LORTA

Country Brief

GREEN CLIMATE FUND | Independent Evaluation Unit

NOVEMBER 2024

IMPACT EVALUATION MIDLINE REPORT FOR FP073 – THE GREEN GICUMBI PROJECT

Context

The Green Gicumbi Project is implemented in nine sectors that fall within a sub-catchment zone of the Muvumba River in Gicumbi District, Rwanda. The zone is prone to water run-off and associated land degradation processes. The dependency on agriculture makes households highly vulnerable to the loss of fertility caused by land degradation.

The project aims to address these challenges through a cascading series of measures. Project activities include watershed protection and climate-resilient agriculture, and sustainable forest management and sustainable energy use. This USD 33.2 million project, implemented from May 2019, is funded by the Green Climate Fund (GCF) and implemented by the Ministry of Environment, Rwanda. The project activities are executed directly by the Rwanda Green Fund (FONERWA) and implemented by Government of Rwanda agencies at the district or sectoral level.

Purpose and objectives

This brief summarizes the intermediate outcomes observed in our midline impact evaluation. The findings suggest a broadly positive trajectory towards achieving medium-term and longer-term objectives.

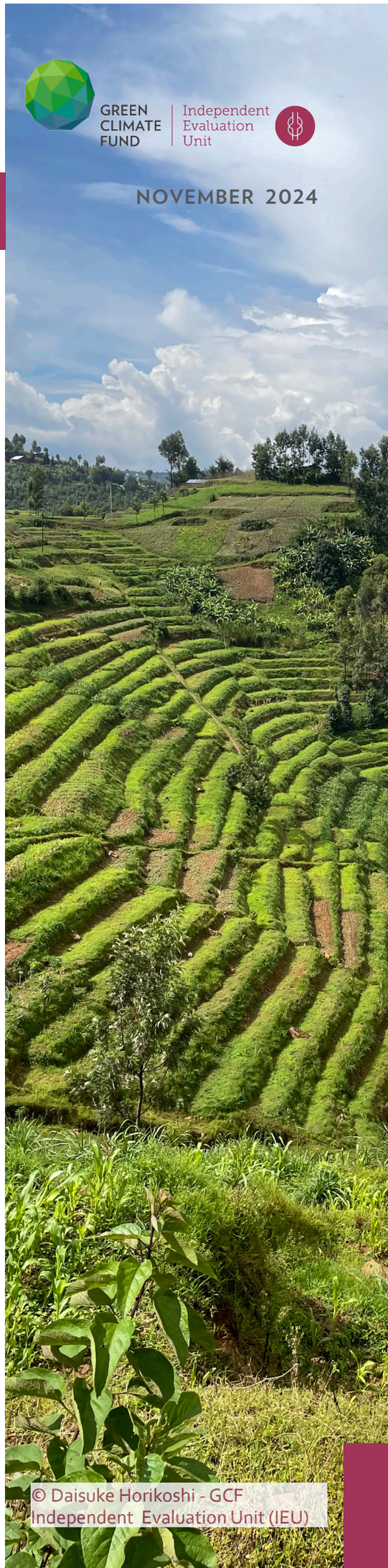
Scope

The report assesses the impact of two components of the project by comparing key outcome indicators across households in villages that have received project interventions with comparable households in villages in nine non-intervention sectors in Gicumbi. At the output level, the report assesses changes in adopting climate-resilient agricultural practices, the main source of fuel used for cooking, and the quantity of firewood and charcoal used for cooking.

At the outcome level, the report assesses indicators of food security, such as household dietary diversity scores, household coping strategy indices, and whether households experienced food shortages in the past year. In addition, the report assesses indicators of agricultural production, the number of income sources, and a climate resilience index. Indicators are also presented separately for female- and male-headed (married) households.

