

Investing in Resilience

Climate Risks & Opportunities in Rwanda's Key Agricultural Value Chains

Gates Foundation



This investor brief is designed to support policymakers in translating climate risk analysis into actionable investment strategy. Drawing on the Clim-ARM project report [*Investing in Resilience: A Guide to Climate Risks and Opportunities in Rwanda's Key Agricultural Value Chains*](#), the brief highlights how targeted government action can unlock climate-resilient investment while strengthening agricultural productivity, food security, and rural livelihoods.



Rather than presenting climate risks solely as constraints, the analysis identifies a pipeline of financially viable investment opportunities that can deliver strong economic returns alongside resilience outcomes. The central policy challenge is therefore not the absence of capital, but the need to align public policy, infrastructure investment, and risk-management frameworks in ways that enable private and concessional finance to flow at scale.



Rwanda's Agricultural Investment Landscape



Agriculture remains central to Rwanda's economy, contributing approximately 25% of GDP and employing nearly 65% of the workforce. Government strategies under the Strategic Plan for Agriculture Transformation (PSTA IV) have emphasized productivity growth, innovation, and infrastructure development, contributing to agricultural export revenues reaching USD 857 million in 2022–2023, with ambitions to exceed USD 1 billion.



A supportive investment environment has been cultivated through fiscal incentives, simplified regulatory structures, and the establishment of special economic zones such as Kigali SEZ and Bugesera Industrial Park. Despite these efforts, however, actual investment flows into agriculture remain significantly below potential, with only around USD 50 million recorded during 2020–2021.

From Climate Risk Analysis to a Government Crowding-In Agenda

The Clim-ARM analysis demonstrates that Rwanda possesses a robust pipeline of climate-resilient agricultural investments. However, unlocking this potential requires a more deliberate role for government as a catalytic actor that addresses systemic barriers rather than directly financing entire value chains.

In practice, this means recognizing that certain foundational investments—particularly climate information systems, irrigation backbone infrastructure, and market connectivity assets—represent public goods that private investors cannot profitably provide but which are essential for reducing risk across the entire agricultural system. Strengthening Climate and Weather Services (CWS), for example, would significantly enhance farmers' adaptive capacity by providing localized forecasts, early warning systems, and decision-support tools. Expanding hydrological monitoring, improving communication channels through mobile platforms and community radio, and investing in technical capacity within Meteo Rwanda would generate economy-wide benefits that extend beyond individual projects.

Similarly, infrastructure investments such as reservoirs, primary irrigation networks, rural feeder roads, and cold storage facilities play a critical enabling role. These investments lower transaction costs, improve market access, and enhance profitability for downstream actors, thereby improving the attractiveness of private investment opportunities. Without these foundational assets, commercially viable investments in climate-smart agriculture remain difficult to scale despite strong underlying demand.

Alongside direct investment in public goods, policymakers must also address regulatory and institutional constraints that limit access to finance. Existing collateral requirements often exclude smallholder farmers—particularly women—from formal credit markets because movable assets such as livestock or equipment are not widely recognized.

Modernizing collateral frameworks, strengthening financial inclusion policies, and facilitating weather-indexed insurance markets would significantly improve the risk profile of agricultural lending. Streamlining public-private partnership processes and improving coordination between climate services, extension systems, and financial institutions would further reduce friction for investors seeking to enter the sector.

Finally, government intervention is required to bridge early-stage risks through blended finance mechanisms. By strategically deploying guarantees, concessional capital, or targeted subsidies, government can reduce perceived risk sufficiently to attract commercial lenders and impact investors. The Clim-ARM investment blueprints illustrate how such structures can enable viable investment across multiple value chains while maintaining strong financial performance.

Investment Opportunities Across Priority Value Chains

1) Irrigation & Climate-Smart Agriculture

Rwanda's agriculture faces persistent drought risk and resource constraints, yet only around 15% of the country's 2.4 million irrigation-suitable farms currently utilize irrigation systems, many relying on manual methods. Investment in solar-powered smallholder irrigation combined with climate-smart agriculture practices offers a pathway to increase productivity while enhancing resilience.

Proposed investments include upgrading traditional irrigation systems, strengthening cooperative models, and promoting practices such as drought-resistant crops, efficient fertilization, rainwater harvesting, and conservation agriculture. A blended finance structure combining debt, grants, and equity is estimated at USD 161–224 million. Projected internal rates of return of approximately 30% with payback periods between 3.4 and 3.9 years demonstrate strong commercial viability. However, regional differences in adaptive capacity and persistent credit access barriers require tailored policy interventions to ensure scalability.

