

Country Update

Implementing adaptation strategies to climate change: views from farmers & agro-processors

Provided by



Agency for Cooperation and Research in Development

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How climate change is impacting your business/organization?

Scientific based knowledge on climate variations in Rwanda is limited, but it is fully recognized that the country is one of the most vulnerable nations in the world in regard to climate changes.

Many of the specific resources (e.g. water, land, soils) and the ecosystems (e.g. the natural forests, the marshlands and lakes and the highlands) are furthermore overused, very fragile and geographical fragmented (limited in space and not connected). Thus, climate change preparedness for Rwanda is essential both in a local, national and international context.¹

Observed climate change is linked to the general circulation of winds and the variation of temperatures in the region of Central Africa where Rwanda is located. During the past 30 years, Rwanda has experienced climate change in terms of frequency, intensity and persistence of extreme changes such as heavy rain-falls, heat waves, drought and climate events such as El Nino and La Nina. The frequency of rainfalls deficits reached 16%. The occurrence of rainfall deficits and excess has significantly increased in recent years².

Rwanda is vulnerable to the impacts of climate change as its economy is largely dependent on rain-fed agriculture.³ The agriculture sector accounts for 73% of the employed population and represents more than 43% of the Gross Domestic Product or GDP (Rwanda Vision 2020, 2000). The other key sectors that will be highly affected by climate change include

¹ REMA, 2010. *Assessment of Operational Framework Related to Climate Change in Rwanda*

² Republic of Rwanda, 2012. *SNC*

³ Republic of Rwanda, 2011. *GGCRS*

water, infrastructure and health

The estimated costs of adaptation will rise in future years. Estimates of medium-term costs to address future climate change are typically of the order of \$50 – 300 million per year for Rwanda by 2030, focused on enhancing climate resilience⁴.

These changes are expected to become more severe over the ensuing decades and result in multiple negative effects on the major economic sectors in Rwanda.

The main effects of climate change in Rwanda are predicted to include: i) an increased frequency of extreme flood events; ii) increased duration and frequency of droughts, recurring every two to three years; and iii) increased average temperatures.⁵

Rutayisire, a farmer from Bugesera district confirmed that he was seriously affected by climate change impacts by increased duration and frequency of droughts. He revealed that he did not manage to harvest even ¼ of the usual quantity of Maize harvested every year.

In addition, *Pascal from Gakenke district* confirmed that last year (2016), heavy rains which resulted to floods washed away his around 1 ha of beans before even flourishing. Climate change leads to economic uncertainty for these farmers because unpredictable weather patterns cause smaller yields of their products.

Actions to adapt to climate changes vary depending to the nature of climate change impact you are facing and the nature of your location.

Mr Faustin Munyazikwiye, Director of climate change revealed that Rwanda Environment Management Authority (REMA) conducted a study on Climate change Technology Need

Assessment (TNA). TNA development process included institutional arrangements for TNA, extensive stakeholders' consultations, prioritization of sectors, barrier/market analysis and Technology Action Plans (TAP) with agriculture and energy as priority sectors.

The top five actions or technologies (in descending order) prioritised for climate change adaptation in Rwanda are:

1. Seed and grain storage; Government discussing the most pressing matters with stakeholders during planning days helps get these stakeholders the help they need and spread mitigation strategies most effectively. Getting different strategies to different regions is important and allows each region to produce their products most effectively.
2. Agro forestry;
3. Radical terraces;
4. Drip irrigation;
5. Rainwater harvesting

Therefore, *Rutayisire, a farmer from Bugesera district* also confirmed that after being sensitized by sector agronomist, he started irrigation as action to adapt the increased duration and frequency of droughts. He started at small scale but later on he received additional funds from one project from Ministry of Agriculture.

The ministry of agriculture has extensive services in each of the 30 districts that make the country. It disposes of funds for innovative projects especially in irrigation and mechanisation, and progressive farmers are encouraged to access the funds through the partnership with micro finance institutions. The outreach of the ministry of agriculture is important for building trust between the government and stakeholders and farmers. It is

⁴ SEI, 2009. *Economics of Climate Change in Rwanda*

⁵ Republic of Rwanda, 2012. *SNC*

encouraging that the government can reach out to stakeholders like Rutayisire as it proves that they have similar priorities and are working together to mitigate the effects of climate change

What are your needs to better adapt to climate adverse effects?

