



Republic
of Rwanda

National Adaptation Plan

Summary



To the United Nations Framework Convention
on Climate Change

2026

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Table of Contents

List of Acronyms	iii
1. Introduction	1
2. Vision for a successful National Adaptation Plan.....	2
3. Summary: Institutional Roles and Responsibilities	2
4. Aligning with the Global Goal on Adaptation	3
5. Climate Risks, Hazards and Vulnerability for Rwanda.....	3
5.1. Climate Hazard.....	3
5.2. Key Risks and Vulnerabilities.....	5
6. Adaptation Actions	15
6.1. Adaptation actions based on Hazard Specific Early Warning Systems /Monitoring Systems and Response Plans.....	15
6.2. Adaptation actions based on Hazard Specific Early Warning Approaches	17
6.2. Adaptation actions based on benefits and resilience-building by Sector/GGA System....	20
7. Policy and institutional structures	31
7.1. Institutional Arrangement.....	31
7.2. Implementation Strategy	33
7.3. Special projects	35
8. Resource mobilization plan	55
References	56

List of Acronyms

BXW	Banana Xanthomonas Wilt
CBT	Climate Budget Tagging
CCA	Climate Change Adaptation
CNFS	Climate and Nature Finance Strategy
DDS	District Development Strategy
EICV	Integrated Household Living Conditions Survey
FMES	Forest Monitoring and Evaluation System
GGA	Global Goal on Adaptation
GGCRS	Green Growth and Climate Resilience Strategy
GoR	Government of Rwanda
JADF	Joint Action Development Forum
MEL	Monitoring, Evaluation and Learning
MHEWS	Multi-Hazard Early Warning Systems
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINICOM	Ministry of Trade and Industry
MINEMA	Ministry in Charge of Emergency Management
MININFRA	Ministry of Infrastructure
MLND	Maize Lethal Necrosis Disease
MoE	Ministry of Environment
MoH	Ministry of Health
NAEB	National Agricultural Export Development Board
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NAP TWG	National Adaptation Plan Technical Working Group
NISR	National Institute of Statistics of Rwanda
NLA	National Land Authority
NLUDMP	National Land Use and Development Master Plan
NST	National Strategy for Transformation
PSTA5	Fifth Strategic Plan for Agriculture Transformation
RAB	Rwanda Agriculture and Animal Resources Development Board
RBC	Rwanda Biomedical Centre
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority
RFA	Rwanda Forestry Authority
RHA	Rwanda Housing Authority
RMB	Rwanda Mines, Petroleum and Gas Board
RTDA	Rwanda Transport Development Agency
RWB	Rwanda Water Resources Board
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund

WASH
WASAC

Water, Sanitation and Hygiene
Water and Sanitation Corporation

1. Introduction

Rwanda's National Adaptation Plan (NAP) process is grounded in a strong policy framework that has evolved over nearly two decades. The country began its adaptation planning process with the development and submission of National Adaptation Programme of Action (NAPA) to the United Nations Framework Convention of Climate Change in 2006, addressing urgent climate vulnerabilities. In 2011, Rwanda adopted the Green Growth and Climate Resilience Strategy and set a long-term vision for a climate-resilient and low-carbon economy nation, to ensure its alignment with global climate action commitment. GGCRS was revised in 2022 and its priorities were aligned with the National Strategy for Transformation 2017-2024 (NST1) and other existing climate action policy instruments.

Rwanda strengthened its commitments through the first NDC in 2015, followed by enhanced updates in 2020 and 2025. The country also submitted to the convention its Adaptation Communication in 2021 outlining progress and priorities under the Paris Agreement. These milestones are supported by climate change vulnerability index assessments conducted every five years since 2015 to inform national planning processes. Rwanda has established a NAP Technical Working Group (NAP TWG), to oversee the generation of climate change projections, the development of climate risk assessments, adaptation planning and climate change mainstreaming for the purpose of project implementation. The technical working group is conducting climate risk assessments for four catchments out of nine existing catchments in Rwanda to inform the design of catchment level Climate Change Adaptation (CCA) strategies.

The Government of Rwanda is also engaging different stakeholders as a way of raising awareness about the NAP process, through all the project activities. It is supporting technical and institutional capacity for the National Adaptation Plan process in Rwanda.

Purpose of this Document

This summary NAP consolidates Rwanda's long-term adaptation vision and reinforces Rwanda's commitment to protecting communities, ecosystems, and the economy from climate impacts.

2. Vision for a successful National Adaptation Plan

The National Adaptation Plan (NAP) for Rwanda is not just a technical climate document; it's a long-term vision for making the country climate-resilient while continuing its economic transformation. Based on Rwanda's policies and NAP process, Rwanda's NAP vision is to mainstream climate adaptation into national development ensuring that growth is sustainable and climate resilient.

Rwanda's NAP envisions a fully coherent national adaptation architecture that translates high-level climate commitments into measurable and financed actions at the sector and community level. Rwanda 's NAP reinforces the country's climate action policies and strategies particularly NDC 3.0 and GGCRS while ensuring that the most climate-vulnerable Rwandans particularly women, smallholder farmers and rural communities are at the center of every adaptation investment and decision.

3. Summary: Institutional Roles and Responsibilities

Rwanda's National Adaptation Plan (NAP) is designed in line with the national policies and strategies such as the National Environment and Climate Change Policy and the Green Growth and Climate Resilience Strategy.

The overarching goal of Rwanda's NAP is to reduce vulnerability to climate change impacts and build long-term resilience across sectors and communities while integrating adaptation into national development planning. This goal entails strengthening the adaptive capacity of institutions, ecosystems, and communities and promoting climate-resilient socio-economic development pathways that support sustainable growth and safeguard livelihoods.

The specific objectives of Rwanda NAP include:

- ❑ strengthening institutional and technical capacity to enable government and stakeholders to effectively plan, implement and monitor adaptation actions while enhancing coordination across sectors;
- ❑ integrating adaptation into national and sectoral planning by mainstreaming climate change into policies, strategies and long-term development plans;
- ❑ improving climate information and risk assessment through the use of data, projections, and vulnerability analyses to support evidence-based decision-making;
- ❑ promoting climate-resilient technologies and practices such as ecosystem-based adaptation and climate-smart solutions in agriculture, water and infrastructure; enhancing financing for adaptation by mobilizing and aligning domestic and international resources with national priorities;

- ❑ Supporting community resilience and livelihoods for all genders by reducing vulnerabilities and enhancing food security.

strengthening monitoring, evaluation and learning systems to track progress and encourage continuous improvement;

4. Aligning with the Global Goal on Adaptation

Rwanda’s National Adaptation Plan (NAP) is closely aligned with the targets of the Global Goal on Adaptation (GGA) under the Paris Agreement, particularly in its emphasis on reducing vulnerability, enhancing adaptive capacity and strengthening resilience. The NAP supports GGA priority areas by promoting climate-resilient agriculture and food security systems, improving water resource management, protecting ecosystems through ecosystem-based adaptation approaches and strengthening health and infrastructure resilience. It also contributes to the GGA’s cross-cutting targets by enhancing climate information services, institutional capacity and inclusive governance while advancing monitoring, evaluation, and learning systems to track adaptation progress. Furthermore, Rwanda’s focus on mobilizing climate finance and integrating adaptation into national development planning directly supports the GGA’s call for scaled-up means of implementation, including finance, technology and capacity-building, thereby ensuring a coherent and globally aligned adaptation.

5. Climate Risks, Hazards and Vulnerability for Rwanda

5.1. Climate Hazard

Rwanda is affected by climate related hazards in many ways. The table below provides an overview of the main climate hazards affecting Rwanda outlining their key characteristics, including frequency, triggers and impacts on populations, ecosystems and livelihoods

Climate Hazard	Description
Drought	In Rwanda drought occurs periodically especially in Eastern and southern province. The drought is triggered by prolonged rainfall deficits and rising temperatures leading to water scarcity, reduced agricultural productivity, infrastructure destruction, livestock losses, food insecurity and ecosystem degradation.
Floods	In Rwanda, floods are increasing in frequency due to intense rainfall events triggered by poor drainage and land use changes. Every rainy season, floods cause loss of lives, displacement, destruction of infrastructure, crop damage and soil erosion. The Northern and Western Provinces of Rwanda are particularly most vulnerable due heavy rains.

Climate Hazard	Description
Landslides	Common in highland and steep slopes of Western, Northern and Southern Provinces of Rwanda, landslides are triggered by heavy rainfall and soil saturation. They result in fatalities, destruction of homes and infrastructure and loss of arable land.
Storms and strong winds	In Rwanda, storms and strong winds occur seasonally often linked to extreme weather patterns. They damage houses, schools and crops, and disrupt livelihoods.
Soil erosion	Soil erosion is a widespread challenge across Rwanda, driven by a combination of heavy rainfall, steep and mountainous topography and unsustainable land management practices. These factors accelerate the removal of fertile topsoil, leading to declining soil fertility and reduced agricultural productivity. In addition, eroded sediments are transported into rivers, lakes and wetlands, causing sedimentation that degrades water quality and disrupts aquatic ecosystems.
Pests and diseases	In Rwanda, crop and livestock pests and diseases pose a significant threat to food security and agricultural productivity. Major crop diseases include Banana Xanthomonas Wilt (BXW), Cassava Brown Streak Disease (caused by CBSV) and Maize Lethal Necrosis (MLND). Invasive pests such as the Fall Armyworm causes widespread damage to staple crops particularly maize. These pests and diseases reduce crop yields, increase production costs and undermine farmer incomes what increases the vulnerability of farming communities and hinder efforts to achieve sustainable agricultural development.
Temperature rise	Rwanda is experiencing a rapid temperature increase of 1.4oC to 2.6oC to since 1970, outpacing the global average, with projections of up to further warming by 2050. This warming drive severe droughts, unpredictable rainfall and increased evaporation, impacting agriculture and causing floods.
Lightning strikes	Lightning strikes are a recurrent hazard in Rwanda, particularly during the rainy seasons when thunderstorms are frequent. Due to the country's tropical climate and elevated topography, lightning events occur across many regions, posing risks to human life, livestock and infrastructure. Lightning strikes can cause fatalities and injuries, damage electrical systems, and lead to fires in homes, schools, and public facilities.

