

ENHANCING CLIMATE RISK MANAGEMENT OF FINANCIAL INSTITUTIONS IN BELT AND ROAD INVESTMENTS

EXECUTIVE SUMMARY



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Due to different development stages and natural resource endowments, many Belt and Road Initiative (BRI) countries still have relatively inefficient modes of production, with high energy consumption and carbon emission intensity. Although the other BRI countries, excluding China, currently account for a small share of global GHG emissions, they are likely to become the major source of future global GHG emissions if they do not shift to a low-carbon development mode soon. Furthermore, many BRI countries are ecologically fragile and sensitive to the impacts of climate change. Therefore, BRI countries are in urgent need of green and low-carbon socioeconomic transition, whether out of the responsibility to deal with climate change or the need for sustainable development.

For the financial sector, in addition to traditional financial risks, international investors are increasingly exposed to significant climate change-related risks (hereinafter referred to as “climate risks”) when investing in BRI countries. The sources of climate risks faced by financial institutions can be divided into two categories: physical risks and transition risks. Physical risks are those caused by climate events such as extreme weather events, and those caused by changes in ecosystem balance, such as sea level rise, soil degradation, or marine ecological imbalances, that are triggered by climate change. Transition risks are those caused by the efforts of society to address climate change, including but not limited to public policy, technological change, investor sentiment, and disruptive business model innovation.

1. Physical Climate Risks in BRI Investments

On one hand, climate change will cause an increase in the frequency and intensity of extreme weather and natural disasters in the BRI region, leading to direct damage to financial institutions’ local office facilities and personnel. On the other hand, climate change alters local ecological environments and natural resources distribution, creating uncertainty for important industries, such as energy, agriculture, forestry, and other related sectors in BRI countries. If companies do not anticipate such risks and take mitigation measures, they will suffer substantial losses when the risks occur. These losses will be transmitted to financial institutions through the financing services they provide.

Based on analysis of national geographic conditions, population, infrastructure, and a review of the literature, this report describes the profile of physical climate risks in BRI countries, and analyzes key areas (Southeast Asia, South Asia, and Sub-Saharan Africa) and key sectors (energy, agriculture and forestry, cities). The following table shows the main physical climate risks and sectors affected in different BRI regions.



| Region | Major Types of Physical Risks | Major Influenced Sectors |
|--------------------------------------|---|--|
| Central Asia | drought, water shortage | farming, renewable energy |
| South Asia, Southeast Asia | flood, water shortage, drought, destruction of coral reef systems, sea level rise, hurricanes | rice, fishery, industrial infrastructure, tourism |
| West Asia, North Africa | heat waves, droughts, water shortages | farming, renewable energy |
| Sub-Saharan Africa | Fresh water shortages, decreased grain production, increased irrigation needs | agriculture |
| Europe | droughts, sea level rise | renewable energy, agriculture, industrial infrastructure |
| Latin America | water shortages in semi-arid areas, urban flooding | farming, industrial infrastructure |
| Pacific Island countries and Oceania | destruction of coral reef systems, sea level rise, flooding, heat waves, forest fires | industrial infrastructure, forestry, fishery, tourism |

2. Transition Climate Risks in BRI Investments

All BRI countries have joined the Paris Agreement, and almost all have submitted nationally determined contributions (NDCs) and introduced related low-carbon transition policies, including carbon markets, carbon taxes and energy transition, etc. Low-carbon transition policies, green technology development and changing public preferences will greatly impact the operating environment and supply-demand relationship in many sectors — including energy, building, transportation, manufacturing, and others — which will affect the revenue, cost, profit, debt repayment ability, and asset valuation of related companies. In many carbon-intensive sectors, climate transition factors will lead to deterioration in corporate solvency and valuation and result in non-performing loans or investment losses for financial institutions.

This report conducts a preliminary quantitative analysis of the transition climate risks facing BRI investments. First, we use the Belt and Road Integrated Assessment Model (BRIAM) to analyze BRI countries’ carbon emissions, energy mix, electricity structure, carbon price, and the impacts on related investments under three scenarios: BAU (business-as-usual), NDC, and 2DS (2°C warming). The results show that under NDC and 2DS scenarios, the proportion of non-fossil energy in primary energy consumption in BRI countries will increase significantly, and the energy structure will show characteristics of deep decarbonization. While the total investment in energy supply does not change much, the investment structure will change significantly, with investments in low-carbon energy and related infrastructure greatly increasing and investments in fossil fuels declining sharply. The greening of energy structure will lead to decreased demand for fossil fuel companies and increased demand for green energy companies. Furthermore, as more BRI countries announce carbon neutral policies and launch carbon trading mechanisms, carbon prices will rise significantly, which will increase costs for carbon-intensive companies, thereby impacting their financial status and posing new risks for investors.



To better understand the impact of BRI countries' climate policies and low-carbon transition on carbon-intensive companies, we conducted financial stress tests (2020-2030) for representative carbon-intensive sectors (coal power in Malaysia, cement in Pakistan, and steel in South Africa and Russia) under the three climate policy scenarios (BAU, NDC and 2DS). The results show that, compared with the BAU scenario, tested companies' financial indicators — including solvency, liquidity, and profitability — deteriorate, and corporate valuations and profits decline under the NDC and 2DS scenarios. Given that the 2DS scenario has more stringent requirements on carbon emissions, companies' financial indicators and valuation deteriorate more severely under the 2DS scenario, with some companies' valuations falling more than 70%. Therefore, financial institutions holding such carbon-intensive assets will face relatively high risks of loan default and asset impairment if they do not take risk mitigation measures.

To further calculate potential losses caused by transition climate risks for banks, we quantify the loan default risk of the coal power sector in Pakistan using scenario-based stress tests. The results show that in scenarios that account for various impacts, including declining coal power demand, rising carbon price, price competition from renewable energy, and increasing financing cost, the default risk of representative coal power loans in Pakistan will rise from 1% in 2020 to 35% in 2030.

3. How to Enhance Climate Risk Management in BRI Investments

Many BRI investments face physical climate risks and many carbon-intensive investments face significant transition climate risks. However, many financial institutions investing in BRI countries are not fully aware of these climate risks and have not taken sufficient measures to mitigate them. In order to promote better climate risk management of BRI investments, we put forward constructive suggestions for governments and financial institutions.

Suggestions for governments: (1) establish clear policy requirements for financial institutions and enterprises to conduct climate risk analysis, and disclose relevant information and establish a climate information disclosure system; (2) build a BRI Climate Data Platform; (3) encourage financial institutions and research institutions to conduct BRI climate risk research; (4) increase guarantees for low-carbon investments by sovereign guarantee agencies and decrease guarantees for high-carbon investments; (5) build a BRI Green Project Library; (6) formulate taxonomies of BRI "green assets" and "brown assets"; (7) Coordinate the carbon neutrality goals of BRI countries and encourage financial institutions to bolster their climate risk management efforts.

Suggestions for financial institutions: (1) formulate BRI green investment strategies; (2) enhance climate risk analysis of BRI investments, including stress testing and scenario analysis; (3) integrate climate risks into the country risk management system and investment decision process, and allocate more capital into sectors with relatively-low climate risks; (4) enhance climate-related information disclosure; and (5) policy banks should take the lead and play an exemplary role.