Innocent from Ministry of Agriculture asserts that National adaptation programmes of action (NAPAs) of Rwanda which was done in 2006 provided a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs to adapt to climate change – those for which further delay would increase vulnerability and/or costs at a later stage.⁶

Out of twenty adaptation options proposed for Rwanda's NAPA, only eleven were identified as national priorities. The following are the seven adaptation priorities included in the top eleven national climate change priorities submitted to the UNFCCC:

1. An Integrated Water Resource Management – IWRM;
2. Setting up an information system to early warning of hydro-agro meteorological system and rapid intervention mechanisms;
3. Promotion of non-agricultural income generating activities;
4. Promotion of intensive agro-pastoral activities;
5. Introduction of species resisting to environmental conditions;

6. Development of firewood alternative sources of energy; and
7. A National Plan for Disaster Management (Emergency Plans).

Mr Alphonse, Member of Private sector federation in Nyabihu District confirmed that Early warning system which is backed by timely and reliable weather prediction information can help not only farmers to adapt and prevent losses and damage due to climate change impacts but also to enable them to climate proof their infrastructure like feeder roads, storages and industries (agro processing). The challenge today is to provide timely and reliable weather prediction information hence trustable by the farmers.

⁶ See page 6 for more on NAPAs

Do the stakeholders receive support from government to adapt to climate change?

Mr Faustin Munyazikwiye from REMA, revealed that Rwanda Green Growth and Climate Resilience strategy (GGCRS) introduces **enabling pillars** or ongoing processes that should support their implementation. The objective of the pillars is to provide a foundation for current and future actions and will continuously be improved and reviewed. The five enabling pillars are:

1. Institutional arrangements

To implement climate compatible development, it will be critical for Rwanda to create an institutional arrangement that allows for transparent and effective flow of information, knowledge and financial resources. Development, especially sustainable development, will require effective and transparent governance.

2. Finance

To effectively mobilize and make available financial resources to fund environment and climate change projects. The priorities for the Finance Pillar include the operationalisation of the National Climate and Environment Fund of Rwanda, FONERWA, which was provided for in organic law 04/2005 to support REMA.

3. Capacity building and knowledge management

Many of the programmes of action required to implement the Strategy are knowledge intensive and require new skills across sectors and management levels. Capacity building efforts are instrumental to creating foundations of adaptive management and stakeholders' ability to implement the Strategy. Recalling the

opening paragraph that states "Scientific based knowledge on climate variations in Rwanda is limited", it seems that spreading education to farmers and stakeholders regarding climate change is essential in combatting it.

4. Technology, innovation and infrastructure

The application of, and investment in technology, innovation and infrastructure is vital for development. FONERWA is unique for environment and climate change adaptation projects. But other institutions such as Rwanda development bank and Business development fund provides directly funding to sectors outside agriculture

5. Integrated planning and data management.

Climate change is a cross-cutting issue that impacts the economy in the long-term. Integrated planning of multiple sector programmes is crucial due to the constraints facing Rwanda, in land, water, energy and finance. Integrated planning systems will allow the Government of Rwanda to invest in the most efficient way, producing the maximum return on investment while accommodating different sector needs.

Ruganintwali from Gasabo District confirmed that him and his neighbors have received support to obtain a rain water harvesting tank through a project from Rwanda Natural Resources Authority (RNRA) funded by FONERWA through its project called Rooftop Rainwater Harvesting in High Density Areas. The water collected is mostly used for kitchen gardens to grow mainly vegetables and various fruits. But today the system of water harvesting remains experimental and inaccessible for the many farmers scattered on the thousand hills. Indeed, the tanks and related infrastructure to collect rain water is very expensive for a rural farmer to invest, unless farmers get big grants from international donors such as FAO, DFID and USAID able to fund multi years programs

In addition, *one staff from Kinazi Cassava plant (preferred to do not mention his name)* revealed that cassava growers around the plant have benefitted various trainings and experience sharing sessions with others cassava growers from different regions. Indeed, *Mr Rukaka, one of the beneficiaries from Ruhango District* confirmed that training and continuous follow up he got from Kinazi Cassava plant helped him to improve his knowledge especially in quantity and quality of agriculture inputs like fertilizers and also agriculture planning (when, how and what to grow so that you can maximize your chances of avoiding losses due to various reasons including climate change impacts (heavy rains or droughts). More farmers can be involved in such exchanges meetings and trainings through the support from local and international civil society organizations, provided that they access funding to conduct the activities.

