

Info Note

Stepwise in Tanzania- the tale of smallholder coffee farmers and the effects of climate change on their livelihoods

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Key messages

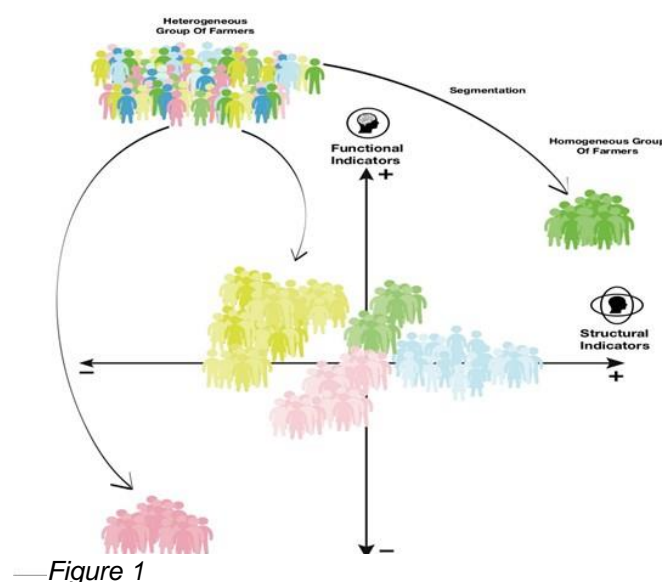
- IITA in collaboration with public and private sector partners developed a set of complementary approaches and tools to explore the diversity of smallholder coffee farmers, their ranking of constraints to implementing CSA practices and land-use planning to identify different ecological zones within a country to enhance adoption of Climate-Smart Agriculture (CSA) and good agronomic practices among smallholder coffee farmers as well as make coffee farmers more resilient to climate change and its effects.
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Problem/ challenge:

Coffee is a tree crop which requires good management throughout its growth cycles. Farmers are trained continuously in good agricultural practices to adopt and improve coffee productivity. Training offered to farmers introduces a “basket of practices” and climate smart technologies for which they are urged to implement all at once for coffee sustainable production and productivity. However, adoption of good management practices is still very low among smallholder farmers due to resource constraints. Application of all practices within the ‘basket of practices’ challenges resource-poor farmers who end up implementing haphazardly with little or misguided planning on how best to break up the ‘basket of practices’ which leads to low adoption and implementation as well as poor timing of recommended practices. Poor implementation of practices leads to low yields and leaves resource-poor farmers poor if not poorer.

IITA in collaboration with public and private sector partners developed a set of complementary approaches and tools to explore the diversity of smallholder coffee farmers, their ranking of constraints to implementing climate smart

agricultural (CSA) practices and land-use planning to identify different ecological zones within a geographical location to enhance adoption of CSA and good agronomic practices among smallholder coffee farmers as well as make coffee farmers more resilient to climate change and its effects. One such approach, known as ‘Stepwise’ (https://drive.google.com/file/d/1_LHX6caZuAQK6HM7vQ5k259W_n0h6yt/view) breaks down the full training package of CSA practices into more manageable subsets of practices. These smaller packages are aligned with the structural (resource endowments) and functional (entrepreneurship) characteristics of different types of farmers. A farmer segmentation tool (<https://drive.google.com/file/d/114a5B-y0W2DcyRdasaNflwIKtEwEd55x/view>) differentiates the coffee farmers into Sub-groups, based on their assets and entrepreneurial characteristics.



—Figure 1

These segmentations guide stakeholders working with farmers on how to best engage with and train farmers in the most relevant practices based on a contextually specific Stepwise for that agro-ecological area and sub-group of farmers) by taking their capacity and willingness to implement the practices into consideration.

Progress/ success so far

1. Participatory Land use planning workshops

In December 2017, two regional workshops were conducted with regional stakeholders in Mbeya and Kilimanjaro. Here, stakeholders were divided into groups in which they identified the major agro ecological zones as well as map and update the main actors in CSA adoption and their roles in these major Arabica coffee growing regions of the country. Stakeholders included representatives from government, non-governmental, civil society, academia and research, private sector, and different associations from the regions. The output of this process was a set of land use maps that represented the different agro-ecological zones identified per region.

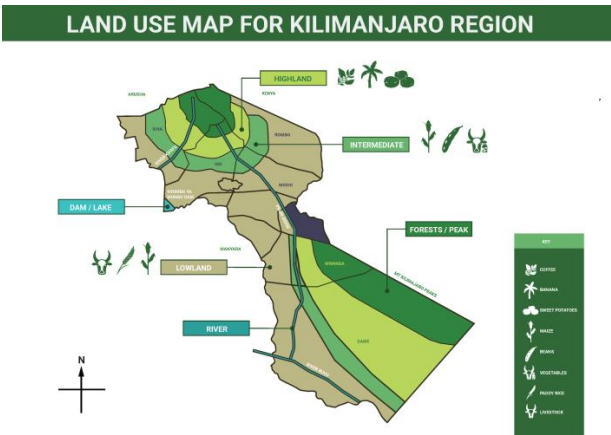


Figure 2 Digitized landuse map of Kilimanjaro region.

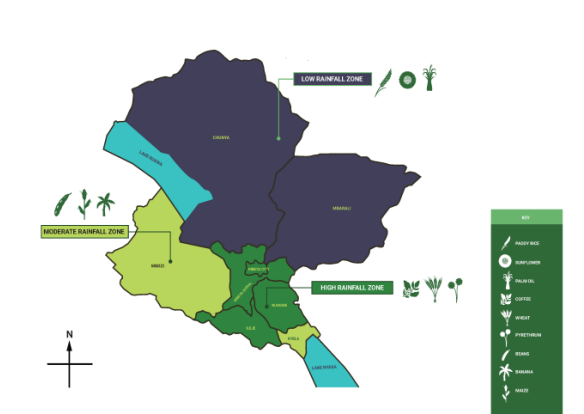


Figure 3 Digitized landuse map of Mbeya and Songwe region.

