



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



Photo: CNFA

LEVERAGE OPPORTUNITIES FOR SYSTEMIC CHANGE: INSIGHTS FROM A MARKET SYSTEMS AND PERFORMANCE BASELINE OF THE RWANDAN FOOD SYSTEM

A baseline study was conducted to analyze the key performance and market system-level indicators and inform intervention design for Hinga Wunguke¹, a five-year USAID-funded initiative to increase incomes, improve nutritional outcomes, and strengthen resilience to climate change in Rwanda through a market systems development (MSD) approach. MSD aims to sustainably address constraints across all parts of a [market system](#), including the exchange of goods and services, supporting functions, and formal and informal rules governing the system.

This brief presents baseline learnings to inform stakeholders and activities striving towards more inclusive and equitable agricultural market systems.

BACKGROUND

At the market system-level, the key study areas that the team focused on to capture [market system health](#) and dynamics were business innovation and trust and cooperation. With the importance of inclusion and sustainable approaches, inclusive and sustainable value creation were also studied. As nutritional outcome improvement is a key objective, the team examined the [ecological factors that affected food intake](#). At the performance level, the areas that were assessed included agriculture practices, access to markets, and nutrition outcomes. All performance and systems indicators will also be analyzed at midline and endline.

The baseline study took place from May to August 2023. It was led by the [Cultivating New Frontiers in Agriculture \(CNFA\)](#) and [MarketShare Associate \(MSA\)](#) teams.



USAID
FROM THE AMERICAN PEOPLE

This document was made possible through support provided by Feed the Future through the U.S. Agency for International Development (USAID) under the terms of Contract No. 72069623CA00001, the Feed the Future Hinga Wunguke Activity managed by Cultivating New Frontiers in Agriculture (CNFA). It was prepared by Noura Kamel and Ellie Rakoff (MarketShare Associates) and Daniel Gies, Cyprien Nsengiyumva, and Thomas Arminio (CNFA). The findings expressed herein are those of the contributors and do not necessarily reflect the views of USAID or the United States Government.

The baseline study employed a mixed methods research methodology including qualitative and quantitative components. For the performance-level indicators, enumerators conducted a population-based survey that reached 3,822 respondents across all thirteen districts in the Feed the Future Zone of Influence (ZOI). A food environment assessment (indicator HW.16: Index of key nutritious foods available in physical markets in the ZOI) was also conducted across 26 markets and covering 11 vendor types. For the market system-level survey, the team analyzed data from 255 key-informant interviews (KII) conducted in July 2023 across four districts in Rwanda, as well as in Kigali. The sample included representatives from all identified key actors that represent the full agricultural market system. All data was coded and analyzed relative to each of the evaluation questions.

FINDINGS

#1: There is a moderately innovative business environment as represented by a Business Innovation Index score of 0.51 out of 1.00. There are opportunities for fostering more inclusive business models by targeting market actors that already demonstrate risk taking, which could be adopted by other actors within and across value chains.

The business model innovation scoring index was developed to measure incremental innovation in existing business models and covers four categories:

- product/service innovations;
- process innovations;
- marketing innovations;
- and organizational innovations.

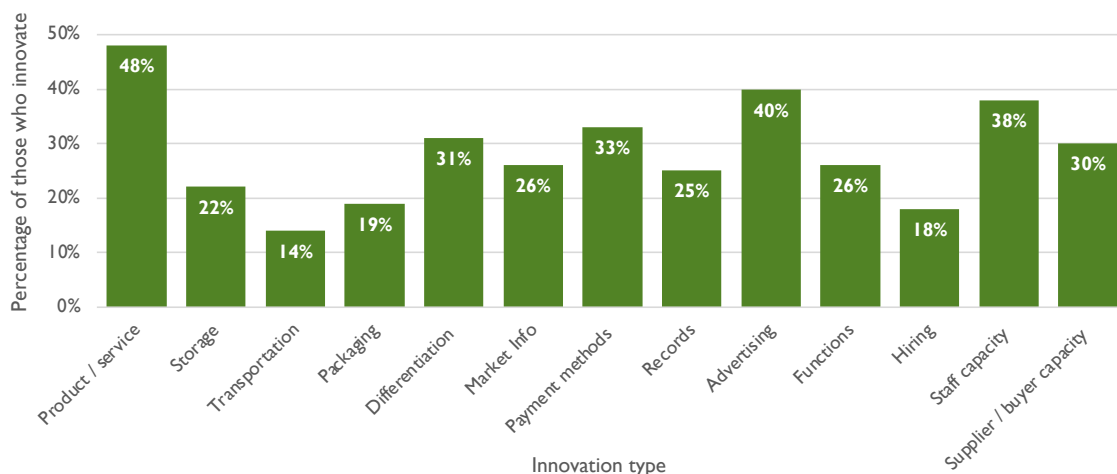
This index seeks to understand the innovations that market actors make as a good indicator of the level of risk-taking and dynamism of the market system. There is a well-established positive relationship between innovation by people and organizations and their ability to absorb and adapt to shocks.



