

CHAPTER 2

Delivering agricultural innovations at scale in Burundi: Adaptation, results, and learning

Patrick K Mutuo¹, Saidi Bizoza¹, and Christophe Gahungu¹

Contributors:

Fiacre Nkeshimana², Patrick Munezero³,
Alain Villard Bimenyimana⁴, Jean Berchmans Bizimana⁵,
Bertin Nduwayo⁶, Blaise Ndabashinze⁷, Jonas Ndikumana⁷,
Micheline Inamahoro⁷, Pierre Niyonzima⁷, and Irene Mughi⁸

¹International Institute of Tropical Agriculture (IITA). ²World Vision Burundi. ³Confédération des Associations des Producteurs Agricoles pour le Développement (CAPAD). ⁴International Livestock Research Institute (ILRI). ⁵International Rice Research Institute (IRRI). ⁶International Potato Center (CIP). ⁷Institut des Sciences Agronomiques du Burundi (ISABU). ⁸Seed Systems Group (SSG).

2.1 Context

Burundi faces several structural and systemic challenges that severely constrain its agricultural sector and threaten national food security. The country's high population density and limited arable land put immense pressure on natural resources, while widespread poverty and recurrent climate shocks further undermine household resilience.

Agriculture remains the backbone of livelihoods, engaging more than 90% of the population, yet productivity is among the lowest in the region. This is largely due to limited access to improved seeds, modern agricultural technologies, and reliable extension services.

A weak seed system, coupled with insufficient dissemination of proven technologies, leaves most smallholder farmers dependent on traditional practices that can no longer meet growing food demands, even as improved and better options exist. Underdeveloped markets,

limited value-addition – particularly at the household/local level – and poor dietary diversity reinforce a downward spiral of low productivity and food insecurity. As a result, food and nutrition insecurity remain widespread, especially in rural areas. Women and youth are disproportionately affected, as they face greater barriers to adopting innovations and accessing economic opportunities, further entrenching inequality and vulnerability.

In this context, the AID-I GLR project aimed to reach half-a-million smallholder farmers in Burundi. The program leveraged existing proven technologies and innovations to ensure farmers gained access to improved seed varieties and climate-smart agricultural practices. By scaling up these technologies through strengthened extension and market systems, the program sought to boost productivity, enhance food and nutrition security, improve climate resilience, and expand livelihood opportunities.

2.2 Adaptation and implementation of AID-I GLR strategies in Burundi

In Burundi, the first step was to hold a stakeholders co-creation workshop in December 2022, where discussions centered on (i) challenges in the agriculture sector, (ii) value chains with the most potential for scaling, (iii) available and documented technologies and innovations, (iv) mapping of partners working with rural communities, and (v) identifying workable partnerships that could spearhead implementation.

The implementation model was built on inclusive, results-driven, multi-stakeholder partnerships, including delivery partnerships, innovation developers, service providers and the national agricultural research and extension system. Three principal delivery partnerships (consortia) were established to ensure broad and equitable coverage across Burundi's regions:

1. Consortium 1: World Vision-led partnership

This consortium included World Vision Burundi, Welt Hunger Hilfe (WHH), Agency for Cooperation and Research in Development (ACORD), and *Vétérinaires Sans Frontières (VSF)*. It targeted the Northern Region, covering the provinces of Kayanza, Ngozi, Muyinga, Cibitoke, Bubanza, and Kirundo (Figure 6). The partnership focused on seven value chains: beans, maize, milk, poultry, rabbits, rice, and sweet potatoes.

2. Consortium 2: CAPAD-led partnership

Led by the *Confédération des Associations des Producteurs Agricoles pour le Développement (CAPAD)*, in collaboration with the World Food Programme (WFP), this partnership operated in the Eastern and Central

regions, specifically in the provinces of Ruyigi, Makamba, Gitega, Karusi, and Muramvya (Figure 6). It covered nine value chains: bananas, beans, cassava, maize, milk, poultry, rabbits, rice, and sweet potatoes.

3. Consortium 3: One Acre Fund partnership

The third partnership involved the One Acre Fund (1AF) network, focusing on Gitega Province in the Central Region, with interventions concentrated on the maize and bean value chains.