5.2. Key Risks and Vulnerabilities

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
<p>Sector- Agriculture</p>	<p>Agriculture remains the backbone of Rwanda's economy, with nearly 69% of households engaged in farming and the sector contributing 27% of GDP in 2023 (MINAGRI, Fifth Strategic PPlan for Agriculture Transformation (PSTA5), 2024)¹. The sector's reliance on rain-fed agriculture makes it highly vulnerable to fluctuations in precipitation patterns. Additionally, the mountainous terrain increases the risk of soil erosion, exacerbating vulnerability (WorldBank, 2021)². Climate change significantly impacts agricultural productivity, post-harvest losses in the maize value chain is 13.8%, 12.4% for rice, and 11.3% for beans (MINAGRI, Fifth Strategic PPlan for Agriculture Transformation (PSTA5), 2024).</p> <p>In 2018, the economic impact of climate change was estimated at over \$200 million in damage to crops, livestock, and property. In response to this risk and for the sake of reducing the rate of vulnerability, Rwanda has launched the climate Smart Agriculture investment programme as well as the implementation of the strategic plan for agriculture transformation aiming to building resilient and sustainable agri-fod systems. Households in the Eastern Province may experience up to 8% decrease in annual agricultural production due to climate change (Hunter. R., 2020)³ (Rwanda Agriculture and Animal Resources Development Board (RAB), 2022). Western Province remains the province with the highest percentage of households with unacceptable food consumption (31%) followed by the Southern Province with 27 per cent while the lower percentage is found in Eastern Province (22%).</p> <p>Climatic hazards affecting Agriculture: droughts, floods, soil erosion, rising temperatures, pests and diseases, landslides, lightning strikes, wind storms and Hail storms.</p> <p>Most affected areas:</p> <ul style="list-style-type: none"> • Eastern Province: Particularly vulnerable to drought and experiencing the most significant decrease in annual production. More than 24,000 hectares of farmland have been

¹ MINAGRI, 2024. Fifth Strategic Plan for Agriculture Transformation (PSTA5)

² World Bank (2021). Rwanda Economic Update.

³ Hunter. R., Crespo. O., Coldrey, K, Cronin, K, New, M. 2020. Research Highlights – Climate Change and Future Crop Suitability in Rwanda. University of Cape Town, South Africa, undertaken in support of Adaptation for Smallholder Agriculture Programme' (ASAP) Phase 2. International Fund for Agricultural Development (IFAD), Rome

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	<p>abandoned in Kayonza District alone due to severe droughts and shifting weather patterns.⁴</p> <ul style="list-style-type: none"> • Northern and Western Provinces: Prone to floods, soil erosion and landslides associated with heavy rain (MoE, 2023).⁵ • Southern Province: Susceptible to drought⁷ in Amayaga region, Nyaruguru, Nyamagabe, and Muhanga districts are affected by the soil erosion.⁶ • Kigali: Affected by water-related stress and water shortages, flash floods, soil erosion and landslides. • Specific Districts: Bugesera, Nyanza, Gisagara, Huye, and Rusizi-Nyamasheke are affected by erratic rainfall, soil erosion and water stress⁸.
<p>Sector- resources</p> <p>Water</p>	<p>With the population of 13, 549 ,000: water demand is expected to rise significantly. Groundwater resources are being depleted faster than they can naturally recharge, particularly in urban areas (World Health Organization, 2021). Over-extraction and contamination reduce the availability of clean groundwater, which is crucial for drinking and irrigation. Surface water levels are also declining due to climate change which also affects water quality due to pollution and sedimentation.</p> <p>Water-related issues have an economic impact of approximately \$100 million annually due to lost productivity and health impacts.</p> <p>Climatic hazards affecting water resources:</p> <ul style="list-style-type: none"> • Drought: Prolonged periods of drought leading to the lowering of groundwater levels and depletion of aquifers resulting in dry springs, lower productivity of boreholes, and lower water levels in lakes, streams and rivers. During prolonged dry periods the quality of surface water is affected linked to lower discharge rates resulting in low environmental dilution of effluents with organic matter from domestic and industrial effluents, etc. • Flooding: Intense rainfall events lead to flooding, which can damage infrastructure and contaminate water sources. Ground water sources deteriorate when and where flooding is common as groundwater recharge rates are high, and catchment protection is not in place.

⁴ Farmers' Resilience in the Face of Climate Change in Eastern Rwanda - People TV

⁵ Rwanda's Climate Adaptation Monitoring, Evaluation, and Learning System in the Agriculture Sector: -Republic of Rwanda, 2023

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
<p>Sector- supply sanitation</p> <p>Water and</p>	<ul style="list-style-type: none"> • Soil Erosion: Increased rainfall intensity leads to soil erosion, affecting watershed health and water quality. During periods of heavy rainfall, high surface runoff rates is associated with low raw water quality of surface water sources especially increasing the turbidity. • Temperature Increases: Rising temperatures can increase evaporation rates, further reducing the quantity and the quality of available water. <p>Most affected areas:</p> <ul style="list-style-type: none"> • Eastern Province: Faces significant water scarcity and competition for resources due to high population density and agricultural demands. • Northern Province: Vulnerable to water quality issues from agricultural runoff and sedimentation in lakes and rivers. <p>Kigali: High surface runoff rates is associated with low raw water quality of surface water sources and lead to floods and landslides. Western Province: Lakes in this region are affected by sedimentation and pollution, impacting aquatic ecosystems and water quality.</p> <p>Access to water and sanitation services is vital for a better socio-economic life in Rwanda. As of recent reports like EICV7, approximately 82.3% of households have access to improved drinking water sources, and the access to improved sanitation is higher, with 92% of households benefiting, with urban areas experiencing slightly high access than rural ones (NISR, Integrated Household Living Conditions Survey 7 (EICV7), 2023)⁷.</p> <p>The water supply and sanitation sector faces significant challenges due to climate change, which causes recurrent droughts, heavy rains, and flooding. Prolonged droughts pose a threat to water quantity by depleting aquifers and lowering groundwater levels, while heavy rainfall degrades water quality through runoff and erosion, as well as reduced discharge rates during dry periods. Furthermore, extreme weather events can physically damage infrastructure, necessitating costly repairs and production interruptions during dry spells. All these factors could result in water supply disruptions, higher chemical use, and possibly lower water quality for customers. The Eastern Province, particularly, suffers from severe water scarcity, while regions like the Northern Province are prone to flooding. Overall, the integration of</p>

⁷ NISR, 2023 Integrated Household Living Conditions Survey 7 (EICV7)

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	<p>climate-resilient strategies in the water supply and sanitation sector is essential to ensure continuity of services during extreme weather events, protect public health, and improve the overall quality of life for Rwandans.</p> <p>Most affected areas:</p> <ul style="list-style-type: none"> • Eastern Province (especially Kayonza, Nyagatare, Kirehe, Bugesera and Rwamagana) experiences severe water scarcity due to prolonged drought periods. • Northern Province (e.g., Musanze, Burera) and parts of the Western Province are particularly prone to flooding during heavy rains. <p>The hilly regions of the Northern and Western Provinces, including Gakenke, Rubavu, Ngororero and Nyabihu, are vulnerable to landslides after heavy rainfall.</p>
<p>Sector- Health</p>	<p>Climate change poses a growing challenge to Rwanda's health sector, intensifying existing vulnerabilities and threatening hard-won gains. Infrastructure gaps, workforce shortages, and disease burdens are being exacerbated by rising temperatures, altered rainfall patterns, and increasingly frequent extreme weather events. Despite substantial government investments, healthcare access in rural areas remains inadequate, with Rwanda having only 1.2 healthcare workers per 1,000 population well below the WHO threshold of 4.45 per 1,000 needed to meet the SDGs (MoH, 4X4 Reform: Executive Summary, 2024)⁸. Climate-induced hazards create a cascading effect on these already-strained systems: rising temperatures and extreme weather events intensify disease burdens, while floods and landslides damage infrastructure and obstruct transportation routes, creating compounding vulnerabilities that most severely affect underserved rural populations. Climate change is reshaping Rwanda's disease landscape across multiple domains.</p> <p>Vector-borne diseases like malaria, despite an 85% decline from 2019 to 2022, face potential resurgence as rising temperatures and altered rainfall create favorable breeding conditions (MoH, Rwanda Malaria Program Midterm review, 2023)^{9,10} Waterborne diseases surge after intense rainfall events, with two-thirds of outbreaks linked to extreme</p>

⁸ MoH, M. of H. (2024). *4X4 Reform: Executive Summary. January.*

⁹ MoH, M. of H. (2023). *Rwanda Malaria Program Midterm review. RBC.*

¹⁰ WHO. (2024). *World malaria World malaria report 2024 report.*

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	<p>weather (GoR, 2021)¹¹. Climate variability disrupts agricultural production and food supply chains, exacerbating malnutrition particularly among children under five, while displacement from floods and droughts strains health services and disrupts continuity of care. Rising temperatures and air pollution contribute to increased non-communicable diseases, while climate-induced disasters have driven mental health disorder prevalence from 12.7% in 2017 to 20% in 2022 (Kayiteshonga, 2022)¹².</p> <p>Vulnerable populations, including women, children, persons with disabilities, elderly individuals, and refugees, face compounded climate-health risks due to their socio-economic roles and existing inequalities (UNFPA, 2023)¹³. Women's primary roles in agriculture and caregiving increase their exposure to climate impacts, while disrupted maternal health services raise pregnancy and childbirth complication risks. Children face heightened vulnerability through interrupted immunization services, damaged health infrastructure, and climate-sensitive diseases, with seasonal flooding contributing to high stunting prevalence (33%) and widespread maternal anemia (22%) (UNICEF, 2024)^{14, 15}. People with disabilities and elderly populations encounter barriers accessing early warning information, evacuating during emergencies, and reaching health facilities during extreme weather.</p> <p>Climate change also increases zoonotic outbreak frequency by altering ecosystems and facilitating pathogen spillovers, exposing gaps in pandemic preparedness. Rwanda has embraced One Health as a comprehensive framework to address these interconnected challenges through improved surveillance integration and cross-sectoral coordination (RBC, 2023)^{16,17} However, ensuring effective multi-sectoral collaboration, equitable vaccine access, decentralized laboratory capacity, and timely resource mobilization remain critical challenges. These climate-health linkages underscore the urgent</p>

¹¹ GoR. (2021). Republic of Rwanda, One Health Strategic Plan 2021-2026. June 2021.

¹² Kayiteshonga, Y., Sezibera, V., Mugabo, L., & Iyamuremye, J. D. (2022). Prevalence of mental disorders, associated co - morbidities, health care knowledge and service utilization in Rwanda – towards a blueprint for promoting mental health care services in low - and middle - income countries? BMC Public Health, 1–13. <https://doi.org/10.1186/s12889-022-14165-x>

¹³ UNFPA. (2023). Handbook for Conducting Multi-stakeholder Vulnerability Assessments for SRHR, HIV, and GBV in Humanitarian Settings. 1–54.

¹⁴ UNICEF. (2024). Health, Nutrition and Early Childhood Development in Rwanda. January.

¹⁵ UNICEF. (2024). Water, Sanitation and Hygiene (WASH) in Rwanda. January.

¹⁶ GoR. (2021). Republic of Rwanda, One Health strategic Plan 2021-2026. June 2021

¹⁷ RBC. (2023). National Action Plan for Health Security.