There is an opportunity for stakeholders to facilitate further innovation among actors across focus value chains, especially production-level actors who currently show the lowest level of innovation (0.39 out of 1.00). Actors who already take risks and introduce innovations (such as supporting services and input actors, each scoring 0.59) could be targeted for additional inclusive business model innovation, as they demonstrate a willingness and openness to innovate. Opportunities for improving innovation in the least innovative value chains, such as beans and peas, necessitate more effort.

Importantly, across value chains, transportation and storage stand out as the areas with the least innovation, despite being key factors that drive market access and affect post-harvest losses for producers. This is another important area in which stakeholders focused on inclusive food systems could implement market-wide interventions, such as through new membership models to facilitate aggregation, storage, transportation, and market linkages to large buyers.

Innovation by type



#2: There is a moderate level of trust and cooperation observed in the market system, with an overall score of 1.67 / 3.00. Leveraging inclusive models that integrate group representation and advance group representation are especially relevant to deepening trust and cooperation.

The level of trust and cooperation is influenced more by cooperation² (1.76) than trust (1.59). Trust and cooperation in a market system are considered key enablers of inclusive growth, [market system resilience](#), and, by extension, sustainable value creation. It measures informal rules and expectations that govern behavior and set expectations among market actors.

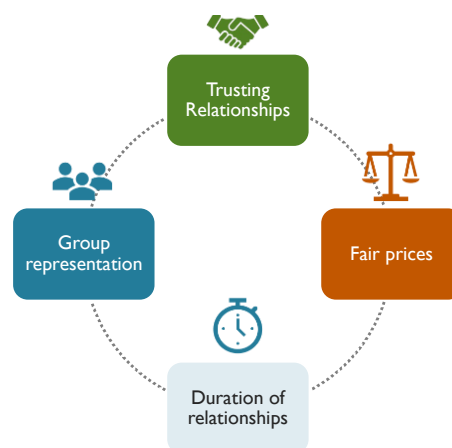


There are opportunities to leverage and further develop trust and cooperation, especially through interventions that bring together actors with an *existing history of working relationships*. New partnerships between market actors may require additional attention and resources. Promising areas for consideration include models that integrate group membership (relevant for Intermediate Result 1: Sustainably increase agricultural productivity) and advancing group representation with industry groups and advocacy groups (relevant particularly for Intermediate Result 4: Strengthen the enabling environment to foster market driven agriculture).

“Nowadays I don’t sell my products on credit. This is because, there is a time I gave a buyer my tomato production on credit then he paid me less money according to what we agreed. Since that time, I cannot trust buyers anymore. Maybe I will sell again my production on credit the time we get fixed buyers. I think this was because we didn’t make a written contact, I trusted him, and he proved me wrong. (Farmer, male, over 30, Bugesera)”

There is considerable opportunity to improve terms and conditions of credit for borrowers in the agricultural market system (e.g., through using contracts and secured crop as collateral for additional credit). Crop insurance is another mechanism that could enable continued trust and cooperation without undermining prospects.

Influences that drive trust and cooperation



#3: At baseline, individual, interpersonal, and institutional factors impact respondents’ food intake to a moderate degree, with an overall score of 1.56 / 3.00. Food intake and consumption patterns can be improved by ensuring that interventions focus on affordability and access.

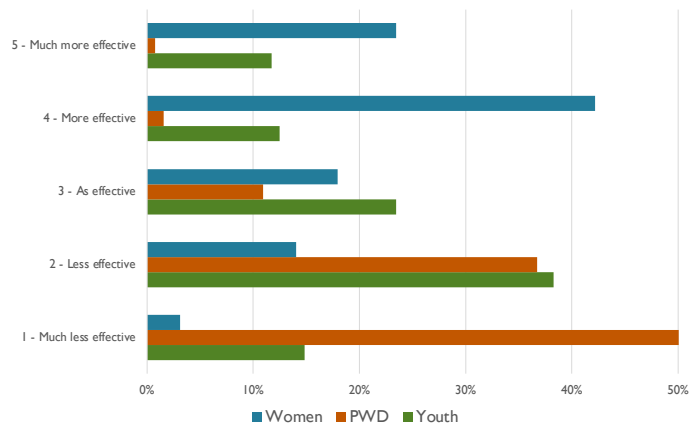
Interpersonal factors have slightly more influence (1.74) followed by individual (1.53), then institutional (1.43). This indicator provides particularly relevant insights for Intermediate Result 3: Improve producers’ market outcomes.