In addition to delivery partners, innovation developers were engaged to support and complement scaling efforts. For each selected innovation, a designated innovation owner provided technical guidance. This guidance involved six institutions: five

CGIAR centers (IITA, the International Potato Center [CIP], the International Rice Research Institute [IRRI], the International Livestock Research Institute [ILRI], and the Alliance of Bioversity and CIAT [ABCI]) and one national research institution, *Institut des Sciences Agronomiques du Burundi (ISABU)* as well as *Ministère de l'Environnement, Agriculture et Elevage (MINEAGRIE)* (Figure 7). Service providers included Scientific Animation Without Borders (SAWBO) and Seed Systems Group (SSG), who provided specialized tools and approaches to facilitate the delivery of innovations.

These partnerships were designed to integrate research-based innovation, technical expertise, operational capacity, and community engagement. Collectively, they aimed to reach 500,000 smallholder farming households by the end of the project's implementation period.

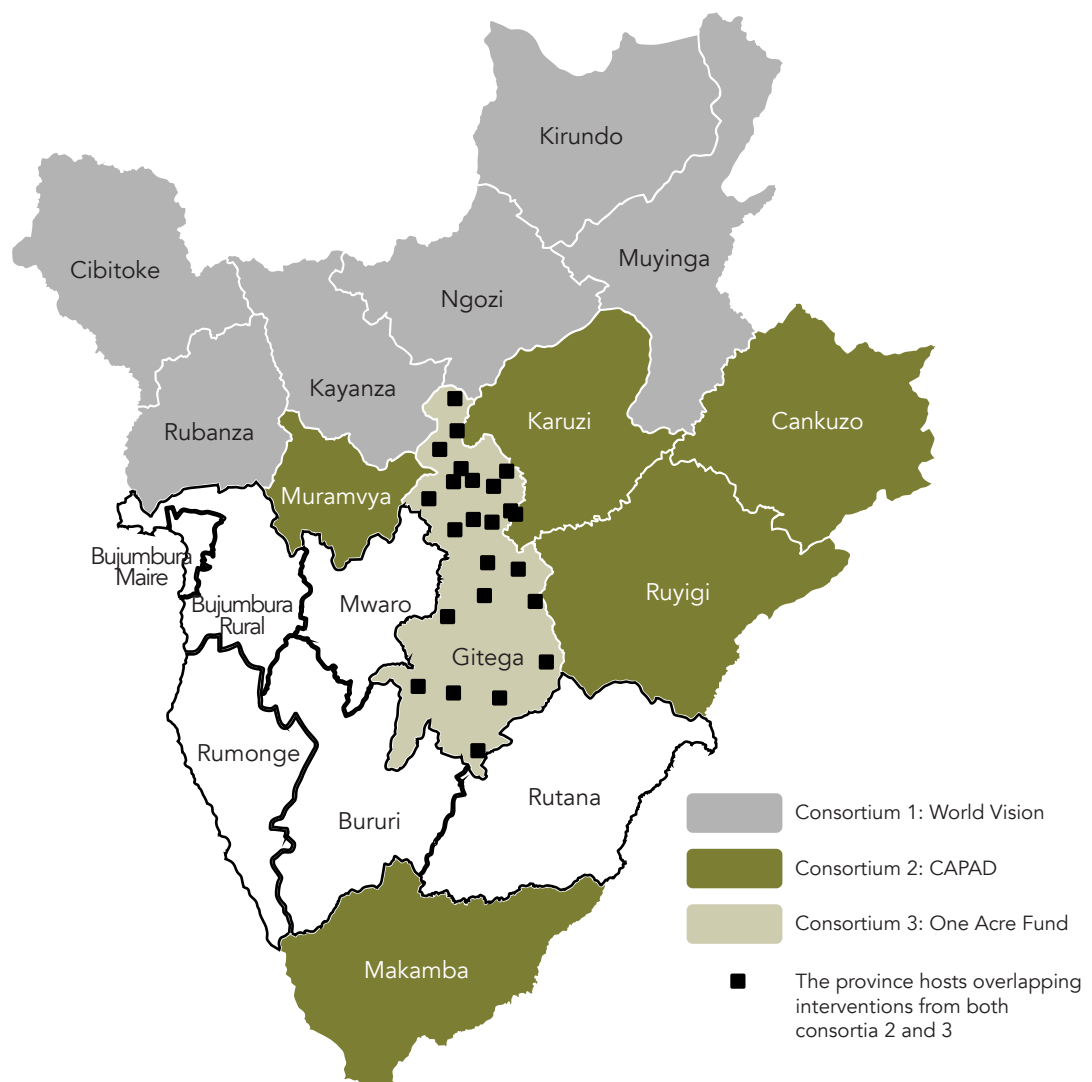


Figure 6: Map of Burundi showing intervention area (s) by each consortium.