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
<p>Sector- Transport infrastructure</p>	<p>need for integrated adaptation strategies that explicitly address both health system resilience and the protection of vulnerable populations.</p> <p>Most affected areas:</p> <ul style="list-style-type: none"> • Highland areas: Experiencing an increase in malaria prevalence due to changing climate patterns³⁰. • Western Province: Experiencing floods, infrastructure damage, deaths, injuries, landslides, agricultural degradation, and environmental degradation¹⁸. • Eastern Province: Experiencing prolonged droughts that threaten food supplies³⁰ • Mahama Sector, Kirehe District: Experiencing prolonged droughts, destructive rains and winds, and irregular rains, leading to hunger, poor health, and psychological harm, particularly affecting women (Gatsinzi, 2020)¹⁹. <p>Rubavu District: Experiencing floods that cause deaths and homelessness³⁰.</p> <p>Rwanda's mountainous topography renders transportation infrastructure particularly vulnerable to climate impacts. In 2015, approximately 979 km of roads were reported vulnerable to landslides, including 165 km of national paved roads (MININFRA, Transport Backward Looking JSR Report 2015/2016, 2016)²⁰. Flooding events in Kigali can delay bus services by 5 to 15 minutes, with a significant percentage of routes being rerouted or canceled (Kigali City Council, 2020). Economic impacts from transportation costs account for over 40% of the cost of goods, which affects competitiveness (Rwanda Transport Sector Review, 2020)²¹. Furthermore, the transport sector contributes to greenhouse gas emissions, necessitating resilient infrastructure and low-carbon mobility solutions. Disruptions to transport networks due to flooding and extreme weather events require urgent adaptation measures to maintain connectivity.</p> <p>Most affected areas:</p>

¹⁸Climate Change Poses a Growing Threat to Child Health in Rwanda - People TV

¹⁹Effects of Climate Change on Women's Health in Mahama Sector, Rwanda - Journal of Research Innovation and Implications in Education

²⁰ Ministry of Infrastructure (2015). Transport Sector Review

²¹Rwanda Transport Sector Review (2020). Infrastructure Development Report.

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	<ul style="list-style-type: none"> • Kigali: The capital city faces increasing frequency and intensity of flooding, which disrupts vital socioeconomic infrastructure, including the transportation sector. The Nyabugogo transportation hub, Kigali's largest and busiest public transportation terminal, is in a flood-prone area. • Northern and Western Provinces: These regions are prone to heavy rains, flooding, and landslides, leading to road closures and infrastructure damage. Nyabihu, Ngororero and Musanze districts have suffered extensive damage to road infrastructure. • Rubavu District: Suffered infrastructure damage from the eruption of the Nyiragongo Volcano and seismic activities. • Southern Province: Identified as the most vulnerable among the four provinces and the City of Kigali. • Highlands: The mountainous topography makes road infrastructure susceptible to landslides.
Sector- Energy	<p>Rwanda's energy sector faces several critical challenges that hinder its resilience to climate change. A major concern is the country's heavy reliance on hydropower, which is highly sensitive to climate variability such as erratic rainfall, droughts, and flooding, conditions that disrupt electricity generation. This vulnerability is worsened by environmental degradation, including deforestation and catchment damage, which lead to sedimentation that clogs turbines and reduces efficiency. Although Rwanda is gradually investing in solar and methane gas, its energy mix remains insufficiently diversified, leaving the system exposed during hydropower shortfalls.</p> <p>Many energy infrastructures were not built with climate resilience in mind and are susceptible to flood damage, landslides and extreme temperatures. Additionally, high upfront costs for resilient technologies and a heavy dependence on external financing constraints progress. Weak integration of climate risk into planning, combined with limited climate data and early warning systems, further reduces the sector's capacity to adapt. Off-grid systems, while expanding energy access, often lack protection from extreme weather and suffer from inadequate maintenance, undermining their reliability in the face of climate threats.</p>
Urbanization & human settlements	<p>Rwanda's urbanization level is targeted to increase from 27.9 percent of the total population in 2022 to 52.7 percent in 2035; by 2050 it is</p>

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	<p>targeted to reach approximately 70 percent (MININFRA, National Urbanization Policy , 2025)²². Urban growth is accelerating, particularly in Kigali, which comprises 41% of the national urban population (NISR, Rwanda Statistical Yearbook. , 2020) However, 61.3% of urban residents live in informal settlements, highlighting a significant housing gap (Rwanda Urbanization Policy, 2022)²³. Rwanda faces significant vulnerabilities to weather and climate shocks, making adaptation and climate resilience crucial for sustainable urban development. Urban areas, particularly the growing population, are at risk of floods, landslides, and extreme temperatures. The urban poor, residing in informal settlements lacking adequate measures, are especially vulnerable. Resilient infrastructure is vital, but financial limitations pose a challenge. (National Urbanization Policy,2025)</p> <p>Furthermore, Population growth coupled with urban expansion threatens the country's ecosystems and biodiversity and increases vulnerability to flood risks, land degradation, and climate-related events. Effective urban planning and resilient infrastructure are critical to mitigate these risks and ensure sustainable urbanization.</p> <p>Most affected areas:</p> <ul style="list-style-type: none"> • Kigali: Faces risks of flooding due to unplanned urban sprawl, especially in areas like the Nyabugogo commercial district. It also experiences challenges related to limited infrastructure, green spaces, and a decline in natural drainage systems. • Secondary Cities: Huye, Muhanga, Musanze, Nyagatare, Rubavu, Rusizi, Kirehe, Kayonza, and Karongi revised their master plans to address rapid urban growth and infrastructure pressures. • Cities in western province of Rubavu, Rusizi faces landslides and flooding while in eastern province faces drought. • Informal Settlements: Unplanned settlements, often inhabited by low-income households in flood-prone areas, are particularly vulnerable. • Eastern Province: Experiences water shortages and is sensitive to temperature increases. • Northern and Western Provinces: Prone to flooding and landslides, affecting infrastructure.

²² National Urbanization Policy (2025). Urban Development Framework.

²³ World Bank (2021). Rwanda Economic Update

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
<p>Mining and Industry</p>	<ul style="list-style-type: none"> • Karongi: 23.1% of infrastructures in Karongi are affected by environmental destruction, 6.5% affected by flooding events; 36.2% affected by mountain slides or landslide; 47.3% destructive rains, and 10% affected by other environmental problems not specified. <p>The mining sector significantly contributes to Rwanda's economy, over the past three years, it has generated export earnings of \$ 772 million (2022), \$1.1 billion (2023), \$1.75 billion (2024) Rwanda Mining sector provides income and employment to approximately 77,000 people (NISR, Labour Force Survey , 2024)²⁴ However, it faces climate-related challenges, including flooding, landslides, and water scarcity, which can disrupt operations and degrade local environments (Rwanda Mines, Petroleum and Gas Board, 2023). Implementing sustainable mining practices is essential to mitigate these impacts, improve water efficiency, and rehabilitate affected landscapes.</p> <p>Climate change hazards affecting Mining & Industrial sites</p> <ul style="list-style-type: none"> • Flooding: Heavy rainfall and flooding can inundate mining sites, disrupt operations, and spread pollutants. • Landslides: Can destabilize mining areas and industrial facilities, cause structural damage and hinder access. • Extreme Weather Events: Increased frequency of extreme storms can lead to property damage and infrastructure destruction. • Water Scarcity: Longer dry periods can limit water availability for mining and industrial processes. • Temperature Increases: Rising temperatures can affect worker health and the efficiency of industrial processes. <p>Most affected areas</p> <ul style="list-style-type: none"> • Northern Province: Experiences heavy rainfall and flooding, which can impact mining operations. • Eastern Province: Prone to droughts, leading to scarcity water challenges for mining and industry. • Ngororero: Environmental impacts caused by mining activities. • Mining areas: Water resources are often degraded in mining areas, affecting local communities. • Southern province: Muhanga, Kamonyi and Ruhango.

²⁴NISR, Labour Force Survey 2024

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
<p>Special Women</p> <p>Group:</p>	<p>Women in Rwanda face heightened vulnerability to climate risks due to their strong dependence on climate-sensitive livelihoods, particularly rain-fed agriculture, combined with structural inequalities in access to resources and decision-making. As primary food producers and household managers, women are disproportionately affected by climate hazards such as droughts, floods, soil erosion and pests and diseases, which reduce crop yields and increase food insecurity. Limited access to land ownership, credit, agricultural inputs, climate information and extension services further constrains their adaptive capacity.</p> <p>In addition, climate-related shocks often increase women’s unpaid care and domestic workload such as fetching water and firewood, especially during periods of resource scarcity. Disasters like floods and landslides can also expose women to higher risks of displacement, loss of livelihoods and gender-based violence. Despite these challenges, women play a critical role in building household and community resilience, making their inclusion in climate adaptation planning and decision-making essential for effective and equitable responses.</p>
<p>Special Youth</p> <p>Group:</p>	<p>Youth in Rwanda face significant climate-related vulnerabilities, largely due to high dependence on climate-sensitive sectors such as agriculture, limited access to productive resources and constrained employment opportunities. Climate hazards including droughts, floods, soil erosion, and pests and diseases disrupt agricultural productivity and rural livelihoods, where a large share of youth are engaged, thereby increasing unemployment and underemployment.</p> <p>In addition, many young people have limited access to land, finance, skills training and climate information, which restricts their ability to adopt adaptive practices or diversify income sources. Climate shocks can also disrupt education and skills development, particularly when households face economic stress or displacement due to disasters. As a result, youth may be compelled to migrate often to urban areas where they face additional socio-economic challenges.</p> <p>Despite these vulnerabilities, youth represent a key opportunity for climate resilience and innovation, given their potential to adopt new technologies, engage in green entrepreneurship and support climate-smart solutions. Strengthening their access to resources, skills and</p>

Sector, Geography & Group	Description of Key Climate Risk or Vulnerability
	participation in decision-making is critical to enhancing adaptive capacity and long-term resilience.

6. Adaptation Actions

6.1. Adaptation actions based on Hazard Specific Early Warning Systems /Monitoring Systems and Response Plans

Climate Hazard	Hazard-specific Programming (Early Warning / Monitoring / Response)
Flood	<ul style="list-style-type: none"> <input type="checkbox"/> Flood Early Warning Systems <ul style="list-style-type: none"> • Development of operational flood early warning systems in high-risk catchments such as the Sebeya River Basin. • Installation of river level monitoring stations and sensors that transmit real-time data to central systems for early alerts. • Deployment of radar-based monitoring systems in flood-prone areas to improve forecasting and warning accuracy. • Establishment of flood hotspot monitoring platforms for reporting, mapping, and managing flood and erosion risks. <input type="checkbox"/> Multi-Hazard Early Warning Systems (MHEWS) <ul style="list-style-type: none"> • Development of integrated national early warning platforms capable of monitoring multiple hazards (floods, landslides, droughts, storms). • Strengthening meteorological observation networks and forecasting systems through METEO RWANDA. • Use of Doppler radar and precipitation forecasting models to support early warnings for hydro-meteorological hazards. <input type="checkbox"/> Climate and Weather Forecasting Systems <ul style="list-style-type: none"> • Establishment of climate early warning and forecasting systems to provide seasonal and short-term forecasts for farmers and communities. • Application of digital technologies (e.g., IoT solutions) for real-time climate data collection, analysis, and dissemination.