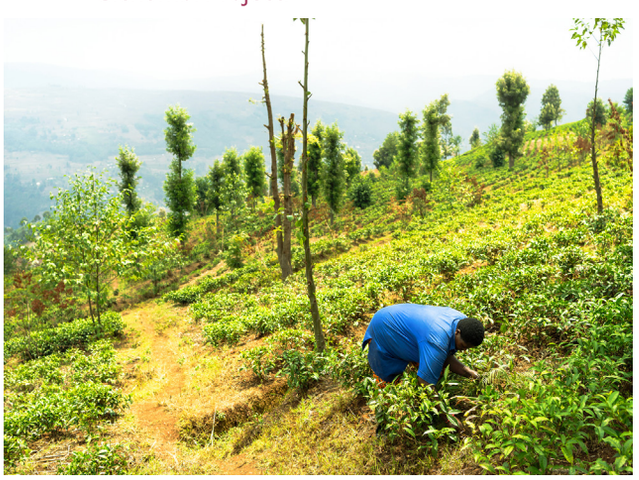
Methods

Baseline data was collected in June–July 2020, while midline data was collected in April 2023. Data was collected from 1,299 households across treatment and control groups in 18 sectors at baseline. At midline, data was obtained from 1,258 households across treatment and control groups in the same sectors.



The report uses a repeated cross section design with a random sample of households from the same villages and sectors interviewed at baseline and midline. The identification strategy applies two quasi-experimental methods. The report employs the difference-in-differences methodology using the repeated cross section data set where possible. This provides a causal estimate of the project's impact by assessing changes in the trends of indicators through time. Difference-in-differences estimates are provided for all indicators apart from two sets of outcomes. The report uses propensity score matching for two outcomes which cannot be assessed using the difference-in-differences methodology. Matching estimates are provided for the coping strategy index scores and measures of agricultural production.

Figure 1. A smallholder farming tea within the Green Gichumbi Project.



Source: Green Climate Fund - Andy Ball

Results

Turning to results, we find that the **treatment group has higher adoption rates of climate resilient agricultural practices**. The proportion of treatment households adopting climate-resilient agricultural practices is 20 to 24 percentage points higher than comparison households, and adopt around 0.5 more climate-resilient agricultural practices per household. These aggregate results are driven by a greater proportion of treatment households adopting:

- Rainwater harvesting (14.2 percentage points)
- Household wastewater treatment (18.3 percentage points)
- Alternative cooking fuels (3 percentage points)
- Development of irrigation schemes (6.5 percentage points)
- Radical terracing (14.5 percentage points)
- Methods to protect housing infrastructure against lightning (11.3 percentage points)

Surprisingly, more control households have adopted climate-resilient crop varieties (0.6 percentage points) than treatment households.

Results are mixed when it comes to measures of agricultural production. At midline, the intervention enhanced the agricultural production of specific staple crops like beans beans (between 92.4 kg and 92.9 kg) and sweet potatoes (between 1,226 kg and 1,242 kg). This translated into treatment households now yielding an additional 1.72 to 1.78 tonnes of beans per ha compared to control areas. Surprisingly, we found a significant decrease banana production amonst treatment households.

Green Gicumbi Project activities increase short-term food security and reduce vulnerability to food shortages. A significantly smaller proportion of treatment households (17.6 percentage points) reported suffering from food shortages in the past year compared to control households. Furthermore, treatment households report lower coping strategy index scores (between 3.3 and 3.6 points lower), indicating that they resort less to harmful strategies in response to food shortages than control households. However, long-run dietary habits do not appear to be influenced yet.

In terms of measures of smallholder farmers' resilience, at midline we observe no changes in tropical livestock units, or the climate resilience index (using a Food and Agricultural Organization tool). We also observe a decrease in income diversification. Further, we observe mixed findings regarding the type of cookstoves used and the type and quantity of fuel used.

Importantly, female-headed households consistently exhibit notable and statistically significant improvements in the adoption of climate-resilient agricultural practices, food shortages and the use of coping strategies.

The project's longer-term impacts will be measured in an endline impact evaluation planned for 2025.

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