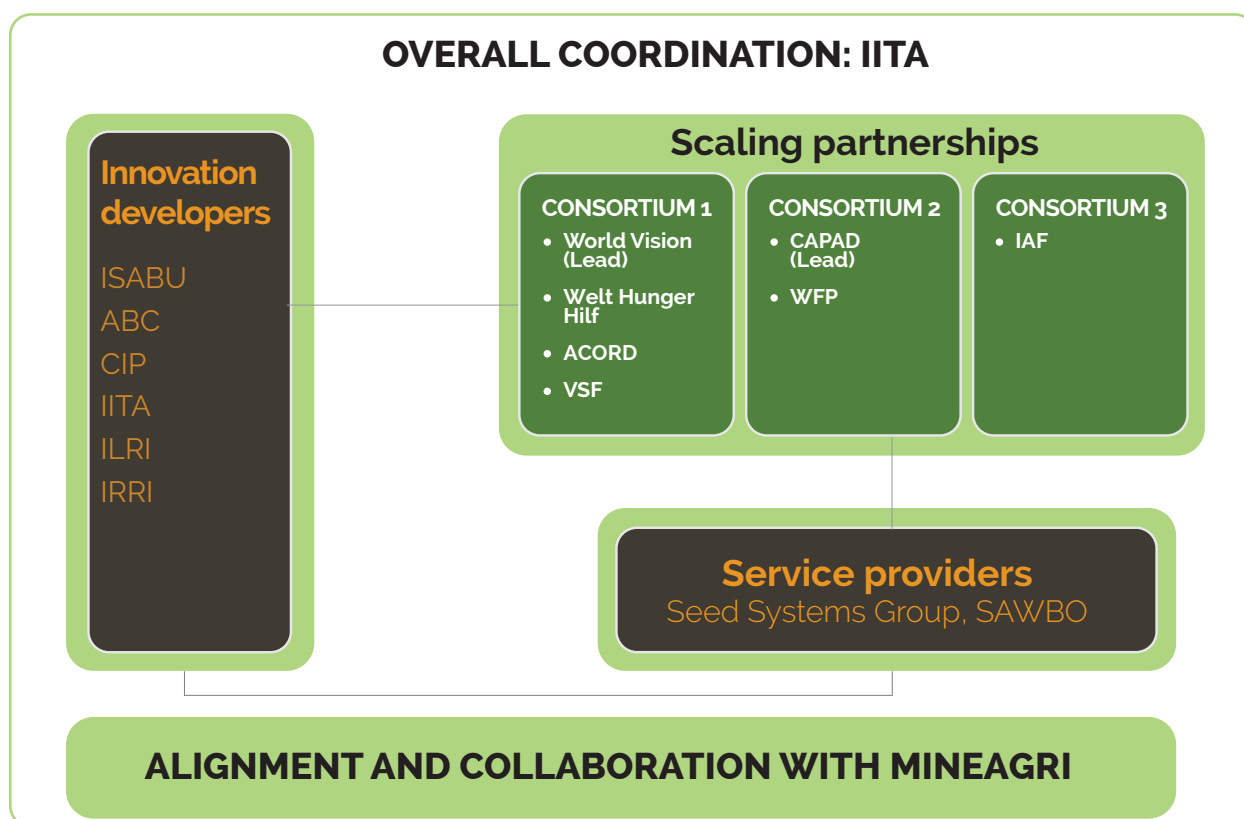


Figure 7: Partners and roles.



A 2.5-ha plot for production of parental hybrid seed by ISABU, at Bukemba station in Burundi. It was predicted to yield sufficient seed to produce 400 metric tons of hybrid seed by end of 2025. Photo taken on 3rd September 2024.

