience. By contrast, effective environmental governance and adaptation capacity can mitigate vulnerability, reduce economic disruption, and dampen the transmission of climate shocks into bank balance sheets. The literature further notes that the development of green finance and sustainability-oriented lending may improve resilience by reducing exposure to high-risk, environmentally fragile sectors and by supporting investment in adaptation and cleaner technologies.

Therefore, the environmental finance literature suggests that climate risk should be treated as a stability-relevant determinant rather than a peripheral sustainability issue. Strong environmental governance and the strategic development of green finance are increasingly viewed as components of long-term systemic resilience, especially in economies where climate vulnerability interacts with macroeconomic volatility.

Table 1 Theoretical Perspectives on Banking Financial Stability.

Perspective	Core Focus	Implications for Banks
Macro-financial theory	Business cycles, FX volatility	Procyclical credit risk
Political economy	Governance and institutions	Regulatory credibility
Climate risk theory	Physical climate shocks	Sectoral credit risk
Environmental management	Sustainability capacity	Long-term resilience

Note. This table synthesizes dominant theoretical approaches in the literature.

3. Research Methodology

This study adopts a macro-level analytical framework using system-wide banking indicators. Financial stability is assessed along three dimensions: asset quality, capital strength, and profitability. Macroeconomic, political, and environmental indicators are incorporated as explanatory conditions.

Table 2 Variables, Measurement, and Data Sources.

Category	Variable	Measurement	Source
Asset quality	NPL ratio	% of total loans	National Bank of the Kyrgyz Republic (NBKR)
Capital strength	CAR	% of risk-weighted assets	NBKR
Profitability	ROA	%	NBKR
Macroeconomy	GDP growth	Annual %	World Bank
Governance	Government	Index	World Bank (WGI)

Category	Variable	Measurement	Source
	effectiveness		
Climate risk	Climate vulnerability	Index	ND-GAIN

Note. WGI = Worldwide Governance Indicators; ND-GAIN = Notre Dame Global Adaptation Initiative.

The study employs a quantitative, secondary-data design based on publicly available national and international databases. The unit of analysis is the banking system (aggregate level), rather than individual banks, aligning with the study's focus on systemic financial stability. The analysis is structured to (a) describe recent stability conditions, (b) examine directional associations between contextual factors and stability outcomes, and (c) evaluate whether adding governance and climate-related indicators improves explanatory completeness beyond macroeconomic fundamentals.

All variables are compiled from authoritative sources to ensure replicability and data credibility. Banking sector stability indicators are obtained from the National Bank of the Kyrgyz Republic (NBKR), while macroeconomic indicators are drawn from the World Bank. Political-institutional conditions are measured using the Worldwide Governance Indicators (WGI), and climate vulnerability is captured using ND-GAIN metrics.

Banking financial stability is operationalized using standard system-wide indicators widely used in financial stability surveillance:

1. Asset quality is measured by the non-performing loan (NPL) ratio, defined as non-performing loans as a percentage of total loans. Higher NPL indicates weaker stability.
2. Capital strength is measured by the capital adequacy ratio (CAR), defined as regulatory capital as a percentage of risk-weighted assets. Higher CAR indicates stronger loss-absorbing capacity.
3. Profitability is measured by return on assets (ROA), defined as net income as a percentage of total assets. Higher ROA indicates stronger performance and greater capacity to build buffers through retained earnings.

Explanatory variables are grouped into three domains:

1. Macroeconomic conditions: Real GDP growth is included as a core macro indicator reflecting borrower income and demand conditions.
2. Political-institutional governance: Governance quality is proxied by WGI government effectiveness, reflecting policy implementation capacity and public service quality—factors that affect regulatory credibility and confidence.
3. Environmental management and climate risk: Climate vulnerability is proxied by ND-GAIN vulnerability, capturing exposure and sensitivity to climate-related disruption (with lower values indicating lower vulnerability). Where available, ND-GAIN

readiness can be included as a complementary proxy for adaptive capacity and investment readiness.

4. Results

4.1 Banking Stability Indicators

Table 3 reports the descriptive statistics of key banking, macroeconomic, political, and environmental variables. The data indicate that while the Kyrgyz banking system maintains relatively strong capital buffers and profitability, credit risk remains elevated.

