Land Husbandry, Water Harvesting, and Hillside Irrigation (LWH) Project Impact Evaluation

Context

The Government of Rwanda considers agriculture an engine for the economy (cf. Rwanda Vision 2020; Rwanda's Economic Development and Poverty Reduction Strategy) and aims to reduce poverty and achieve food security through commercialized and professional agriculture, as well as increased export earnings and industrialization. This calls for improved and sustained productivity through investment in farmer-participatory land care, water-harvesting, and intensified irrigation in the hillsides. The Land and Water Husbandry (LWH) project is working to meet this objective.

Intervention

LWH uses a modified watershed approach to introduce sustainable land husbandry measures for hillside agriculture on selected sites and develops hillside irrigation for sub-sections of each site, with the objective of comprehensive agricultural overhaul. LWH includes major infrastructure investments such as hillside terracing, irrigation dams, and post-harvest storage, and aims to operationalize Rwanda's Ministry of Agriculture (MINAGRI)'s strategy to encourage mono cropping of cash crops, as opposed to the traditional system of inter-cropping for household consumption.

Evaluation Questions

What is the impact of the LWH project on adoption of improved agricultural technologies, agricultural productivity, commercialization, food security, and household income? While the evaluation is designed to measure the overall impact of the project, the division of sites into separate zones will provide some information as to the effect of different components. Since only the command area will receive irrigation, comparison of treatment to control catchment areas will capture the effect of the land husbandry interventions, while comparison of command areas will capture the effect of land husbandry plus irrigation.

Evaluation Method

The impact evaluation will document the impact of the project in these sites, using pair-wise matching to identify sites considered eligible to receive LWH, but that will not receive it. There are a number of reasons to think that pair-wise matching will provide unbiased measures of the overall impact of the project. LWH will only be implemented in a small subset of suitable valleys, and the pre-identification of the sites was well documented. Many sites were considered for inclusion in the LWH, and data was collected on their geography, weather, and land use patterns. Comparison sites were selected in consultation with the project engineers, based on the following criteria: location, agro-climatic zone, slope, soil type, land use patterns, and size.

Expected Policy Impact

Evaluating the overall impact of LWH is important to allow MINAGRI to effectively plan for its future activities. LWH covers a relatively small area of 30,250 ha, eventually affecting approximately 20 watersheds. From the perspective of MINAGRI, LWH can be seen as a pilot program for comprehensive agricultural overhaul.

Dataset for the Reproducible Research Fundamentals Course

The RRF course will use a modified version of a household-level dataset from the LWH project impact evaluation. The dataset used is the second follow-up survey, which was collected after harvest for the 2013 short rainy season (known locally as 'Season B'). The main objective of the survey round was to measure progress on results framework outcomes that include technology adoption, agricultural production, food security, among others. The dataset is abbreviated: it includes a subset of the entire original sample and a subset of variables out of the 3900 variables of the original raw dataset. It only includes data from the treatment areas.