“The factor that matters to me when deciding on the foods to consume is what is locally available and affordable to us. Here I mean that we consume first of all what we harvest from our farms. We consume foods that are available at nearby markets and that are affordable to us.” (Farmer, female, over 30, Nyabihu)

Consumers know about food recommendations for people with certain conditions (e.g., pregnant people, those with illnesses, and older populations), but the team found little evidence that people alter their consumption based on these conditions. Both raw and processed foods are seen as part of a healthy diet; yet, raw foods are consumed more frequently at the household level because food consumption is most influenced by affordability, availability, and what is produced

Perceived effectiveness as employees



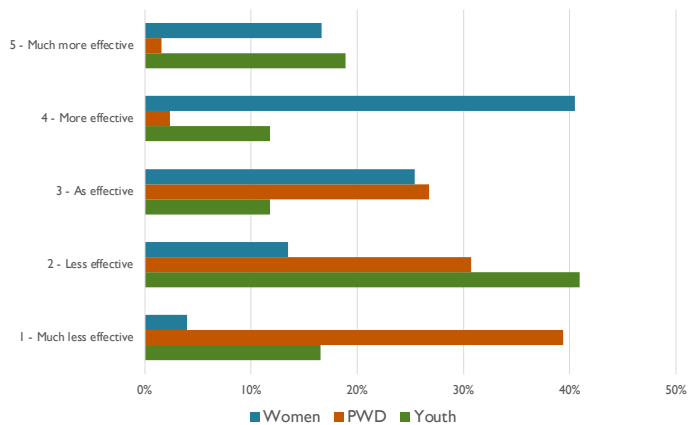
domestically. Taste and nutritional value are secondary to cost and access.

Cost and access are therefore key drivers for food intake and consumption patterns. Interventions to make nutritious foods more affordable and accessible could improve outcomes (fresh as well as high-quality processed foods³). This may be through interventions targeting improving access, processing and value addition (especially climate-smart processing using solar drying or low-impact biomass-fueled equipment), or innovation more generally.

Targeting the local market is more likely to have an impact than retailers or restaurants. Institutionally, respondents have general knowledge about food recommendations, but there is little evidence that this knowledge is the result of systematic messaging or marketing. Information is transmitted informally. There is an opportunity for targeted nutrition messaging around the selected foods.

#4: In terms of inclusive value creation, women are perceived favorably as employees and entrepreneurs in all areas of the sector. Youth tend to be perceived less favorably, but this seems to mirror their reported lack of interest in the agricultural sector. Persons with disabilities (PWD) are believed to be less effective than their peers, however, they were considered to add value assuming the work mindfully accounts for their areas of ability. Awareness of these perceptions in the design of all interventions will be key as gender and social inclusion is of cross-cutting importance.

Perceived effectiveness as entrepreneurs



The question is whether these positive perceptions of women as employees and entrepreneurs translate into women being engaged equitably and having opportunities for greater contribution and growth.

“To work with or to hire a person with disability, I would follow the same procedures as what I can use to hire other category but for them I will look at what kind of disability if it should not hinder him/her to perform the assigned job. Otherwise, there is no prioritizing of any category. General criteria I consider [when hiring] are qualifications (skill and knowledge), availability, honesty, and type of disability depending on which job is available” (Financial Service Provider, male, over 30, Gakenke)

- Agriculture transformation initiatives can further leverage the existing favorable environment for gender inclusion, especially as it relates to sustainability and land management interventions.
- For youth, there are indications that the sector provides opportunities for youth who have interest and enthusiasm for agriculture. As the sector modernizes, youth’s higher literacy levels and skills can be leveraged to improve inclusion in areas such as low-innovating transport.
- Finally, PWD groups can be used to reach PWD to improve their inclusion in the value chains by providing access to quality inputs or financial products.

#5: In terms of sustainable value creation, climate- and weather-related shocks (droughts and flooding), pests and diseases afflicting crops, and land conditions (erosion and soil degradation) are the main shocks that impact individuals and households. Facilitating and supporting affordable long-term and systematic coping mechanisms, such as crop insurance, are critical to alleviating shock exposure and strengthening resilience.