Table 3 Banking Stability Indicators in the Kyrgyz Republic.

Variable	Mean	Interpretation
NPL (%)	10.8	Elevated credit risk
CAR (%)	27.7	Strong capital buffer
ROA (%)	4.1	High profitability
GDP growth (%)	9.0	Robust macro performance
Governance index	-0.6	Below global average
Climate vulnerability index	High	Significant exposure

Note. Data source: NBKR Financial Stability Reports.

Regression analysis indicates that GDP growth is negatively associated with NPLs and positively associated with ROA and CAR. Exchange rate depreciation exerts a destabilizing effect on asset quality and profitability. Governance quality shows a statistically significant stabilizing impact across all banking indicators.

Environmental management variables are also significant. Higher climate vulnerability is associated with increased NPL ratios and lower profitability, while stronger environmental governance is linked to improved capital adequacy and reduced credit risk. Table 4 summarizes the direction of these relationships.

Table 4 Direction of Effects on Banking Financial Stability

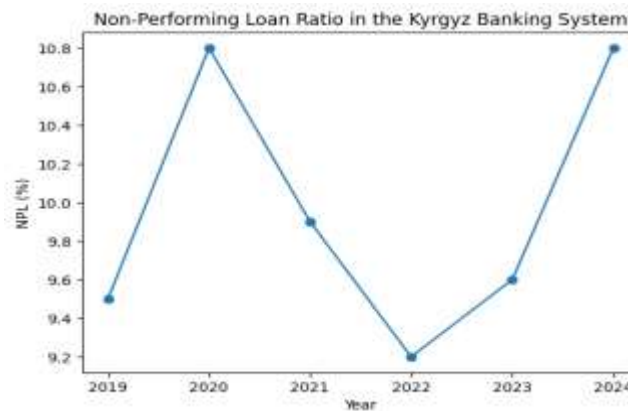
Factor	NPL	CAR	ROA
GDP growth	-	+	+
Exchange rate depreciation	+	-	-
Governance quality	-	+	+
Climate vulnerability	+	-	-
Environmental governance	-	+	+

Note. “+” indicates a positive relationship; “-” indicates a negative relationship with banking

stability.

Figure 2 illustrates the evolution of credit risk in the Kyrgyz banking system. After peaking in 2020, the NPL ratio declined in 2021–2022, reflecting temporary improvements in asset quality during economic recovery. However, the renewed increase in 2023–2024 suggests rising credit risk, potentially associated with exchange rate volatility and climate-related pressures on the real sector.

Figure 2 Trend of Non-Performing Loan Ratio in the Kyrgyz Banking System (2019–2024).



As depicted in Figure 3, the capital adequacy ratio exhibits a consistent upward trend from 2019 to 2024, indicating strengthening capital buffers. This pattern suggests that banks have maintained prudent capital management, supported by retained earnings and regulatory oversight, despite increasing credit and environmental risks.

Figure 3 Capital Adequacy Ratio of the Kyrgyz Banking System (2019–2024).