Do they receive support from any other organization to adapt to climate change?

Environment specialist from Ministry of Environment revealed that the establishment of the Fund for Environment and Climate Change was provided for under Organic Law No 04/2005 determining the modalities of protection, conservation and promotion of environment in Rwanda. In 2011, the Rwanda Green Growth and Climate Resilience Strategy (GGCRS) included the operationalization of FONERWA among top priorities to effectively mobilize resources to fund environment and climate change projects. FONERWA has the overarching objective of contributing to sustainable wealth creation and poverty

reduction in Rwanda, through sustainable management of natural resources, climate resilient and green economic growth.⁷ FONERWA support contributes to the GGCRS and EDPRS 2 objectives and implementation.⁸

Indeed, he added that Ministry of Natural Resources (current Ministry of Environment) has been accredited by the Adaptation Fund and accessed 10 Millions of USD. The same Ministry also has been accredited by the Green Climate Fund which is a ground breaking fund to help countries to implement Paris Agreement. This allows for implementing both long-term solutions to curb the effects of climate change and short-term solutions that are meant to help farmers and agro-producers deal with its effects. The accreditation of the then MINIRENA allows any executing entity (public, private and NGOs) to access at least 50 Million USD per project from Green Climate Fund. However, he confirmed that still the funds still like a drop in the sea comparing to the needs in different corners of the country. MINIRENA is also a government institution that provides funding for public and private entities.

Rulisa, a farmer from Nyabihu District confirmed that he received support from Adaptation fund through the then MINIRENA project. This support is integrated in the manner that is helping him to reduce poverty but also to build his resilience. He benefitted a house in the constructed green village since he was usually leaving in the high risk zone but also he got a milk cow which is helping him to get milk and organic fertilizer. Rulisa believe that a support is more relevant and beneficial if it is an integrated package rather than having a support of just one component. The MINIRENA project focuses on development and lifting workers out of poverty as well as promoting green sustainable development. Few international organizations and NGOs outside

⁷ CDKN. *FONERWA: Sustainable Financing mechanism for Environment and climate change initiatives in Rwanda*

⁸ University of Wolverhampton/CIDT, 2016

the Rwandan government are involved in adapting to climate change, as it is a new sector of international support. While there are some that are involved such as ACORD Rwanda and

ARCOS Albertine Rift conservation society, most climate adaptation strategies are coming from stakeholders and the local government.

In conclusion, Rwanda like others LDCs is facing a perennial challenge of securing the necessary funding to implement NAPAs, embark on the NAP process, and interpret scientific and technical information they receive. Support is urgently required to enhance the technical capacities of officials and institutions to plan, budget, track, and monitor how support is provided and used. Support is also needed to engage small farmers associations, cooperatives et private sector SMEs in climate adaptation which actually threaten the basic right of access to food for the vulnerable rural farmers. Funding for technological support coming from international organizations and NGOs could encourage long-term climate adaptation strategies and development. Getting stakeholders to trust NGOs would be a long-term project involving education and outreach, as well as advocacy and grants, as mentioned.

Given the direct impact of prolonged droughts and floods on food production, farmers expect the government to engage them in the preparation of contingency plans for adaptation including the introduction of species resisting to environmental conditions, the setup of stock holding for food security, the rationale use of irrigation and rivers' banks for production of food, the development of firewood alternative sources of energy and the promotion of non-agricultural income generating activities. Stakeholders, the local government, and international organizations can all offer new ideas and support to farmers and agro-producers in facing climate change. Rwanda's most pressing needs are funding and long-term support and trust among these organizations.

Farmers diversifying their income and becoming more involved in all aspects of production promotes income generation and educating these farmers on all aspects of their production.



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The PACT EAC2 project is undertaken with funding support from the Swedish International Development Cooperation Agency (Sida).