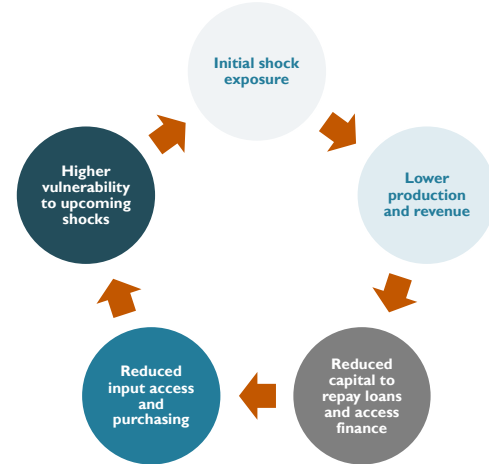
Lack of access to affordable, available, and high-quality inputs also increases the cost of production and constrains yields, leading to lower profitability and incomes. Many actors, especially producers, become caught in a negative feedback loop whereby initial shocks create a chain reaction and worsen their vulnerability to later shocks.

Critically, shocks lead to intensified food insecurity and constrained household spending. While some coping mechanisms are present, actors mainly rely on low-cost and low-technology mechanisms such as land management or diversifying into new crop varieties when seeds are available; however, there is a notable lack of access to long-term, systematic coping mechanisms like crop insurance and irrigation.

“The most difficult challenge that I face as a farmer is related to climate change. Sometimes we have a prolonged dry season, and in other cases we have a severe rain season. All these problems emanating from climate change damage our crops and affect production thus causing losses to farmers. I had a case where all my crops were destroyed and I was left without even enough to sustain family nutrition and without means to pay for the universal health insurance scheme.” (Farmer, male, over 30, Nyabihu)

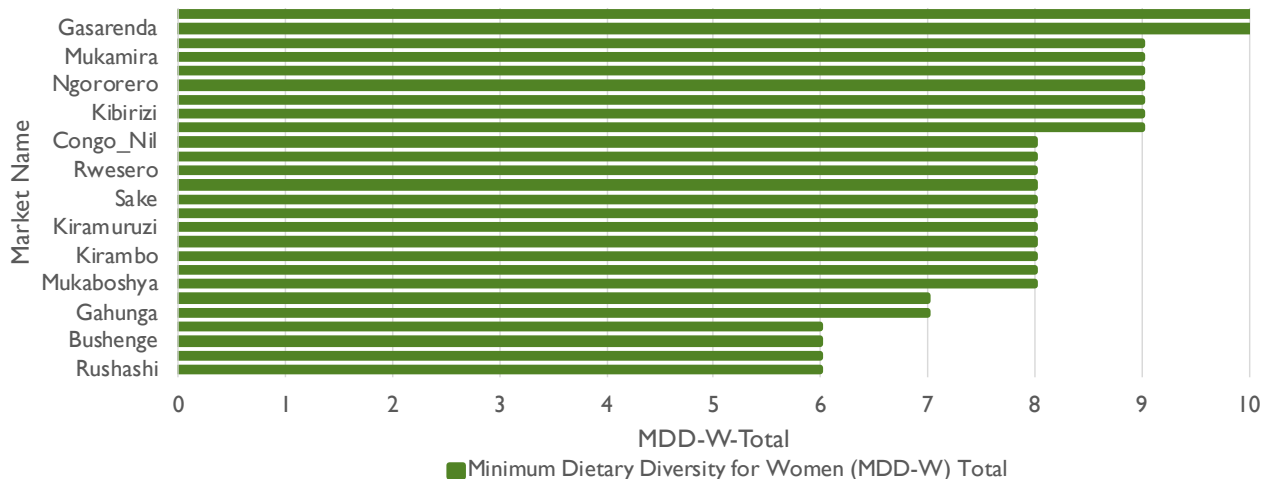
Shocks that affect production are felt across all value chains studied. Constrained incomes lead to fewer customers. Post-production market actors (e.g., traders / aggregators, processors, and distributors) are unable to purchase the quality and quantity of crops they need as inputs for their businesses, and they face higher prices due to shortages. It was less clear what coping mechanisms businesses resort to, but consistent production, and therefore opportunities for growth and expansion, continue to be challenging considering these shocks.

Shock and Vulnerability Feedback Loops



#6: A Food Environment assessment suggests the broad availability of fresh, nutritious food groups in local and regional markets. Though market availability is not a barrier to household nutrition, improving cost and access could positively impact consumption patterns. Further studies could also support a more comprehensive understanding of these drivers of household nutrition.

MDD-W Food Group diversity and availability at 26 markets (10 points max)



An assessment of the availability domain of the food environment was designed in collaboration with USAID's Advancing Nutrition program. Enumerators counted the physical presence of nutritious food groups and determined that 80.3 percent of MDD-W (minimum dietary diversity for women) food groups were available in ZOI physical markets.

