



THE ECONOMICS OF LAND DEGRADATION

A Global Initiative for Sustainable Land Management



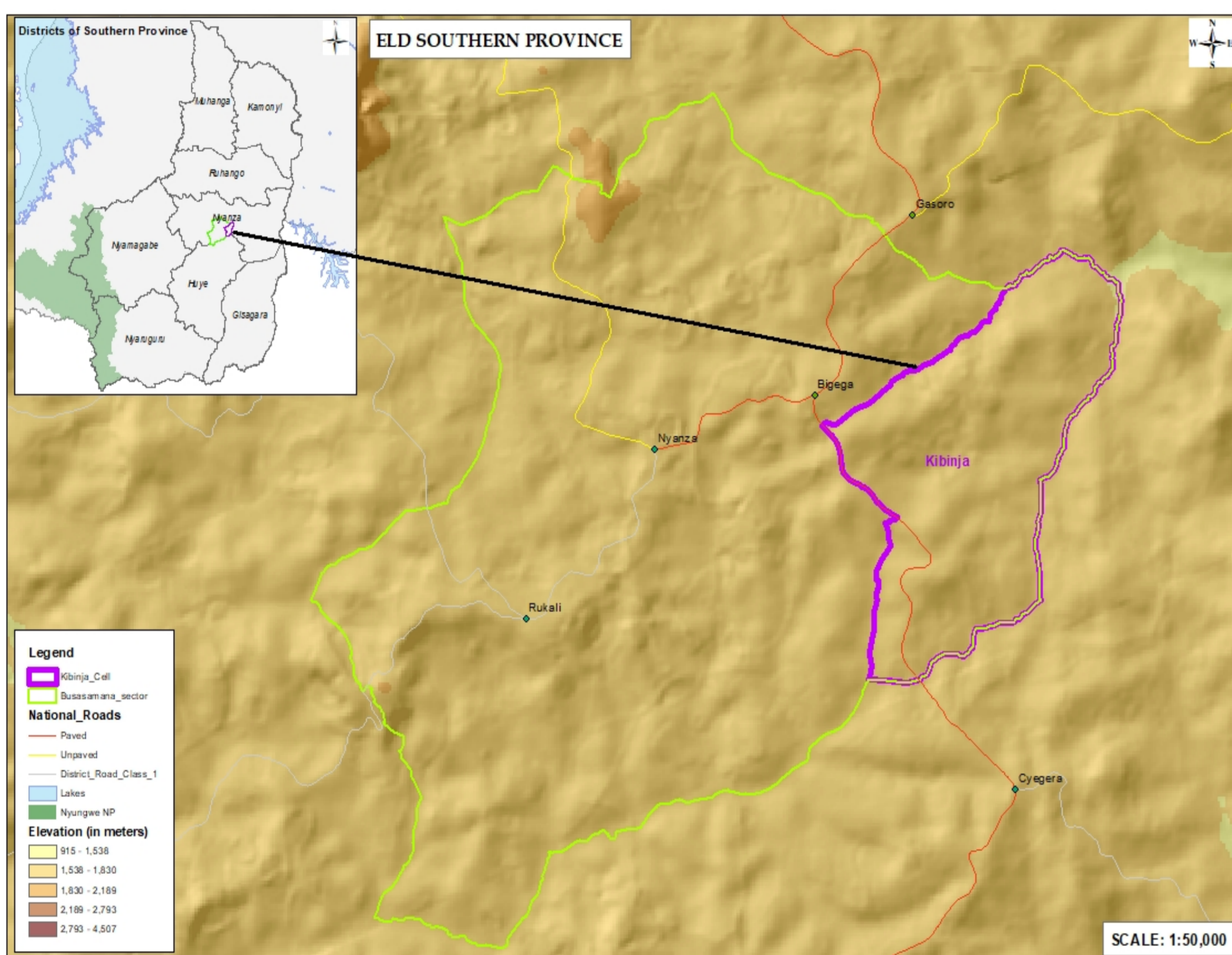
# Cost-Benefit Analysis of Sustainable Land Management in the Southern Province of Rwanda