2. Development of Stepwise

IITA worked with various coffee experts to develop a national stepwise investment pathway for arabica coffee in Tanzania. During the workshop, stakeholders were

divided into four groups to develop pathways for for both coffee types. The four investment pathways are then compiled into a hybrid (with expected yields estimated for each).

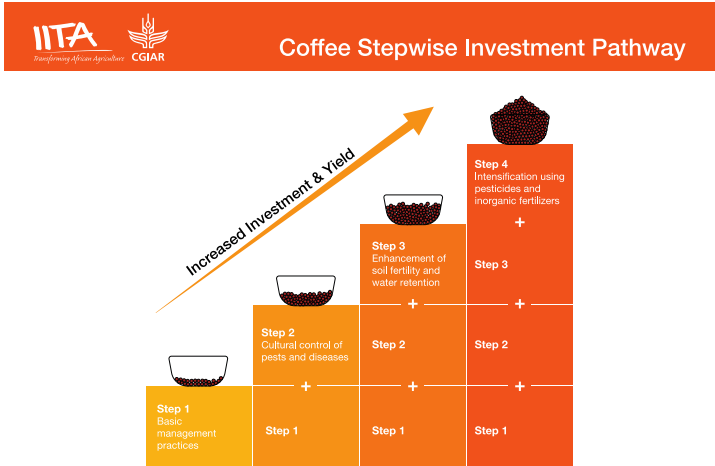


Figure 4 Illustration of Stepwise Investment Pathway of coffee

Subsequent establishment of demonstration plots with impact partner participating farmers provide the testing ground for each site-specific stepwise climate smart investment pathway. IITA researchers deliver a Training of Trainers to the impact partner extension officers. In Tanzania regular monitoring and data collection is done by HRNS with backstopping from IITA

3. Farmer Segmentation

Agricultural extension to farmers in Tanzania assumes similar needs and aspirations. Research reveals there are in-fact many variances between farmers. The farmer segmentation tool enables the researcher and impact partners to identify different clusters of farmers with similar characteristics. By better understanding specific farmer characteristics, more effective extension service delivery models can be targeted. Having identified the different challenges and resource constraints of the different farmer categories in Mbeya and Kilimanjaro, HRNS utilizes this knowledge to provide targeted extension services based on the specific needs and available resources of those farmers.

4. Stepwise demonstrations

Following the Stepwise climate-smart investment pathways developed by the regional stakeholders in the two major Arabica coffee growing areas in Tanzania, demonstration plots have been set up on HRNS participating coffee farmers plots: 3 in Mbeya and 2 in Kilimanjaro. The plots are set up based on the site-specific Stepwise investment pathways for each site. The aim of setting up the demo plots is to validate the approach and demonstrate to coffee farmers in these sites the combination of packages developed by the stakeholders as the best pathway through which farmers can implement CSA and good agricultural practices in Arabica coffee. The demo plots are monitored for their performance and data collected is being

analysed by IITA. Results are expected to be shared towards the end of 2019.

Preliminary Feedback

Initial Stepwise participating farmers' feedback from the central Uganda demonstration sites is promising. Stepwise is noted as one of the novel approaches to increasing investment in coffee farming systems by the Uganda National Coffee Platform Financial Viability of Coffee Farming Study Report, October 2018. The report states that initial observations from Stepwise demonstration plots in Central Uganda managed by IITA impact Partner Hanns R. Neumann Stiftung (HRNS) "show high yields in step 4." Preliminary data analysis suggests a decreased incidence of Black Coffee Twig Borer. Local Government partners are encouraging further expansion of Stepwise pilots. Another key impact partner of IITA, Olam Uganda, is also reporting early signs of success from demonstration sites in Mount Elgon. Olam is expanding the testing of the Stepwise approach beyond coffee and Uganda.

Further Reading

- Climate Smart Investment Pathways for smallholder farmers
https://drive.google.com/file/d/1_LHX6caZuAQK6HM7vQ5k259W_n0h6yt/view
- The Farmer Segmentation Tool: Understanding the diversity of coffee farmers
<https://drive.google.com/file/d/114a5B-y0W2DcyRdasaNflwKtEwEd55x/view>
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Research led by:



Hanns R. Neumann Stiftung



IITA Uganda and partners under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) (<https://ccafs.cgiar.org>) is promoting increased smallholder coffee farmer adoption of Climate Smart Agriculture (CSA) practices in Uganda. Initial IITA research on coffee in Uganda began in 2006 and has spread across 30-districts, with 58 field trials, and 178 demonstration plots established and more than 4,000 participating farmers. IITA supports the Uganda Government relevant agricultural and coffee research policies, working closely with the Uganda Coffee Development Authority (UCDA) and the National Coffee Research Institute (NaCORI). Working with private sector impact partners such as Olam, Kawacom, Great Lakes Coffee, and Hanns R. Neumann Stiftung, IITA research activities include: land-use mapping; farmer segmentation surveys, and the development of climate smart investment pathways to increase smallholder coffee farmer adoption of good agricultural and climate smart practices. IITA has published almost 30-scientific articles on coffee.

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The views expressed in this brief are those of the

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The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together some of the world's best researchers in agricultural science, development research, climate science and Earth System science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. Visit us online at <https://ccafs.cgiar.org>.

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