Though it appears that availability of nutritious foods may not be an issue for households, this finding supports the notion that cost and access are key drivers for food intake and consumption patterns, reinforcing findings from the ecological factors indicator. However, it is possible that seasonality could have significant impact on availability, as this food environment assessment did not account for potential variation of food availability across seasons.

This indicator uses an established methodology to measure food availability as a proxy of the presence of various food groups in physical markets but does not measure food availability by volume. A more comprehensive nutrition consumption study could reveal the extent to which cost, access, and seasonal availability correspond to household nutrition.

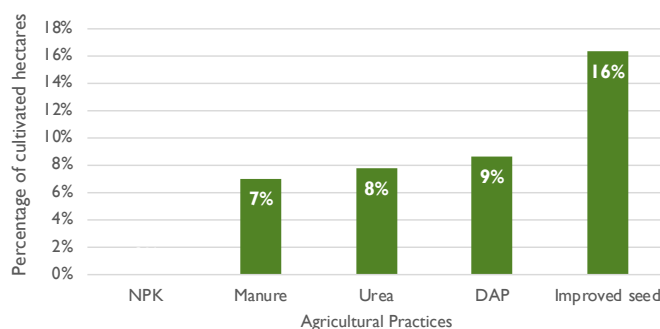
#7: Yields of agricultural commodities could be increased through greater adoption of improved practices and inputs, including improved seeds and fertilizers. Support for farmers to acquire improved inputs and embrace well-established improved management practices will significantly improve Rwanda's yield gap for these commodities.

Agricultural productivity is constrained in the Rwandan food system by the low adoption of improved management practices and improved seeds and fertilizers. In 2022, Rwandan farmers harvested [1,595kg/ha](#) of maize on average in Season A. By comparison, South African farmers [yielded 5,760kg/ha](#) over the same period according to a projection by the USDA FAS.

Overwhelmingly, smallholder farmers in rural Rwanda have yet to embrace the potential yield benefits associated with the adoption of hybrid seeds or synthetic fertilizer. Only 13 percent of measured hectares were planted according to recommended rates of improved seeds and fertilizers. Additionally, of 1,033 measured hectares, only 723 hectares applied improved management practices or technologies, which are primarily comprised of low-cost, low-risk, and low-technology practices. The combination of the widespread use of unimproved inputs with a suboptimal adherence to improved agronomic practices are likely strong contributing factors to Rwanda's yield gap of agricultural commodities.

Smallholder farmers in the 13 measured districts primarily grow beans (French, high iron, soy, and other types), carrots, Irish potatoes, and maize. Yields of these crops would substantially benefit from a universal adoption of recommended rates of seed and fertilizer, as well as observation of good agricultural practices. Support for smallholders to acquire improved inputs, such as hybrid and locally optimized seed varieties, and embrace well-established improved management practices, such as optimal crop spacing, crop rotation, minimal tillage, organic carbon management, and other climate-smart approaches, will significantly improve Rwanda's yield gap for these commodities.

Percentage of hectares using optimal fertilizer and improved seed varieties



CONCLUSION

These seven core findings of the baseline study have been used by the Hinga Wunguke Activity to set quantitative targets for relevant indicators, inform learning questions, and design effective interventions and models. By taking a market systems development approach, constraints are comprehensively contextualized across several levels of market actors allowing opportunities to be leveraged to maximize impact and drive Rwanda towards a more productive, sustainable, and equitable agricultural market system. The Hinga Wunguke Activity will continue to monitor its approach to improve agricultural productivity, increase access to finance for farmers and agribusinesses, improve market outcomes for producers, and strengthen the enabling environment to foster market driven agriculture, and share lessons from implementation and partnerships.

¹ The [Feed the Future Rwanda Hinga Wunguke Activity \(Hinga Wunguke\)](#) is a five-year (January 16, 2023 to January 15, 2028) USAID-funded \$29.75M initiative to increase incomes and improve nutritional outcomes by sustainably increasing agricultural productivity and strengthening domestic consumption and markets for high-value and nutritious agricultural products. It has four complementary objectives: (1) increase agriculture productivity sustainably, (2) increase farmer & agribusiness access to finance, (3) improve producer market outcomes, and (4) strengthen the enabling environment to foster market driven agriculture.

² There are three dimensions of trust that are studied, which are reliability, competence, and integrity; as well as two dimensions of cooperation, which are belief in the importance of relationships, and the belief in mutually beneficial gains. The scores range from 0 (low) to 3 (high).

³ Respondents seemed to equate raw food as being nutritious and processed food as not nutritious as a whole, whereas high quality and minimally processed foods are still able to provide good nutritional outcomes.