6.2. Adaptation actions based on Hazard Specific Early Warning Approaches

Climate Hazard	Risk Management Approach (Type + Targeted Actions)
Drought	<ul style="list-style-type: none"> <input type="checkbox"/> Drought Risk Management <ul style="list-style-type: none"> • Expansion of irrigation infrastructure, including small-scale and hillside irrigation schemes. • Promotion of drought-tolerant and early-maturing crop varieties. • Rainwater harvesting systems for agriculture and domestic use. • Development of water storage infrastructure and efficient water use technologies
Floods	<ul style="list-style-type: none"> <input type="checkbox"/> Flood Risk Management <ul style="list-style-type: none"> • Construction of flood control infrastructure (dikes, drainage systems, retention basins) in high-risk zones. • Restoration of wetlands to enhance natural flood buffering capacity. Examples: Nyandungu Eco- Park and 5 Kigali Wetlands • Floodplain zoning and relocation of households from high-risk areas. • Promotion of climate-resilient urban planning and stormwater management systems.
Landslides & Soil erosion	<ul style="list-style-type: none"> <input type="checkbox"/> Landslide Risk Management & Soil Erosion Control <ul style="list-style-type: none"> • Terracing (radical and progressive terraces) on steep slopes to stabilize soils. • Afforestation and reforestation programs to reduce slope instability. • Enforcement of land-use planning regulations to prevent settlement in high-risk zones. • Slope stabilization measures, including drainage control and vegetative cover. • Nationwide implementation of soil and water conservation measures (terraces, contour bunds, agroforestry). • Promotion of conservation agriculture practices (mulching, crop rotation, cover crops).

Climate Hazard	Risk Management Approach (Type + Targeted Actions)
<p>Pests and diseases</p> <p>Hailstorm</p> <p>Lightning strikes</p>	<ul style="list-style-type: none"> • Integrated watershed management approaches to reduce runoff and sediment loss. • Community-based land husbandry programs <p><input type="checkbox"/> Agricultural Pests and Diseases Management</p> <ul style="list-style-type: none"> • Strengthening pest surveillance and control systems. • Promotion of integrated pest management (IPM) practices. • Distribution of resistant crop varieties and improved seeds. • Farmer training and extension services on pest and disease control. <p><input type="checkbox"/> Hailstorm Risk Management</p> <ul style="list-style-type: none"> • Promotion of protective infrastructure such as greenhouses and netting for high-value crops. • Crop insurance schemes to compensate farmers for losses. • Diversification of crops to reduce risk exposure. <p><input type="checkbox"/> Lightning Risk Management</p> <ul style="list-style-type: none"> • Installation of lightning protection systems (lightning rods) in schools, health centres and public buildings. • Public awareness campaigns on lightning safety measures. • Enforcement of building standards that include lightning protection.
<p>Storms & Strong Winds</p>	<p><input type="checkbox"/> Storms and strong winds management</p> <ul style="list-style-type: none"> • Promotion of wind-resistant building designs and construction standards. • Agroforestry and windbreaks to protect crops and soils. • Strengthening infrastructure resilience (e.g., roofs, power lines).
<p>Storms & Strong Winds</p>	<p>At the central level, the Ministry in charge of Emergency Management (MINEMA) leads overall disaster risk management and coordinates preparedness, response, and recovery across multiple hazards. The</p>

Climate Hazard	Risk Management Approach (Type + Targeted Actions)
	<p>Rwanda Meteorology Agency (Meteo Rwanda) is responsible for providing weather and climate forecasts, as well as early warning information, while the Rwanda Water Resources Board (RWB) monitors hydrological systems, including rivers, lakes, floods, and erosion processes. The Rwanda Environment Management Authority (REMA) ensures the integration of climate change adaptation into national policies, strategies, and planning frameworks.</p> <p>These institutions work in close collaboration through inter-agency coordination mechanisms, including technical working groups and information-sharing platforms, to ensure a coherent and effective multi-hazard risk management approach. At the decentralized level, multi-hazard risks are coordinated through District Disaster Management Committees, which are responsible for planning, preparedness, and response across all hazards within their jurisdictions. At the community level, local leaders, community disaster response teams, and volunteers play a key role in risk monitoring, early warning dissemination, and first response actions. This decentralized system enables a strong link between national institutions and communities, enhancing preparedness, responsiveness, and overall resilience to multiple hazards.</p>

6.2. Adaptation actions based on benefits and resilience-building by Sector/GGA System

(i) Agriculture

Climate Hazards	Adaptation Actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Drought	Develop Climate-resilient crops for agri-food systems	Stabilize yields, reduce food insecurity, support nutrition and smallholder incomes.	Focus on drought prone Eastern lowlands and Amayaga region.	Sustainable Food and Nutrition Security for all
	Expand area under irrigation and improve water management	Secure water for crops, reduce production losses, increase resilience and productivity	Priority agricultural zones prone to drought (Eastern lowlands and Amayaga region)	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Sustainable Food and Nutrition Security for all
Floods, Soil erosion and landslides	Develop sustainable land management practices (climate-smart agriculture: Soil & water conservation, terracing, mulching, conservation agriculture, agroforestry and Use of organic fertilizer	Reduce erosion, increase soil moisture retention, improve long term yields, sequester soil carbon.	Highlands with steep slopes (Northern & Western provinces) and other erosion-prone agricultural lands	<ul style="list-style-type: none"> • Sustainable Food and Nutrition Security for all • Healthy Ecosystems and Biodiversity
	Upgrade post-harvest storage facilities to reduce losses and	Reduce losses, stabilize food supply, improve incomes and	National wide in key production regions and market centers	<ul style="list-style-type: none"> • Sustainable Food and Nutrition Security for al.

Climate Hazards	Adaptation Actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
	<p>increase capacity and introduce -agro-processing hubs (solar dryers, Hermetic bags, cold chains, etc-...),</p> <p>Improved infrastructure: Collection centers, feeder roads, electrification, mobile drier</p>	nutrition, and provide clean energy co-benefits		<ul style="list-style-type: none"> • Poverty Reduction and Livelihoods and climate-social protection.
<p>Drought, floods, storms, pests and diseases</p>	<p>Strengthen agriculture de-risking for resilience (crop and livestock insurance)</p> <p>Promote drought-tolerant forage species (e.g: Brachiaria, Napier, Desmodium)</p>	<p>Financial resilience, quicker recovery, reduced poverty impacts and improved food security.</p> <p>Secure fodder for livestock, improved livestock health, improved productivity,</p>	<p>Nationwide with priority for most vulnerable agricultural districts.</p> <p>Focus on drought prone in Eastern province and Amayaga region of southern province,</p>	<ul style="list-style-type: none"> • Poverty Reduction and Livelihoods and climate-social protection measures • Sustainable Food and Nutrition Security for all

Climate Hazards	Adaptation Actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Pests and diseases	Develop water harvesting and small-scale irrigation systems	Secure water and fodder for livestock, improved livestock health, improved productivity,	Nationwide with priority for most vulnerable livestock districts.	Sustainable Food and Nutrition Security for all
	Introduce heat- and drought-tolerant breeds (e.g: cross breeds)	Improved livestock health		
	Sustainable animal breeding			
	Strengthen vaccination and disease surveillance systems			
	Support mobile veterinary services and early warning mechanisms			

(ii) Water Resources

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Soil erosion, landslides, drought	Integrated Water Resources management- Catchment restoration, terracing and agroforestry	Reduce runoff and downstream floods; stabilize slopes (reduce landslide risk); increase infiltration and dry season baseflows; improve soil fertility and agricultural resilience.	Highland catchments (Northern & Western provinces), upland watershed areas nationally where erosion is severe.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Healthy Ecosystems and Biodiversity

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Drought	Water storage expansion and irrigation	Increased water security, stabilized crop yields, reduced vulnerability to rainfall deficits, supports livelihoods and food security.	Eastern and south-eastern lowlands (Nyagatare, Kayonza, Kirehe, Bugesera).	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all. • Sustainable Food and Nutrition Security for all
Floods and drought	Improve water monitoring and ambient water quality coverage	Better data for decisions, timely management of supply and quality, supports IWRM & early warning for water hazards.	Lakes, rivers and key water bodies nationwide	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Impact, vulnerability & early warning systems.
Floods	Urban stormwater drainage / stormwater management (sponge-city measures)	Reduce flood risk, protect infrastructure and build urban resilience.	Kigali and other rapidly urbanizing cities / informal settlements, low lying urban corridors.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all. • Climate-resilient infrastructure & settlements.
Soil erosion, landslides, drought	Integrated Water Resources management- Catchment restoration, terracing and agroforestry	Reduce runoff and downstream floods; stabilize slopes (reduce landslide risk); increase infiltration and dry season baseflows; improve soil fertility and agricultural resilience.	Highland catchments (Northern & Western provinces), upland watershed areas nationally where erosion is severe.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Healthy Ecosystems and Biodiversity

(iii) Water Supply and Sanitation

Climate Hazards	Adaptation Actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Floods, landslides and drought	Universal climate resilient water supply and sanitation systems/services	Universal access to safe water, reduced disease risk, continuity of services during hazards, and resilience of sanitation systems.	All villages and high-risk urban sewerage systems; priority retrofits for treatment plants in high-risk zones.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Climate-Resilient Health Systems and Services
	Building climate resilient water and sanitation Infrastructure	Universal access to safe water, reduced disease risk, continuity of services during hazards, and resilience of sanitation systems.	Priority in protection of assets: intake structures, pumping stations and conveyance pipes.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Climate-Resilient Health Systems and Services
Floods, Soil erosion and landslides	Building climate resilient water and sanitation Infrastructure	Universal access to safe water, reduced disease risk, continuity of services during hazards, and resilience of sanitation systems.	Priority in protection of assets: intake structures, pumping stations and conveyance pipes.	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all • Climate-Resilient Health Systems and Services
Floods	Fecal sludge treatment plants (FSTP) & wastewater treatment & reuse	Reduce health risks, provide nutrient resources for agriculture, and build sanitation resilience.	Urban areas, peri urban, priority towns and cities i.e.Kigali	<ul style="list-style-type: none"> • Climate-Resilient Water Security for all

Climate Hazards	Adaptation Actions	Intended benefits	Potential Areas	Implementation	GGA Target alignment
					<ul style="list-style-type: none"> • Healthy Ecosystems and Biodiversity

(iv) Land administration, forestry & ecosystems

Climate Hazards	Adaptation Actions	Intended benefits	Potential Areas	Implementation	GGA Target alignment
Floods, landslides, erosion, and Drought	Hazard informed land use planning, physical plans and national spatial data infrastructure (NSDI),	Reduce exposure of settlements, guide relocation/avoidance, integrate risk into development, protect ecosystems.	All districts (national rollout) with priority hazard zones and urban expansion areas		<ul style="list-style-type: none"> • Resilient Infrastructure and Human Settlements for all • Climate-Resilient Water Security for all • Healthy Ecosystems and Biodiversity
Drought	Progressively and gradually, implement agriculture in shrublands and wooden savannah areas, to monitor the impacts towards food security, and sustainable land use	Increase food security	Eastern province		Sustainable food and nutrition security for all

Climate Hazards	Adaptation Actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Floods and Landslides	Strategic spatial planning tools and intelligent information systems established to strengthen compliance monitoring and support the effective implementation of land use plans	Reduce exposure of settlements, guide relocation/avoidance, integrate risk into development, protect ecosystems.	National wide	<ul style="list-style-type: none"> Resilient Infrastructure and Human Settlements for all Climate-Resilient Water Security for all Healthy Ecosystems and Biodiversity
Landslides and Floods	Register and update land administration information for forestry, water bodies and other Natural environmental areas	Protect ecosystems	National wide	Healthy Ecosystems and Biodiversity
Drought, and erosion	Promote agroforestry	Enhanced soil protection, diversified farm incomes, improved microclimates and resilience.	Agricultural landscapes across Rwanda, prioritizing erosion prone and low productivity areas.	<ul style="list-style-type: none"> Sustainable Food and Nutrition Security for all Healthy Ecosystems and Biodiversity.