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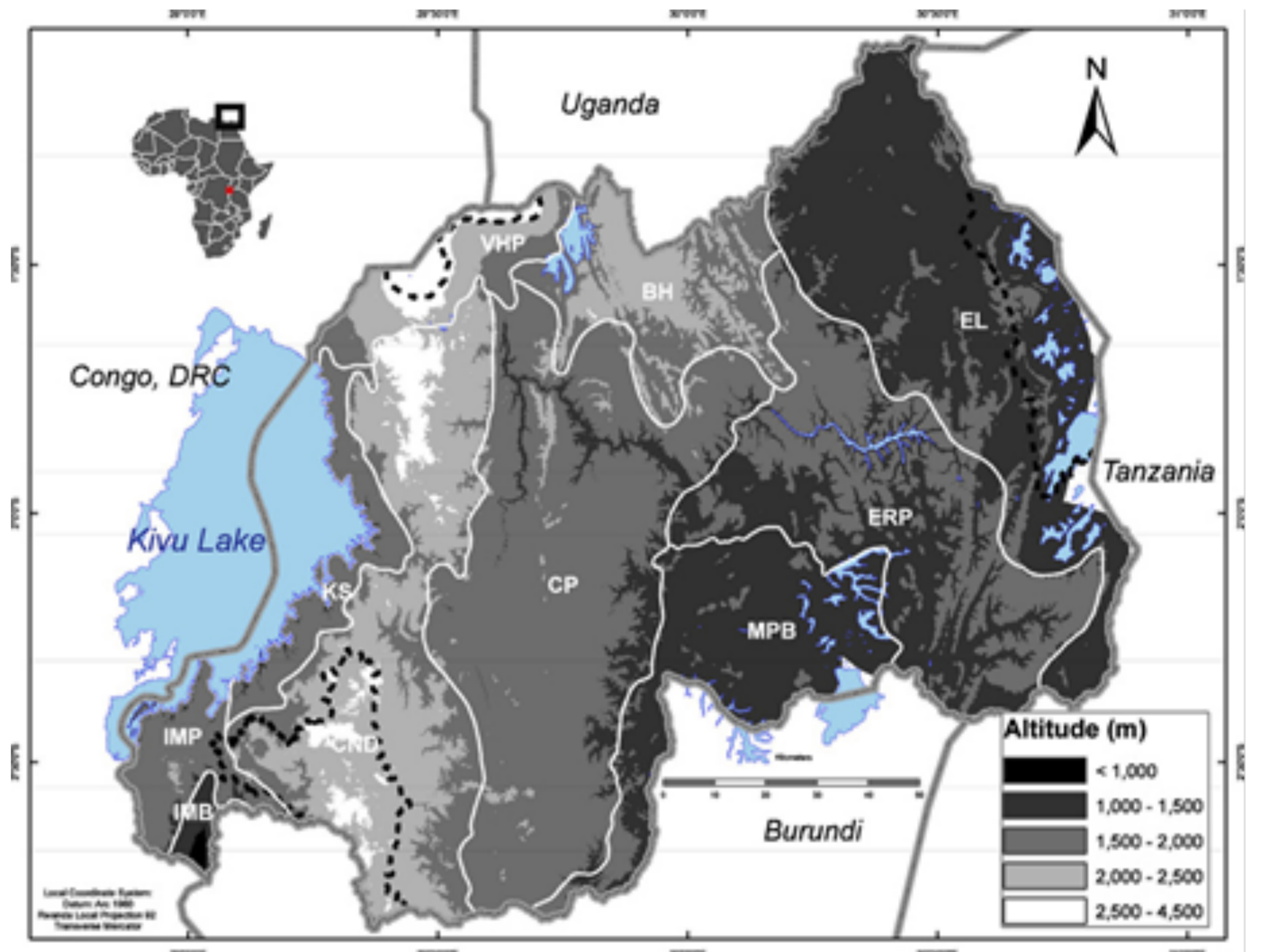
## 1. CONTEXT AND PROBLEMS

- Land use change is a major issue in Rwanda. There is increasing pressure on the land where the human population is growing or moving in.
- Land degradation is most severe in the southern part of the country, especially in the Mayaga agro-ecological zone in the District of Nyanza, the focus of this study. This has negative impacts on Rwanda's food production and security.
- Sustainable land management (SLM) practices such as agroforestry and terracing – used both separately and in combination – have been shown to improve the soil fertility and yield for local farmers in studies from other places. Such practices have also been demonstrated to reverse land degradation in line with national commitments to international policy goals such as Sustainable Development Goal target 15.3.
- This study applies the ELD 6+1 step methodology using business as usual, agroforestry, terracing and agroforestry and terracing in combination.

## 2. STUDY AREA



### Mayaga Plateau and Central Bugesera



## 3. METHODOLOGY

- Two sites from different regions were selected: the Rulindo District in the Northern Province and the Nyamagabe District in the Southern Province
- Sample taken from the population of 4 villages in the Kibinja cell (3,514 inhabitants).
- Snowball method of sampling starting from the village leader: it was possible to identify other potential persons to be included in focus group discussions.
- Each village provided eight members to bring the total sample across three focus group to 24 people.
- Costs and benefits for 3 scenarios were evaluated in addition to business as usual: use of terraces, agroforestry and the combination of both agroforestry and terraces for crop production

## 4. RESULTS

<p><b>Business-as-usual</b> This study conducted a baseline cost-benefit analysis (CBA) of the production of beans, maize and cassava in the business-as-usual (BAU) scenario, which is characterized by the absence of SLM.</p>	<p>The business as usual (BAU) scenario calculated the cost of every activity relating to farming of beans, maize and cassava. The analysis assumed the initial use of organic fertilizers in farming, good quality of seeds and no usage of pesticide.</p>	<p>The costs were then discounted by a calculation of the yield, and the Net Present Value (NPV) was determined with a discount rate of 9.8 per cent, which is the value calculated from the World Bank. The unit area was 0.5 ha for all crops with 2 seasons of production per year. In the calculations, a conversion to one hectare was done to ensure that the results are presented in hectares.</p>	<p>The currency used was Rwanda Francs (Rfrw) and conversion in USD was done by dividing the value in Rfrw with the rate of 904.6782. The sensitivity analysis was done by changing the discount rate; with decrease of 25 per cent, increase of 25 per cent, 50 per cent of decrease and 50 per cent of increase then increase of 100 per cent.</p>
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## KEY RECOMMENDATIONS

1. The use of SLM is recommended to contribute to land degradation reversal and ensure soil conservation. In particular, land users in the Southern Province of Rwanda are advised to adopt primarily agroforestry due to its multiple benefits and important contribution to climate change mitigation. Terracing can be used where the slope allows and the combination of terracing with agroforestry can provide a sustainable solution to the problem of food availability and land degradation.
2. Policymakers should promote the adoption of agroforestry by subsidizing the costs of the necessary tools of this practice and help farmers in the selection of suitable and profitable tree species.
3. At the country level, government should provide a map that indicates suitable areas for terracing or agroforestry or a combination of the two systems according to the national ecological zones.