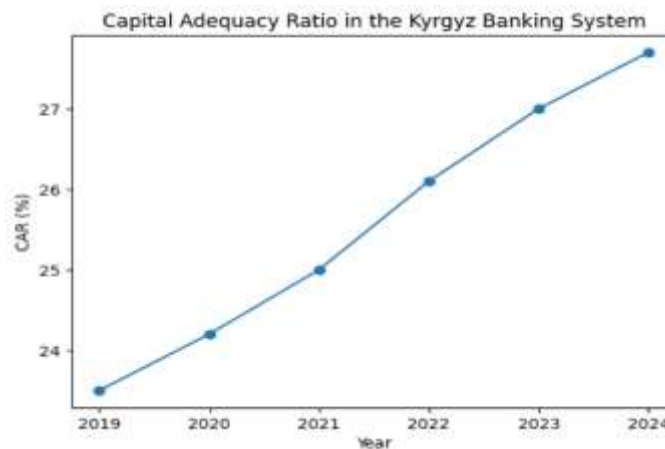
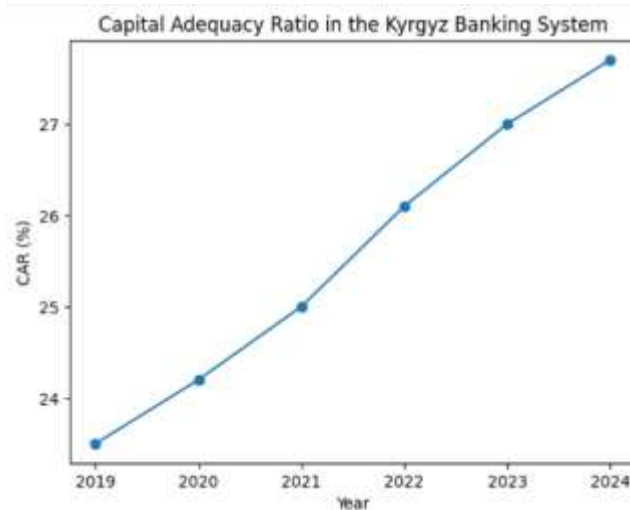


Figure 5 demonstrates a significant recovery and subsequent improvement in bank

profitability following the decline observed in 2020. The rising return on assets from 2021 onward indicates enhanced operating efficiency and reduced short-term financial stress, although the sustainability of this trend remains sensitive to macroeconomic and environmental conditions.

Figure 4 Return on Assets of the Kyrgyz Banking System (2019–2024).



4.2 Governance and Environmental Evidence

The World Bank's governance indicators report government effectiveness below the global average, indicating institutional constraints. ND-GAIN data show moderate climate vulnerability and limited readiness, suggesting that environmental shocks may propagate into banking credit risk.

Table 4 Environmental Management and Climate Risk Profile (ND-GAIN, 2023).

Measure	Value	Interpretation
ND-GAIN overall score	51.2	Mid-range adaptation position)
Vulnerability	0.311	Lower is better; vulnerability remains material
Readiness	0.334	Capacity to mobilize adaptation investment is constrained

Note. Lower vulnerability and higher readiness scores indicate stronger adaptive capacity.

5. Conclusion

This study provides an integrated assessment of banking system financial stability in the Kyrgyz Republic by jointly examining macroeconomic conditions, political-institutional governance, and environmental management factors. The findings reveal a nuanced stability profile. On the one hand, robust economic growth and relatively high profitability support

short-term resilience. On the other hand, elevated non-performing loans and signs of capital buffer erosion indicate emerging vulnerabilities within the banking system.

Macroeconomic conditions remain a primary driver of stability. Economic growth is associated with lower credit risk and stronger profitability, while exchange rate depreciation exerts a destabilizing influence, particularly in a partially dollarized and externally exposed economy. These results reaffirm the procyclical nature of credit risk in small open economies and highlight the importance of macroeconomic stability for banking sector resilience.

Political–institutional governance plays a critical moderating role. Governance quality is consistently associated with improved asset quality, stronger capital adequacy, and higher profitability, underscoring the importance of regulatory credibility, supervisory effectiveness, and institutional capacity. In transition economies such as the Kyrgyz Republic, strengthening governance frameworks is essential for containing risk accumulation and enhancing confidence in the financial system.

Importantly, the study demonstrates that environmental management and climate vulnerability are not peripheral considerations but material determinants of banking financial stability. Climate vulnerability amplifies credit risk and weakens profitability by disrupting climate-sensitive sectors and household income streams. Conversely, stronger environmental governance and adaptive capacity help mitigate these risks and support long-term banking resilience. These findings reinforce the view that climate risk operates both directly through sectoral exposure and indirectly through macroeconomic transmission channels.

From a policy perspective, the results suggest that financial stability frameworks should move beyond traditional macro-financial indicators to explicitly incorporate climate-related risks and environmental management considerations. Regulators should integrate climate risk into macroprudential supervision, develop climate stress-testing capacity, enhance environmental disclosure, and promote sustainable finance initiatives. Strengthening institutional governance and environmental management capacity will be critical for ensuring resilient banking systems in climate-sensitive emerging economies such as the Kyrgyz Republic.

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