(v) Urbanization & human settlements

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Floods, landslides & Temperature increase	Risk informed urban plans; informal settlement upgrading & climate resilient- housing	Flood attenuation, heat reduction, recreation, biodiversity benefits.	Kigali (high priority), secondary cities, informal settlements nationwide.	Climate resilient infrastructure & settlements
	Urban green & blue infrastructure (parks, retention ponds)	Flood attenuation, heat reduction, recreation, biodiversity benefits.	Urban centers (Kigali & secondary cities).	<ul style="list-style-type: none"> • Climate-resilient infrastructure & settlements • Healthy Ecosystems and Biodiversity

(vi) Health Systems

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Temperature increase and floods	Climate -sensitive disease Early Warning Systems and health system strengthening (Meteo- health links, digital records)	Reduced disease incidence (target: halve malaria rate to 41.4/1000 by 2030), faster outbreak response, better continuity of health services.	District health systems nationwide; high-risk districts.	Climate resilient health systems & services

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Floods, temperature increase and storms	Climate proof health infrastructure & digital surveillance / EMR expansion	Reduced service disruption, better case detection and response, improved maternal and child outcomes.	National wide with priority to high risk clinics and hospitals.	Climate-Resilient Health Systems and Services
Floods, landslides, droughts, temperature increase and storms	Emergency preparedness and climate-health response capacity (EWS for extreme weather events; trained disaster response teams)	reduced mortality during climate emergencies, faster medical team deployment, improved community preparedness and health-seeking behaviour, and maintained essential services during disasters.	Western Province (floods/landslides); Eastern Province (droughts); district emergency response teams nationwide	Climate-resilient health systems & services
Floods, landslides temperature increase and storms	Climate-resilient medical supply chains and cold chain systems (Solar-powered vaccine storage; climate-proofed supply chains; electronic stock tracking; mobile clinic units)	Uninterrupted vaccine and medicine availability during emergencies, reduced vaccine spoilage, improved immunization coverage, enhanced supply chain resilience in remote areas, mobile clinics for climate-vulnerable populations.	Off-grid and disaster-prone facilities in Western and Southern Provinces; flood and landslide-prone districts; national health facility network.	Climate-resilient health systems & services
All climate-sensitive diseases; emerging climate-health	Climate-health research, monitoring and knowledge systems (National climate-health research institute; AI-driven predictive	Improved predictive capacity for disease outbreaks using AI and meteorological data, enhanced surveillance through EWS expansion to all districts, better-informed	National-level coordination; district-level implementation; integration with meteorological services, HMIS, and cross-sector alert systems.	<ul style="list-style-type: none"> • Climate-resilient health systems & services; • Water-related climate impacts

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
threats; cross-cutting monitoring needs	systems; climate-health knowledge platform; HMIS integration; scenario exercises)	policy decisions, national knowledge-sharing platform, regular consultation workshops		

(vii) Transport & infrastructure

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
Landslides, floods, and heavy rainfall	Climate proofing primary road corridors (slope stabilization, raised embankments, drainage)	Reduce road vulnerability (target: reduce vulnerable road length from 67,683 km to 384 km by 2030), ensure continuity of services and commerce during shocks	Primary corridors in highlands and hazard prone districts (national network focus).	Climate resilient- infrastructure & settlements
Floods and temperature increase	Modal shift & public transport resilience (BRT, NMT, resilient corridors)	Maintain mobility in crises, reduce exposure to hazardous travel conditions, co-benefits for emissions reduction and health.	Urban corridors (Kigali and secondary cities); main transit axes	<ul style="list-style-type: none"> • Climate resilient- infrastructure & settlements • Climate-Resilient Water Security for all

(viii) Mining and Industry

Climate Hazards	Adaptation actions	Intended benefits	Potential Implementation Areas	GGA Target alignment
<p>Floods, landslides, drought and erosion.</p>	<p>Enforce sustainable Climate compatible mining practices (enhance runoff control, slope stabilization, tailings/waste containment, and site rehabilitation)</p>	<p>Reduce environmental contamination during extremes, improve water efficiency, and rehabilitate landscapes (reforestation) to improve slope stability</p>	<p>Mining areas nationwide (including abandoned sites).</p>	<ul style="list-style-type: none"> • Climate resilient infrastructure & settlements • Healthy Ecosystems and Biodiversity
	<p>Building climate resilient industrial sites considering the industrial sector is a growing economic sector</p>	<p>Protection of industrial sites from climate change risks and potential L&D while improving efficiency, and long-term growth potential</p>	<p>Industrial sites (nationwide)</p>	<p>Climate resilient infrastructure & settlements;</p>

7. Policy and institutional structures

7.1. Institutional Arrangement

Rwanda's NAP is implemented through a coordinated and multi-level institutional framework that ensures integration of climate change adaptation across sectors and governance levels. At the national level, the Ministry of Environment (MoE) provides policy direction and strategic leadership for Environment and climate change adaptation and mitigation, ensuring alignment with national development priorities such as Vision 2050, Green Growth and Climate Resilience Strategy (GGCRS), National Determined Contribution (NDC, National Strategy for Transformation (NST1/NST2), Environment and Climate Change policy and other sectoral Policies and strategies.

Rwanda Environment Management Authority (REMA) under the Ministry of Environment serves as the lead institution responsible for overall coordination, technical oversight and monitoring of NAP implementation. REMA works closely with key sector ministries and local government to mainstream environment and climate adaptation and mitigation into sectoral policies and plans.

Other critical institutions include:

- Meteo Rwanda, responsible for climate data, weather and seasonal forecasting and early warning systems;
- Rwanda Water Resources Board (RWB) overseeing water resource monitoring and management;
- Ministry in charge of Emergency Management (MINEMA), coordinating disaster risk management and emergency response.

At the decentralized level, Districts are responsible for integrating National Adaptation Plan (NAP) priorities into District Development Strategies (DDS) and for implementing adaptation actions on the ground. This process is supported by the Joint Action Development Forum (JADF), a multi-stakeholder platform that coordinates development partners, civil society organizations and the private sector at the district level. In addition, local community structures play a key role in ensuring effective implementation, participation and monitoring of adaptation interventions, thereby strengthening resilience at grassroots level. Figure 1 summarize the institutional arrangement of NAP in Rwanda.

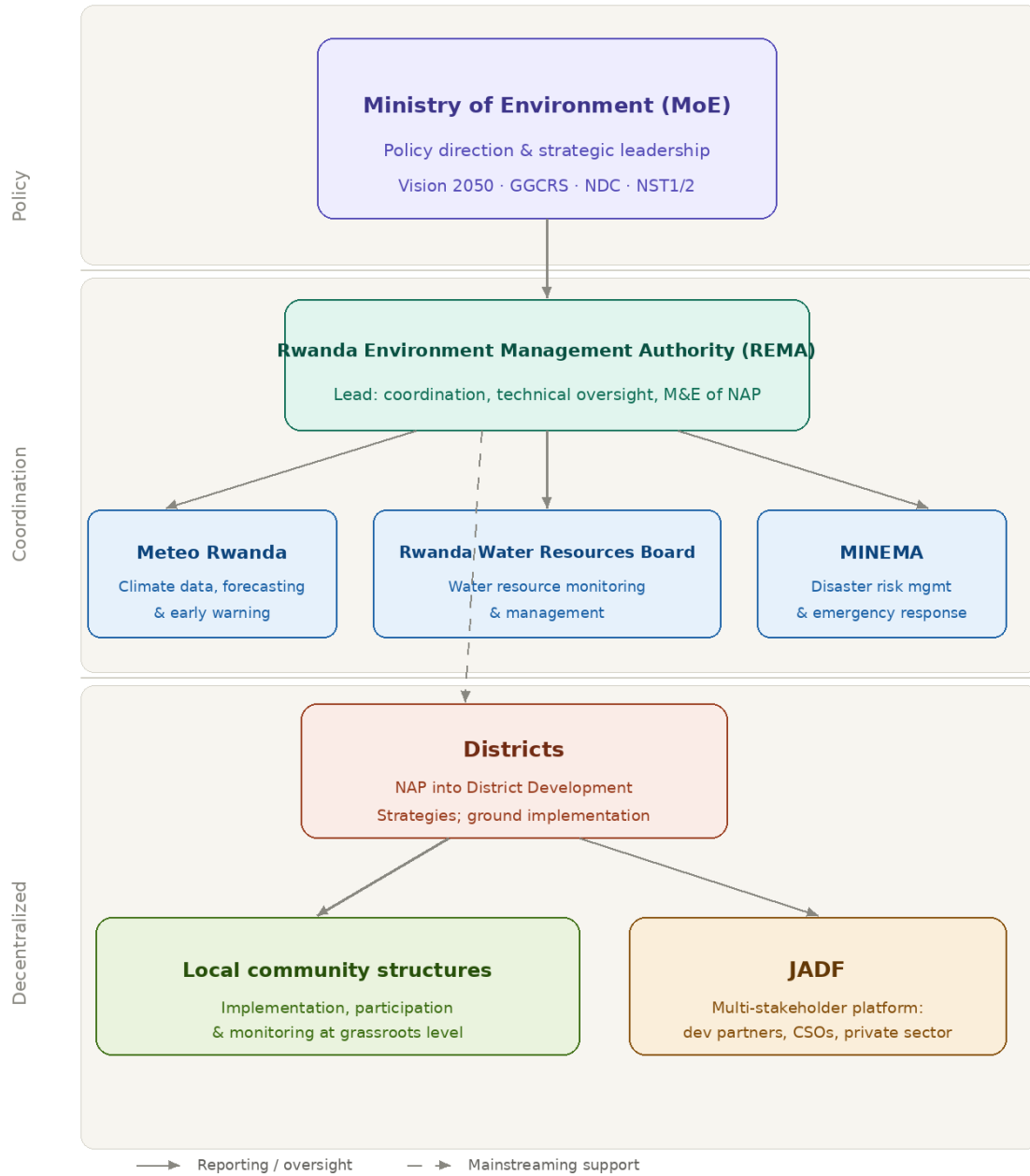


Figure 1: National Adaptation Plan (NAP) Institutional Arrangement

7.2. Implementation Strategy

Rwanda's National Adaptation Plan (NAP) is anchored in a comprehensive and well-aligned policy and planning framework that integrates environment and climate change adaptation and mitigation into national development processes. These existing policies, strategies and sector plans provide the legal, institutional foundation for NAP implementation by guiding priority setting, resource allocation and coordination across sectors and governance levels. Together, they ensure that adaptation actions are not implemented in isolation but are embedded within Rwanda's broader vision for sustainable development.