Box 1: Managing partnership and consortium challenges to accelerate scale

The AID-I GLR Project engaged a diverse range of research, public, private, and civil-society partners to accelerate the dissemination of agricultural innovations across multiple value chains. While this multi-partner approach enabled rapid scale-up, it also introduced coordination and implementation challenges.

Project implementation relied on grouping scaling organizations into regional consortia to maximize geographic coverage and leverage complementary strengths. An initial challenge was securing acceptance of this arrangement, as perceived differences in institutional capacity and experience led some organizations to hesitate in collaborating with smaller or farmer-based partners. Similar concerns arose during the designation of consortium leadership, where issues related to institutional recognition and perceived standards affected acceptance of lead roles. In addition, lengthy partner selection and funding agreement processes during the first year resulted in implementation delays. The project also faced a limited availability of private technical partners for specialized innovations, particularly in artificial insemination and animal vaccination.

These challenges were mitigated through the establishment of structured coordination mechanisms, including regular joint planning, coordination, and review meetings, which helped harmonize approaches, clarify roles and responsibilities, and strengthen collaboration among consortium members. The project further leveraged existing public institutions such as Centre National d'Insemination Artificielle et d'Amélioration Génétique (CNIAAG), ISABU, Office National de Contrôle et Certification des Semences (ONCSS), and national veterinary services to address technical gaps and ensure continuity of service delivery. A clear allocation of roles based on partners' comparative advantages further enhanced operational efficiency.

As a result, partnerships became more effective and resilient. Several collaborations continued beyond the project through new joint initiatives. Also, the seed production, commercialization, and dissemination system linking research institutions, seed producers, VBAs, agro-dealers, cooperatives, and farmers, remain functional. This experience underscores the importance of structured governance, transparent coordination, and alignment with national systems in sustaining impact at scale.

AID-I GLR emphasized a delivery model that supported sustainable scaling beyond project duration. Each partnership operated as a platform for delivering integrated packages of technologies and services, combining CGIAR-derived innovations with local implementation capacity. This included joint work-planning, capacity development, extension support, and real-time monitoring.

By bridging the gap between research and practice, and by involving both public and private actors, the initiative ensured relevance, ownership, and long-term impact and sustainability.

The initiative focused on the delivery and adoption of innovations across the above-mentioned key crop and livestock value chains. Innovation selection was guided by criteria such as demonstrated impact, adaptability to local conditions, and potential for widespread adoption.

Livestock-related activities focused on genetic improvement through artificial insemination (AI) and enhanced animal health practices. All technologies promoted were first assessed for scalability, affordability, and relevance, with strong emphasis on inclusion of women and youth to maximize equitable impact and broaden reach through a consultative process.

Burundi's seed system is still underdeveloped, extension patchy, and input costs remain high. Therefore, the village-based advisor (VBA) approach (explained further below) was introduced by building on what already existed: extensionists and village leaders at the *sous-colline* (sub-hill) level. AID-I GLR enriched their capacity not only to provide technical assistance but also to strengthen and extend the seed system.

A central component of the implementation strategy was the use of input distribution

and training events, which served as entry points for introducing smallholder farmers to improved technologies. During these events, scaling partners distributed small packs of inputs – typically 100-gram seed packs – accompanied by small quantities of fertilizer, as well as flyers with agronomic and nutritional guidance.

These sessions were highly participatory: before distribution, technical experts presented the key benefits of the seeds (such as their nutritional content and yield potential) and demonstrated recommended agronomic practices. This approach ensured farmers not only received quality inputs, but also understood how to use them effectively.

To further reinforce learning and ensure continuous support, the initiative employed the VBA model mentioned above. VBAs are trusted, selected farmers trained to serve as community-level resource persons. Their primary role was to provide day-to-day advisory support to beneficiaries who received input packs, particularly those who may have questions or need practical guidance after the initial distribution.

In many rural settings where access to formal extension services is limited, VBAs bridged the gap by offering prompt and timely advice, facilitating the correct use of technologies, and supporting adoption decisions.

Beyond technical assistance, VBAs also played a key role in strengthening local seed systems. They served as focal points between farmers, agro-dealers, and seed companies, helping to collect orders and convey input demand from their communities to suppliers. This function helped ensure the timely availability of seeds and other inputs while also fostering stronger and more durable relationships between the farming community and the private sector. Through the integration of input distribution events and the VBA model, the initiative created a decentralized, farmer-centered system that enhanced knowledge transfer, promoted inclusive participation (especially by women and youth), and supported sustainable adoption of improved agricultural technologies.