2) Resilient Livestock Systems

Livestock production remains essential for nearly one million Rwandan households, contributing significantly to food security and income generation. Climate variability, including drought and changing disease patterns, poses growing risks to cattle and goat production systems.

Investment in climate-resilient livestock practices—including improved feed systems, veterinary services, and adaptive breeding strategies—can enhance productivity while reducing vulnerability. Financial modeling indicates gross IRRs between 28% and 34%, with investment requirements estimated at USD 91 million for cattle and USD 129 million for goats. Blended finance approaches that integrate technical assistance with improved credit access can play a transformative role, particularly in empowering women farmers who face disproportionate barriers to financing.

3) Agroforestry & Coffee Value Chains

Rwanda's coffee sector benefits from favorable agroecological conditions but faces increasing threats from climate change and ageing trees. Integrating agroforestry approaches such as shade-grown coffee, avocado intercropping, and improved soil management can enhance both resilience and profitability.

The Clim-ARM blueprint proposes a USD 94.8 million investment targeting 40,000 farmers, increasing female participation from 18% to 30%. Expected gross IRRs between 26.8% and 32.4% indicate strong investment potential. Enhancing adaptive capacity requires improved climate information systems, expanded farmer training, and strengthened collaboration between meteorological agencies and financial institutions to integrate climate data into lending decisions.

4) Climate and Weather Services as a Foundational Enabler

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4) Climate and Weather Services (CWS) as a Foundational Enabler

Across all value chains, effective climate and weather services emerge as a foundational enabler. Investments in infrastructure, human capacity, and communication systems would improve the accuracy and accessibility of climate information, allowing farmers and investors to make more informed decisions. Addressing disparities in access to extension services, digital tools, and training programs is essential to ensure equitable adoption of climate-smart practices across regions.

Enabling Resilient Investment Pathways

Rwanda's agricultural sector presents significant opportunities for climate-resilient investment that can drive economic growth while strengthening food systems. However, realizing this potential requires targeted government action to address structural barriers, including infrastructure deficits, financial market constraints, and climate risk exposure.

By prioritizing investment in public goods, implementing regulatory reforms that expand access to finance, and deploying risk-sharing mechanisms through blended finance, policymakers can create an enabling environment that mobilizes private capital at scale. Strengthening adaptive capacity through climate information systems, infrastructure investment, and inclusive financing approaches will be central to building resilient value chains capable of withstanding climate variability while delivering sustained economic benefits.

Background

The Clim-ARM project was implemented by the CGIAR's Sustainable Finance Hub (ImpactSF) and funded by the Gates Foundation. The project collaborated with a variety of partners to ensure a comprehensive assessment and the development of effective agricultural risk management (ARM) solutions for Rwanda's key agricultural value chains. These partners included: the Ministry of Agriculture and Animal Resources (MINAGRI), the Rwanda Agriculture and Animal Resources Development Board (RAB), Rwanda Environment Management Authority (REMA), Rwanda Green Fund, Meteo Rwanda.

Data collection employed a combination of primary and secondary methods. Primary data were gathered through regional workshops and key informant interviews conducted across Rwanda. Secondary data were sourced from academic literature and surveys.

Five regional workshops were held between 2022 and 2023, involving over 150 experts from diverse sectors. These workshops identified key climate risks and suitable ARM solutions for farmers and pastoralists. Additionally, data on land size, tenure, and adaptive capacity indicators were collected. Farmers' adaptive capacity was measured using three criteria: basic needs, innovation, and action.

The comprehensive dataset from the project provides a clear understanding of Rwanda's agricultural landscape, including agricultural systems, risk types, ARM measures, and land tenure. This data was used to prioritize investment solutions tailored to specific risks, livelihoods, and value chains. A follow-up workshop in 2023 validated these priorities, ensuring alignment with expert insights and regional contexts.

More info

- ▶ *Summary brief*
hdl.handle.net/10568/182255
- ▶ *Investor brief for providers of concessional capital*
hdl.handle.net/10568/182257
- ▶ *Investor brief for commercial capital providers*
hdl.handle.net/10568/182256
- ▶ *Full Clim-ARM Rwanda report*
hdl.handle.net/10568/159896
- ▶ *Ethiopia Report summary*
hdl.handle.net/10568/177044



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