Key policies, plans and strategies supporting NAP implementation in Rwanda include:

Vision 2050

It provides the long-term development trajectory for Rwanda, emphasizing climate resilience, sustainable natural resource management and green growth. It guides NAP implementation by ensuring that adaptation contributes to long-term socio-economic transformation

Green Growth and Climate Resilience Strategy (GGCRS)

The Rwanda Green Growth and Climate Resilience Strategy (GGCRS) adopted by Rwanda in 2011 and updated in 2023 aims to transition the country to a developed, low-carbon and climate-resilient economy by 2050. It focuses on four key pillars: green industrialization and trade, green urban transition, sustainable land use and natural resource management and vibrant resilient green rural livelihoods. It serves as the primary framework for climate-resilient and low-carbon development. It identifies sector-specific adaptation priorities and investment pathways directly informing the design and implementation of NAP interventions.

Nationally Determined Contribution (NDC)

Rwanda NDC 3.0 outlines the Country's international climate commitments, including adaptation targets and actions in key sectors such as agriculture, water resources, land administration and forestry, urbanization and human settlements, water, sanitation and hygiene (WASH), health, transport, mining and cross-sectoral activities. It supports NAP by aligning national adaptation efforts with global obligations and financing opportunities (RoR, 2025).

National Strategy for Transformation (NST2)

It operationalizes Vision 2050 through medium-term planning. It integrates climate change adaptation across priority sectors and provides measurable targets and investment priorities that support NAP actions.

Environment and Climate Change Policy

The revised Environment and Climate Change Policy (2019) provides overarching policy guidance for environmental management and climate action. It promotes mainstreaming of adaptation across sectors and supports ecosystem-based and community-based adaptation approaches under the NAP.

Strategic Plan for Agriculture Transformation (2024–2029)

Rwanda is currently implementing the Fifth Strategic Plan for Agriculture Transformation (PSTA 5, 2024–2029), launched in December 2024. The strategy emphasizes climate-smart agriculture, sustainable land management and the strengthening of resilient farming systems. It plays a critical role in supporting the implementation of the NAP by systematically integrating climate adaptation measures into agricultural policies, programs and investments, thereby enhancing the resilience of the agriculture sector to climate variability and change.

Water Resources Management Policy and Strategy

The current Rwanda Water Resources Management Policy updated 2023 focuses on Integrated Water Resources Management (IWRM) to ensure sustainable, equitable and efficient water use. It guides sustainable and climate-resilient water resource management and it supports NAP implementation by addressing water-related vulnerabilities and strengthening resilience to droughts and floods.

National Disaster Risk Reduction and Management Policy (2023)

Rwanda National Disaster Risk Reduction and Management Policy focuses on enhancing resilience, aligned with the Sendai Framework 2015-2030. It shifts focus toward proactive risk management, anticipatory action and strengthening institutional capacities to mitigate hazards like floods, landslides and droughts driven by climate change. It supports the

complementation of Rwanda NAP by addressing climate-induced hazards and strengthening early warning and emergency response systems.

National Land Use and Development Master Plan (2020-2050)

The National Land Use and Development Master Plan (NLUDMP 2020-2050) for Rwanda is a strategic spatial framework designed to guide land use, sustainable development and urbanization through 2050. Integrates climate considerations into spatial planning and land management and supports NAP by reducing exposure to climate risks and promoting resilient settlement and infrastructure development.

District Development Strategies (DDS)

The District Development Strategies (DDS) for 2024–2029 focus on economic transformation, social improvement and good governance, aligned with NST2 and Vision 2050. These strategies emphasize agricultural modernization, infrastructure, urbanization and citizen-centric services. They translate national policies into local action plans, ensuring that NAP priorities are implemented at the district level through context-specific interventions, budgeting and community engagement.

Other sectoral Policies and Strategies (e.g., energy, health, infrastructure). These mainstream climate adaptation within their respective sectors, ensuring that NAP implementation is coordinated, cross-sectoral, and aligned with national development objectives. Together, these frameworks create a coherent and enabling environment for the effective implementation of Rwanda's NAP, ensuring that adaptation is systematically integrated into planning, investment and development processes at all levels.

7.3. Special projects

Provide summary information on ongoing projects and new concrete adaptation action projects ideas to reduce risk or achieve resilience benefits by sector, GGA theme, showing scale, target beneficiaries, time horizon, etc. These projects may cover the adaptation cycle, Risk and hazard assessment, hazard specific early warning systems /monitoring systems, Climate information services, continuing assessments, Capacity building activities such as readiness activities, technical assistance needs, development and deployment of MEL systems, etc. Arrange project Ideas according to the essential projects based on GGA dimensional targets. Use the link below to input information on some ongoing project/ new projects proposals.

Project / intervention title	Enhance National Water Security through water storage and efficient water use
Sector(s) (based on GGA targets)	Water, Food and Agriculture, Ecosystem and Biodiversity, Human Settlements and Infrastructure and Disaster risk reduction
Context	This intervention will reduce run-off and floods risks and help regulate water flows including dry-season flows. It will increase water storage to enhance water security, as well as improved efficiency of water use.
Overall objective(s)	<ul style="list-style-type: none"> • Improve resilience to climate change by increasing the availability of stored water during dry periods and reducing dependence on rainfall-fed systems. • Enhance reliability and equitable access to water resources for domestic use, agriculture, livestock, and industry, even under changing climate conditions. • Reduce water losses and inefficiencies through improved water management systems, infrastructure rehabilitation and adoption of water-saving technologies. • Strengthen adaptive capacity of agriculture and livelihoods by ensuring sufficient water for irrigation, thereby stabilizing food production under climate stress. • Mitigate climate-induced water scarcity risks by promoting diversified water sources such as rainwater harvesting, groundwater recharge and multipurpose reservoirs. • Protect ecosystems and downstream water flows by ensuring sustainable abstraction and maintaining environmental flow requirements during periods of water stress. • Support climate-resilient planning and decision-making through improved water monitoring, forecasting, and integrated water resources management systems.
Activities	Construction of artificial water storage
Timeline	2025-2035
Outcomes	Sustainable expansion of irrigation, support agricultural production and food security from the impacts of rainfall variability.

Indicators	<ul style="list-style-type: none"> • Water storage per capita (m³/ capita) • Artificial water storage per capita (m³/capita)
Estimated costs	USD 1.5 Billion
Source and instrument of funding	To be determined later
Implementing agency	(RWB, RAB, Private sector)
Responsible ministry	MoE, MINAGRI

Project / intervention title	Build flood protection and improve water drainage systems around homes in risk areas
Sector(s) (based on GGA targets)	Human Settlements and Infrastructure, Disaster Risk Reduction, Water, Health, Ecosystems and Biodiversity
Context	This intervention will reduce run-off and floods risks and help regulate water flows including dry-season flows.
Overall objective(s)	Improve water drainage systems
Activities	Build flood protection and improve water drainage systems
Timeline	2025-2035
Outcomes	Protect households from flood-related hazards
Indicators	% of households in high-risk areas protected from flood-related hazards)
Estimated costs	USD 2.2 million
Source and instrument of funding	To be determined later
Implementing agency	(RWB, Private sector, Districts)
Responsible ministry	MININFRA

Project / intervention title	Implement catchment restoration (hillside terracing and agroforestry in erosion-prone areas) to reduce runoff, stabilize soil, and restore degraded land
Sector(s) (based on GGA targets)	Ecosystems and Biodiversity, Food and Agriculture, Water, Disaster Risk Reduction, Human Settlements and Infrastructure

Context	This intervention will reduce runoff, stabilize soil and restore degraded land.
Overall objective(s)	<ul style="list-style-type: none"> • Reduce surface runoff and soil erosion, thereby minimizing risks of landslides and downstream flooding • Stabilize soils and restore degraded land, improving land productivity and long-term sustainability • Enhance water infiltration and groundwater recharge, supporting water availability during dry periods • Promote climate-resilient agricultural systems through agroforestry and sustainable land management practices • Strengthen ecosystem services that support livelihoods, biodiversity and environmental stability
Activities	Establish hillside terraces, and Plant agroforestry in erosion-prone areas
Timeline	2025-2035
Outcomes	Soil erosion restoration
Indicators	Area of land at high risk of soil erosion restored (Ha)
Estimated costs	USD 700 million
Source and instrument of funding	To be determined later
Implementing agency	RWB, REMA and RAB
Responsible ministry	MoE & MINAGRI

Project / intervention title	Restore degraded critical ecosystems (wetlands, lakeshores, riverbanks and natural forests)
Sector(s) (based on GGA targets)	Ecosystems and Biodiversity, Water, Disaster Risk Reduction, Food Systems and Human Settlements and Infrastructure
Context	This intervention will restore degraded critical ecosystems (wetlands, lakeshores, riverbanks and natural forests)
Overall objective(s)	Strengthen the resilience of ecosystems and communities to climate change

Activities	Restore and manage degraded critical ecosystems and riparian areas
Timeline	2025-2035
Outcomes	Restoration and management of degraded critical ecosystems and riparian areas
Indicators	Area of degraded critical ecosystems and riparian areas restored and managed (Ha)
Estimated costs	USD 107 million
Source and instrument of funding	To be determined later
Implementing agency	RWB, RFA and REMA
Responsible ministry	MoE

Project / intervention title	Climate resilient crops for agri-food systems
Sector(s) (based on GGA targets)	Food Systems
Context	This intervention aims to stabilize agri-food systems against climate shocks.
Overall objective(s)	Strengthen the resilience of agri-food systems to climate change.
Activities	Develop climate-resilient crops
Timeline	2025-2035
Outcomes	Increased resilience of agriculture through the development of climate-tolerant crops
Indicators	<ul style="list-style-type: none"> • % of farmers using improved seeds • % of farmers using climate resilient seed varieties
Estimated costs	USD 100 million
Source and instrument of funding	To be determined later
Implementing agency	RAB, NAEB
Responsible ministry	MINAGRI

Project / intervention title	Upgrade postharvest storage facilities to increase capacity and reduce losses
Sector(s) (based on GGA targets)	Food and Agriculture, Infrastructure; Poverty Eradication and Livelihoods
Context	This intervention aims to improved storage systems strengthen food security, reduce post-harvest losses, and improve resilience of agricultural value chains to climate impacts
Overall objective(s)	Build resilient agricultural infrastructure that supports climate adaptation and continuity of supply systems
Activities	<ul style="list-style-type: none"> • Construct climate-resilient storage facilities. • Install modern cold storage and refrigerated facilities for perishable products • Improve drying facilities and post-harvest handling equipment.
Timeline	2025-2035
Outcomes	Upgraded post-harvest storage facilities to increase capacity and reduce losses
Indicators	<ul style="list-style-type: none"> • National storage capacity of food crops • % of postharvest losses on food crops
Estimated costs	USD 775.4 million
Source and instrument of funding	To be determined later
Implementing agency	RAB, NAEB, Private Sector, Civil Society
Responsible ministry	MINAGRI

Project / intervention title	Develop sustainable land management practices (climate-smart agriculture)
Sector(s) (based on GGA targets)	Food and Agriculture, Ecosystems and Biodiversity, Water, Poverty eradication and Livelihoods and Infrastructure
Context	This intervention aims to support resilient agricultural production, food security, sustainable farming systems and adaptation of crops and livestock to climate change.