Initially, the new model was misunderstood and faced resistance, even at the administrative level, with particular disdain for the small-pack approach, due to the small quantities per farmer. To overcome this prejudice, communal agronomists, scaling partners, and village-based extensionists were exposed to the system during a field visit to Kenya, which facilitated understanding it, and hence accepting it. VBAs were further trained in seed business management, enabling some to operate as local seed agro-dealers by collecting orders and reselling to farmers, while others partnered with established agro-dealers on a commission basis.

Box 2: Sub-hill-based VBAs for enhanced last-mile service delivery

In the Burundi context, the AID-I GLR Project introduced an innovation by subdividing village-based advisors (VBAs) at the sub-hill level to align with Burundi's decentralized extension system and improve proximity to farmers. Rather than operating at broader administrative levels, VBAs were embedded closer to communities, each serving a small and manageable group of approximately 100–150 households.

This sub-hill-based deployment allowed VBAs to work closely with government agricultural monitors, cooperatives, and agro-dealers to disseminate good agronomic practices, distribute small trial seed packs, and connect farmers to certified seed producers. The closer presence of VBAs improved responsiveness to farmers' needs, facilitated the aggregation of seasonal seed demand, and strengthened last-mile delivery particularly for hybrid maize seed dissemination.

By bringing advisory services closer to farmers and reducing advisor-to-farmer ratios, this approach enhanced effectiveness, inclusiveness, and sustainability of extension services at the community level.

2.3 Results

2.3.1. Outputs

2.3.1.1. Number of individuals participating in AID-I GLR

Since its inception in 2022, the project reached a total of 626,504 individuals through various outreach and scaling activities. These included the distribution of agricultural inputs, technical training sessions, field demonstrations, and sensitization events (Table 4). This figure represents a 113% achievement against a target of 554,760 participants, reaffirming the project's effectiveness and relevance in reaching rural communities.

An analysis of outreach performance over the implementation period reveals a consistent and strong upward trend in achievement. In 2023, the project reached

191,874 individuals, meeting 72% of the annual target of 267,740. Performance significantly improved in 2024, with 374,357 individuals engaged, which was 20% above the target of 312,174. This positive trajectory continued into 2025, where mid-year results alone accounted for 118% of the annual target (60,273 reached versus 50,712 targeted), proving both the effectiveness and growing – and also organic – demand for project interventions.

This sustained and upward trend demonstrated the project's strong alignment with its objective of supporting small-scale farmers, and highlights both the growing demand for agricultural innovations and the effectiveness of scaling strategies implemented through local partners and input distribution channels.

Table 4: Project participants/beneficiaries in Burundi.

		Target	Actual	Achievement (%)
Number and type of individuals participating in AID-I GLR		554,760	626,504	113%
Gender	Men	331,130	361,649	109%
	Women	223,630	264,855	118%
Age	15–29	109,183	75,319	69%
	30+	445,577	551,185	124%
Category	Government		1,347	
	Partners of United States Government-assisted private-sector firms		567	
	Civil society		369	
	Producers (smallholders)		624,221	

In addition to its quantitative accomplishments, the project made deliberate efforts to enhance social inclusion. In 2023, it collaborated with cooperatives supporting marginalized groups to reach 118 Batwa households across the provinces of Kayanza, Kirundo, and Musinga. These households received seeds and participated in targeted training on good agricultural practices across the bean, sweet potato, and maize value chains. Cooperative member selection was guided by inclusive criteria, prioritizing women, men, youth, vulnerable populations, and indigenous groups.

However, the number of Batwa participants remained relatively low, largely due to limited interest of this community in agriculture and livestock activities: historically, the Batwa were hunter-gatherers.

During the project's lifetime, over 288 individuals from marginalized populations, including eight people with disabilities, actively participated in project activities. These efforts underscore the project's commitment to ensuring that no group was left behind in accessing agricultural technologies and resources.