Overall objective(s)	To enhance the resilience of agricultural systems and rural livelihoods to climate change by promoting sustainable and climate-smart farming practices that improve soil health, conserve water, reduce land degradation, increase productivity, and strengthen food security.
Activities	<ul style="list-style-type: none"> • Promote agroforestry and farmer-managed natural regeneration practices. • Implement soil and water conservation measures such as terracing, contour bunds, and mulching. • Introduce climate-resilient and drought-tolerant crop varieties. • Promote conservation agriculture practices, including minimum tillage and crop rotation. • Strengthen integrated soil fertility management through composting and organic manure use
Timeline	2025-2035
Outcomes	Enhanced resilience and productivity of agricultural systems through the adoption of sustainable land management and climate-smart agriculture practices
Indicators	Area of land under terraces- Ha (radical and progressive)
Estimated costs	USD 294.2 million
Source and instrument of funding	To be determined later
Implementing agency	RAB, NAEB, NLA, Private Sector, Civil Society
Responsible ministry	MINAGRI

Project / intervention title	Expand area under irrigation and improve water management
Sector(s) (based on GGA targets)	Water, Food and Agriculture, Infrastructure, Ecosystems and Biodiversity and Poverty Eradication and Livelihoods
Context	This intervention directly supports sustainable water resource management, efficient water use and improved resilience to droughts and changing rainfall patterns.
Overall objective(s)	To enhance climate resilience, agricultural productivity, and water security through expanded irrigation coverage and

	improved sustainable water management practices that reduce vulnerability to droughts and climate variability
Activities	<ul style="list-style-type: none"> • Develop and expand small-, medium-, and large-scale irrigation schemes. • Construct and rehabilitate water storage infrastructure such as dams, reservoirs, and ponds. • Install efficient irrigation systems (drip, sprinkler, and gravity-fed systems). • Promote rainwater harvesting at farm and community levels. • Introduce water-efficient irrigation scheduling and smart irrigation technologies. • Promote watershed management and catchment protection to sustain water sources. • Train farmers and water user associations on efficient irrigation and water management practices. • Strengthen irrigation governance through Water User Associations (WUAs).
Timeline	2025-2035
Outcomes	Improved climate-resilient agricultural production and water security through expanded and efficiently managed irrigation systems
Indicators	Area of land under irrigation (Ha)
Estimated costs	USD 1,107 million
Source and instrument of funding	To be determined later
Implementing agency	RAB, NAEB, Districts, Private Sector, Civil Society
Responsible ministry	MINAGRI

Project / intervention title	Strengthen agriculture de-risking for resilience (crop and livestock insurance)
Sector(s) (based on GGA targets)	Food and Agriculture, Poverty and Livelihoods; Finance/Risk Transfer Systems; Water (indirect); Ecosystems
Context	Agricultural insurance directly supports climate-resilient food production systems by protecting farmers against

	losses from droughts, floods, pests, and diseases affecting crops and livestock.
Overall objective(s)	To strengthen the resilience of farmers and the agricultural sector by reducing vulnerability to climate-related risks through effective crop and livestock insurance mechanisms that enable risk transfer, protect livelihoods, and support rapid recovery from climate shocks
Activities	<ul style="list-style-type: none"> • Design and develop crop and livestock insurance products tailored to climate risks. • Conduct climate risk assessments and actuarial studies for agricultural insurance schemes. • Develop index-based insurance systems (e.g., rainfall, drought, yield index insurance). • Strengthen partnerships with insurance companies, financial institutions, and cooperatives. • Establish public-private partnerships (PPPs) to support affordable insurance schemes. • Subsidize insurance premiums for smallholder and vulnerable farmers. • Raise awareness and educate farmers on the benefits of agricultural insurance
Timeline	2025-2035
Outcomes	Enhanced resilience of farmers and the agricultural sector to climate-related shocks through increased uptake of crop and livestock insurance
Indicators	<ul style="list-style-type: none"> • Area of crops under insurance (Ha) • Number of livestock insured
Estimated costs	USD 267million
Source and instrument of funding	To be determined later
Implementing agency	RAB, NAEB, Banks, Insurance Companies, Private Sector
Responsible ministry	MINAGRI

Project / intervention title	Enhance land administration and management
Sector(s) (based on GGA targets)	Food and Agriculture, Ecosystems and Biodiversity; Water; Poverty and Livelihoods; Infrastructure/Settlements

Context	Secure and well-managed land systems support sustainable agricultural production, land use planning and climate-resilient farming systems as well as resilient infrastructure development.
Overall objective(s)	To strengthen climate-resilient land governance and sustainable land use through improved land administration systems that ensure secure tenure, efficient land management, reduced land degradation, and optimized allocation of land for agriculture, ecosystems, and development.
Activities	<ul style="list-style-type: none"> • Strengthen land registration and titling systems to ensure secure land tenure. • Digitize land administration systems (land records, cadastral mapping, and registries). • Conduct comprehensive land use planning and zoning at national, district, and local levels. • Update and enforce land use policies and regulations for sustainable land management. • Carry out systematic land surveying and mapping using GIS and remote sensing technologies • Integrate climate risk and environmental considerations into land use planning.
Timeline	2025-2035
Outcomes	Improved climate-resilient land governance and management systems that ensure secure land tenure, efficient and sustainable land use, reduced land degradation, and enhanced integration of climate considerations into land planning and development processes.
Indicators	<ul style="list-style-type: none"> • Number of operational geospatial information systems integrated with environmental protection and land value • Number of expropriated parcels registered • Updated spatial boundaries of agriculture, water, forestry and other land uses including biodiversity areas, urban settlements and rural settlements (Ha) • Ha of resilience physical plans developed that align with district and national land use and development master plan • Number of households in green model villages or green cities

Estimated costs	USD 93.2 million
Source and instrument of funding	To be determined later
Implementing agency	NLA, RHA, REMA
Responsible ministry	MoE, MININFRA

Project / intervention title	Manage forestry resources sustainably
Sector(s) (based on GGA targets)	Ecosystems and Biodiversity, Food and Agriculture; Water; Poverty and Livelihoods; Infrastructure; Disaster Risk Reduction (cross-cutting)
Context	Sustainable forest management directly supports ecosystem protection, biodiversity conservation, restoration of degraded forests, and climate resilience of natural systems.
Overall objective(s)	To enhance climate resilience and environmental sustainability through the sustainable management, conservation, and restoration of forest resources, ensuring the protection of biodiversity, watershed functions, and livelihoods dependent on forest ecosystems.
Activities	<ul style="list-style-type: none"> • Reforestation and afforestation of degraded forest areas. • Restoration of degraded ecosystems and forest landscapes. • Promotion of agroforestry systems integrating trees with crops and livestock. • Sustainable forest management planning and implementation. • Forest inventory, mapping, and monitoring using GIS and remote sensing. • Strengthening forest protection and enforcement against illegal logging and encroachment.
Timeline	2025-2035
Outcomes	Enhanced resilience of forest ecosystems and dependent communities through sustainable forest management
Indicators	<ul style="list-style-type: none"> • Area (Ha) of land restored or maintained under a Payment for Ecosystem Services (PES) scheme

	<ul style="list-style-type: none"> • Area (Ha) of agroforestry trees planted • Area (Ha) of forest managed under the Forest Monitoring and Evaluation System (FMES) • Number of tree nurseries well managed at cell level
Estimated costs	USD 207.1 million
Source and instrument of funding	To be determined later
Implementing agency	RFA, Districts
Responsible ministry	MoE

Project / intervention title	Increase access to decent housing and enhanced resilience of communities
Sector(s) (based on GGA targets)	Urban and Human Settlements (Housing & Infrastructure). Poverty and Livelihoods; Disaster Risk Reduction; Water; Ecosystems
Context	This intervention relates to climate-resilient housing, settlement planning, safe infrastructure, and improved living conditions in both urban and rural areas.
Overall objective(s)	To improve access to safe, affordable, and climate-resilient housing while strengthening the resilience of communities to climate change impacts through sustainable settlement planning, risk-informed construction, and reduced exposure to climate hazards.
Activities	<ul style="list-style-type: none"> • Develop and implement climate-resilient housing standards and building codes. • Construct affordable and disaster-resilient housing units for vulnerable households. • Upgrade informal settlements with resilient infrastructure (roads, drainage, water, sanitation). • Promote use of climate-resilient and locally appropriate building materials. • Improve land use planning and zoning to reduce settlement in high-risk areas. • Relocate highly exposed communities from flood-prone, landslide-prone, or unstable zones. • Strengthen urban drainage systems to reduce flooding risks.

	<ul style="list-style-type: none"> Promote green infrastructure solutions (e.g., permeable surfaces, urban greening)
Timeline	2025-2035
Outcomes	Increased access to safe, affordable and climate-resilient housing
Indicators	<ul style="list-style-type: none"> Percentage of urban population living in unplanned settlements Percentage of rural households living in integrated planned rural settlements
Estimated costs	USD 400 million
Source and instrument of funding	To be determined later
Implementing agency	RHA, NISR, Districts
Responsible ministry	MININFRA

Project / intervention title	Develop inclusive, climate resilient Cities and Towns
Sector(s) (based on GGA targets)	Urban and Human Settlements (Cities, Towns, and Housing), Infrastructure and Services; Poverty and Livelihoods; Disaster Risk Reduction; Water; Ecosystems and Biodiversity
Context	This intervention will focus on resilient urban planning, infrastructure, housing, and service delivery systems that can withstand climate impacts
Overall objective(s)	To promote inclusive and climate-resilient urban development by strengthening sustainable planning, infrastructure, and service delivery systems that reduce vulnerability to climate hazards, improve living conditions, and ensure equitable access to urban opportunities for all groups.
Activities	<ul style="list-style-type: none"> Develop and implement integrated urban development and climate-resilient city master plans. Strengthen land use planning and zoning to avoid settlement in high-risk areas (floodplains, steep slopes).

	<ul style="list-style-type: none"> • Upgrade urban infrastructure (roads, drainage, bridges, water supply, sanitation) to climate-resilient standards. • Develop and rehabilitate stormwater drainage systems to reduce urban flooding. • Promote green and blue infrastructure (urban parks, wetlands restoration, tree planting). • Improve solid waste management systems to reduce urban environmental risks. • Promote climate-resilient and affordable housing for urban populations. • Strengthen urban transport systems to be climate-resilient and low-emission. • Implement flood risk mapping, early warning systems, and emergency preparedness plans. • Support upgrading of informal settlements into safe and resilient neighborhoods.
Timeline	2025-2035
Outcomes	Enhanced resilience, inclusiveness and sustainability of cities and towns through improved climate-resilient urban planning, infrastructure and services
Indicators	<ul style="list-style-type: none"> • Percentage of land (ha) with detailed physical plans that are risk-informed • Percentage of the built- cooling up area of cities that is open space and green space for public use
Estimated costs	USD 8.35 million
Source and instrument of funding	To be determined later
Implementing agency	CoK, Districts
Responsible ministry	MININFRA

Project / intervention title	Increase access to improved drinking water
Sector(s) (based on GGA targets)	Water, Health; Urban and Rural Settlements; Poverty and Livelihoods; Ecosystems; Disaster Risk Reduction

Context	The intervention focuses on safe drinking water supply, water resource management, and climate-resilient water systems.
Overall objective(s)	To ensure universal access to safe, reliable, and climate-resilient drinking water services through the development and strengthening of sustainable water supply systems that reduce vulnerability to climate variability, improve public health, and support community resilience.
Activities	<ul style="list-style-type: none"> • Construct and rehabilitate rural and urban water supply systems. • Extend piped water networks to underserved communities. • Install and upgrade water treatment and purification facilities. • Protect and rehabilitate water sources (springs, rivers, catchments, wetlands). • Promote rainwater harvesting systems at household, institutional, and community levels. • Strengthen water storage infrastructure (tanks, reservoirs, elevated storage). • Improve operation and maintenance systems for water supply infrastructure.
Timeline	2025-2035
Outcomes	Improved and equitable access to safe, reliable and climate-resilient drinking water services,
Indicators	<ul style="list-style-type: none"> • Percentage of villages with access to improved drinking water; • Daily water production (m³/day) capacity increased; • Non-revenue water reduced; • Number of high-risk water systems (plants, pipelines and pumping stations) to be climate-proofed
Estimated costs	USD 640 million
Source and instrument of funding	To be determined later
Implementing agency	WASAC, WASH partners
Responsible ministry	MININFRA, MINALOC

Project / intervention title	Strengthen preventive measures and create capacity to adapt to disease outbreaks.
Sector(s) (based on GGA targets)	Health, Water and Sanitation; Urban and Rural Settlements; Disaster Risk Reduction; Food and Agriculture.
Context	This intervention will focus on strengthening health systems, disease surveillance, outbreak prevention, and climate-resilient public health services.
Overall objective(s)	To strengthen climate-resilient health systems by enhancing preventive measures, early warning systems, and adaptive capacity to detect, prevent, and respond effectively to disease outbreaks, including those exacerbated by climate change
Activities	<ul style="list-style-type: none"> • Strengthen disease surveillance and early warning systems, including climate-sensitive disease monitoring. • Improve laboratory capacity for rapid diagnosis and confirmation of disease outbreaks. • Develop and implement outbreak preparedness and response plans at national and local levels. • Conduct vaccination campaigns for climate-sensitive and epidemic-prone diseases. • Strengthen health workforce capacity through training in epidemic preparedness and response. • Improve community-based disease surveillance and reporting systems. • Promote integrated disease control programs (e.g., malaria, cholera, dengue, zoonotic diseases). • Strengthen Water, Sanitation and Hygiene (WASH) interventions to prevent disease transmission. • Enhance public health emergency operations centers and coordination mechanisms • Conduct risk communication and community awareness on disease prevention and hygiene practices. • Improve data management systems for health information and outbreak tracking. • Strengthen cross-sector collaboration (health, water, agriculture, environment) for One Health approaches. • Stockpile essential medicines, vaccines, and medical supplies for emergency response.

	<ul style="list-style-type: none"> • Conduct simulation exercises and drills for outbreak preparedness. • Integrate climate risk information into health planning and forecasting systems • Strengthen border health surveillance and screening measures. • Support vector control programs (e.g., mosquito control for malaria and dengue). • Improve infrastructure for isolation, treatment and emergency health care services.
Timeline	2025-2035
Outcomes	Strengthened resilience of health systems and communities to climate-sensitive disease outbreaks through improved prevention, early detection, and rapid response capacities
Indicators	Annual incidence rate for malaria (cases per 1,000 population)
Estimated costs	USD 100 million
Source and instrument of funding	To be determined later
Implementing agency	RBC, Meteo Rwanda, Civil society
Responsible ministry	MoH

Project / intervention title	Improved transport infrastructure and services to increase resilience to climate change.
Sector(s) (based on GGA targets)	Infrastructure and Services (Transport Systems), Urban and Rural Settlements; Disaster Risk Reduction; Poverty and Livelihoods; Food and Agriculture; Water.
Context	This intervention covers climate-resilient roads, bridges, public transport systems and logistics networks that can withstand extreme weather events.
Overall objective(s)	To enhance climate resilience of transport systems by developing and maintaining safe, reliable, and adaptive transport infrastructure and services that reduce vulnerability to climate hazards, ensure continuity of mobility and supply chains, and support socio-economic development.

Activities	<ul style="list-style-type: none"> • Construct and rehabilitate climate-resilient roads, bridges, and drainage structures. • Upgrade vulnerable transport corridors prone to floods, landslides, and erosion. • Integrate climate risk assessments into transport planning and design. • Improve road drainage systems to reduce flooding and water damage. • Stabilize slopes and embankments along roads in landslide-prone areas. • Use climate-resilient and durable construction materials for transport infrastructure. • Develop and maintain climate-resilient rural feeder road networks.
Timeline	2025-2035
Outcomes	Improved climate resilience of transport infrastructure and services
Indicators	<ul style="list-style-type: none"> • Reduced length (km) of roads vulnerable to landslides • % of population conveying with public transportation (total/urban/ rural)
Estimated costs	USD 640 million
Source and instrument of funding	To be determined later
Implementing agency	RTDA, RHA, Meteo Rwanda; Districts
Responsible ministry	MININFRA, MINEMA

Project / intervention title	Climate compatible mining
Sector(s) (based on GGA targets)	Industry, Mining and Energy Systems, Water; Ecosystems and Biodiversity; Infrastructure; Poverty and Livelihoods; Disaster Risk Reduction
Context	This intervention focuses on making mining operations climate-resilient, low-impact, and adaptive to climate risks such as floods, heat stress, and water scarcity.

Overall objective(s)	To promote sustainable and climate-resilient mining practices that reduce environmental degradation, improve resource efficiency, safeguard water and ecosystems, and enhance the sector’s ability to adapt to climate change risks while supporting socio-economic development
Activities	<ul style="list-style-type: none"> • Conduct climate risk and vulnerability assessments for mining operations and sites. • Integrate climate change considerations into mining policies, regulations, and licensing frameworks. • Promote climate-resilient mining infrastructure (tailings dams, pits, processing plants). • Improve water management in mining, including recycling, reuse, and efficient abstraction. • Strengthen pollution control and environmental compliance monitoring systems. • Rehabilitate and restore degraded mining sites (land reclamation and reforestation). • Enhance disaster risk management for mining areas (floods, landslides, tailings dam failures). • Develop early warning systems for extreme weather impacts on mining operations.
Timeline	2025-2025
Outcomes	Enhanced climate resilience and sustainability of the mining sector through reduced environmental impacts
Indicators	<ul style="list-style-type: none"> • Percentage of companies deploying climate compatible mining practices • Number of tailings abandoned mining and quarrying sites rehabilitated
Estimated costs	USD 23.2 million
Source and instrument of funding	To be determined later
Implementing agency	RDB, RMB, RWB, Private Sector, Civil Society
Responsible ministry	MINICOM
Project / intervention title	Develop a multi-hazards early warning system and strengthen meteorological services to improve disaster preparedness
Sector(s) (based on GGA targets)	Disaster Risk Reduction (DRR), Water; Agriculture and Food Systems; Health; Urban and Rural Settlements; Infrastructure and Services

Context	The project will focus on early warning systems, risk monitoring, preparedness, and timely response to climate-related hazards such as floods, droughts, storms, heatwaves, and landslides.
Overall objective(s)	To strengthen climate resilience and disaster preparedness by developing and operationalizing a multi-hazard early warning system and enhancing meteorological and hydrological services for timely detection, forecasting, and communication of climate-related risks
Activities	<ul style="list-style-type: none"> • Develop and upgrade multi-hazard early warning systems covering floods, droughts, storms, lightning, landslides. • Strengthen national meteorological and hydrological observation networks (weather stations, river gauges, radar systems). • Improve climate data collection, processing and forecasting capabilities. • Strengthen communication systems for timely dissemination of early warning information. • Conduct public awareness and education campaigns on interpreting and responding to early warnings.
Timeline	2025-2025
Outcomes	Strengthened multi-hazard early warning systems
Indicators	<ul style="list-style-type: none"> • Number of pilot early warning systems developed (flood, lightning, windstorms, forest fires) • Number of socioeconomic sectors with co-produced weather and climate services integrated in their planning instruments
Estimated costs	USD 258 million
Source and instrument of funding	To be determined later
Implementing agency	Meteo Rwanda, RWB,
Responsible ministry	MINEMA

8. Resource mobilization plan

Rwanda has not developed yet a standalone resource mobilisation plan for NAP. This plan will be developed after the development of detailed NAP. However, Rwanda has set strategic priorities for climate finance to implement NDC 3.0 which also includes adaptation actions. In setting these strategic priorities for climate finance to implement NDC 3.0, key structural shifts, such as the adoption of the Climate and Nature Finance Strategy (CNFS), the development of the Rwanda Green Taxonomy and the nationwide rollout of Climate Budget Tagging (CBT) have been instrumental in aligning financial flows with national climate priorities.

Rwanda has defined five strategic priorities for climate finance implementation which are Domestic Fiscal Leverage, Blended Finance Vehicles, Capital and Carbon Markets, International Access and Guarantees, Governance and Transparency.

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