Results in Burundi

Great Lakes Accelerated Innovation Delivery Initiative Rapid Delivery Hub (AID-I GLR) in Burundi

October 2022–September 2025

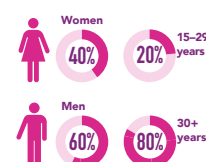


Burundi

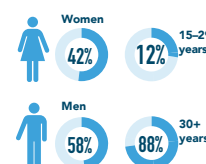
PARTNERSHIPS



TARGET



REACH



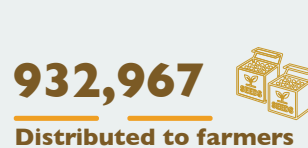
INNOVATIONS



VALUE CHAINS

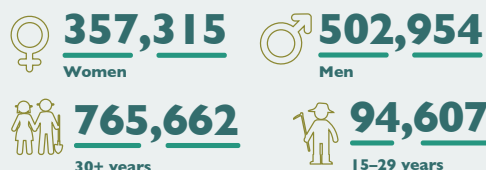


SMALL PACKS



860,269*

Farmers accessed improved agricultural technologies with advisory information through small packs



*Aggregated for the 9 value chains. Some farmers were in several value chains.

119.8

Metric tons of inputs sold by market actors valued at

\$166,441

79.6

Metric tons of early-generation seeds produced and supplied to market actors

144

Metric tons of certified seeds produced

YIELD (mt/ha)

	BEANS	MAIZE	OFSP	RICE
Average farmer-reported yield	1.4	5.3	13.6	4
Innovator projection of potential yield	1–2.5	4–8	9–14	4–7
Baseline	0.6	0.77	9.4	4

Figure 8: The numbers at a glance – Results of the AID-I GLR Project in Burundi.

2.3.1.2. Distribution of small packs of technologies

During the implementation of the project, a total of 683,929 small packs of hybrid maize, beans, sweet potatoes, rice, fodder, bananas, and cassava, representing 52% of the target, were distributed to farmers (Table 5). In total, 636,622 farmers benefited from these small packs of improved seed technologies (Table 42 in Annexes).

In several instances, such as with maize, beans, and rice, the small seed packs were distributed alongside small quantities of chemical fertilizer. Fertilizer distribution reached 182,092 farmers, representing 53% of the planned target.

In the livestock value chain, the project recorded outstanding achievements across

several key interventions. A total of 4,597 cattle were vaccinated, reaching 164% of the initial target, while 5,015 cows underwent artificial insemination, achieving 147% of the target. Additionally, 4,178 farmers received chicks to enhance household poultry production, representing 88% of the planned distribution (Table 42 in Annexes).

In efforts to promote small livestock, 554 households were provided with rabbits, reaching 44% of the target. To further support livestock productivity, especially in terms of nutrition, 32,604 fodder packs were distributed representing 38% of the planned target contributing to improved feed availability and livestock health.

Box 3: Strengthening rural livelihoods through improved poultry systems in Burundi

Under the AID-I GLR (*Kugwiza*) Project, the introduction of improved and disease-resistant poultry breeds particularly SASSO chickens successfully transformed poultry production in Burundi from a subsistence activity into a profitable and scalable rural enterprise. The intervention was designed to accelerate adoption of improved poultry technologies and stimulate demand for enhanced poultry breeds through a starter-package approach.

Each participating farmer received an initial package of three to five improved hens, as well as chicken feed complemented by feeding and good management practices covering at least the first three months of production, thereby reducing early adoption risks. This approach resulted in higher survival rates, faster productivity, and increased farmer confidence in poultry as a viable agribusiness option.

The initiative strengthened local poultry value chains, attracted market intermediaries to rural areas, and generated sustainable income-earning opportunities, particularly for women and youth. Beyond income generation, improved poultry production contributed to enhanced household nutrition and resilience by providing a reliable source of animal protein.



932,967

Small packs of improved agricultural technologies distributed to farmers, along with advisory information



Table 5: Small packs and other inputs distributed in Burundi.

Value chain	Target	Actual	% progress
		(Feb 2023–Mar 2025)	
Seeds			
Maize	538,783	265,817	49%
Beans	463,287	266,574	58%
OFSP	125,346	68,723	55%
Rice	34,933	31,373	90%
Fodder	86,803	32,604	38%
Bananas	39,200	6,514	17%
Cassava	39,029	12,324	32%
Subtotal 1	1,327,381	683,929	52%
Other inputs			
Fertilizer	388,026	204,307	53%
Bio-pesticides	3,600	28,822	801%
Cattle vaccinated	2,807	4,597	164%
Artificial insemination	3,412	5,015	147%
Chicks	6,150	5,419	93%
Rabbits	1,250	878	70%
Subtotal 2	405,245	249,038	61%
Grand total	1,732,626	932,967	54%

While not all individual distribution targets for small packs were fully met, the primary objective of this intervention was to expose farmers to a wide range of agricultural technologies including improved seeds, fertilizers, and livestock inputs, so they

could test them on a small scale and make informed decisions regarding adoption. Attaining 100% of the planned distribution was therefore not the sole measure of success.

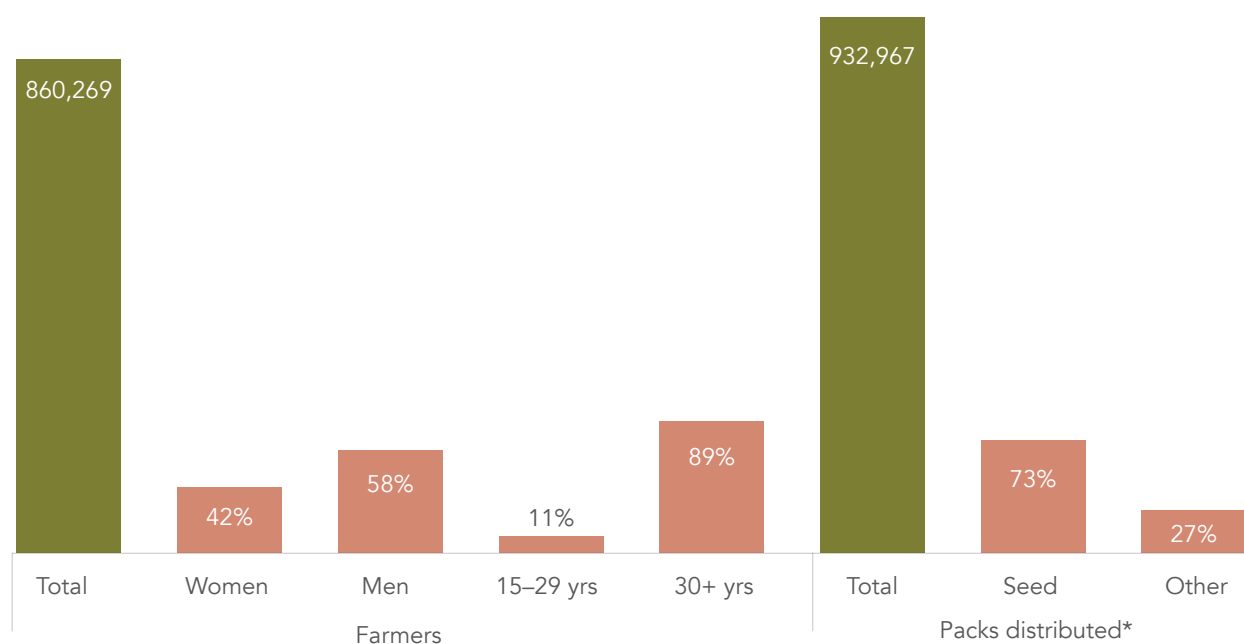


Figure 9: Number of farmers who received seed packs and other inputs disaggregated by gender and age, and total number of packs distributed in Burundi.

* Some farmers received more than one pack

The small-pack approach aimed at stimulating awareness and interest, and encouraging voluntary uptake based on firsthand experience. In this regard, the results are encouraging: 860,000-plus farmers were reached, and 54% of the overall target for technology distribution was achieved across all inputs (Figure 9).

Importantly, when considering the cumulative reach of all project activities over the past three years, the overall engagement has exceeded initial target, showing the effectiveness of the strategy in promoting technology exposure and laying the groundwork for broader adoption.



(1) A five-day training of trainers at the Bujumbura National Veterinary Laboratory for veterinary technicians.

(2) Burundi, Ngozi, Dec 2023: World Vision partnership rice demonstration site established through the support of the International Rice Research Institute (IRRI).

Box 4: Small-pack approach in Burundi

The small-pack approach is an innovative agricultural technology dissemination strategy that enables farmers to test new seed varieties on their own farms. Farmers receive a small trial pack (e.g., 100 g) to evaluate the adaptability, performance, and potential yield of the seeds before adopting them at a larger scale. Complementing this, community-level training at mother demonstration plots is provided, where village-based advisors (VBAs) – trained through CGIAR specialized centers – teach good agronomic practices.

To ensure farmers can access quality seeds after testing, CGIAR centers produce early generation seeds (EGS), which are supplied to community-based seed multipliers for production of certified seeds.

In the Burundian context, the approach initially faced resistance from local administrative authorities, and skepticism from some extension actors due to its novelty. To overcome these barriers, the project organized a learning field visit to Kenya, where the approach is widely implemented, for provincial and communal agronomists, scaling partners, and extension officers. This exposure facilitated understanding, acceptance, and buy-in. Subsequently, VBAs, agro-dealers, and seed multipliers were later trained in seed business management, enabling them to operate efficiently, either independently or in partnership with established agro-dealers, ensuring sustainable delivery of seeds and advisory services.

2.3.1.3. Scaling

Training

Input distribution was accompanied by robust capacity-building efforts targeting various actors across the value chains. Capacity-development activities included training of trainers (ToT) facilitated by technology and innovation developers, direct training of producers, establishing demonstration plots, and organizing field days and sensitization events, each aligned with the project's theory of change.

ToT aimed to strengthen the capacities of those delivering extension services to farmers by equipping them with up-to-date knowledge and techniques on

beans, maize, OFSP, rice, and livestock technologies.

Participants included individuals from government institutions, civil society, the private sector, and seed firms. A total of 3,728 individuals participated in ToT, representing 70% of the target (Table 6).

Beyond ToT, the project trained 43,947 producers, achieving 97% of the target.

Although there were some delays during the initial phase, 47,675 individuals were ultimately trained (Table 6), marking a strong performance with 94% of the target achieved.

Table 6: Training by type, trainees, gender, and age in Burundi.

Type	Trainees	Target	Actual	% achievement	Gender and age			
					Women	Men	15–29	30+
Training of trainers (ToT)	Lead farmers/lead breeders	2,947	2,353	80%	824	1,529	190	2,163
	Government	565	1,011	179%	161	850	34	977
	Private sector	506	96	19%	19	77	12	84
	Civil society	1,289	268	21%	16	252	20	248
	Total participants trained in ToT	5,307	3,728	70%	1,020	2,708	256	3,472
Training of farmers	Total smallholders trained	45,509	43,947	97%	19,441	24,506	4,531	39,416
Total trained		50,816	47,675	94%	20,461	27,214	4,787	42,888

To complement these efforts and further promote the uptake of improved technologies, a total of 711 demonstration plots were established across key value chains (Table 7). Demonstration plots

served as critical experiential learning hubs where farmers could observe the practical application of new technologies and best agronomic practices in real field conditions.

Table 7: Demonstration plots established in Burundi.

Crop	Number of demonstration plots		Achievement
	Planned	Established	
Maize	279	258	92%
Beans	173	161	93%
OFSP	141	132	94%
Rice	66	63	95%
Cassava	22	20	91%
Bananas	74	72	97%
Forage crops	6	5	83%
Total	761	711	93%

These plots were strategically located to ensure accessibility by farmers in various provinces. To maximize their impact, they were often linked with training sessions, field days, and sensitization events. By showcasing visible results such as higher yields, improved crop quality, or better pest and disease control, the demo plots built farmers' confidence in the promoted innovations and stimulated broader adoption within communities, beyond the actual direct participants. Furthermore, these in-community platforms enabled extension officers and scaling partners to provide targeted and practical technical guidance. They also helped amplify and reinforce messages from formal training sessions.

In addition, the project utilized scaling events as a key channel for disseminating advisory information on agricultural and nutritional practices and technologies to farmers. These events were in the form of community-level field days and sensitization sessions. In total, 7,973 farmers participated in field days, while 37,204 took part in sensitization events, reaching a combined total of 45,177 (Table 8). These various platforms enabled large-scale engagement, particularly among women and youth, and played a vital role in promoting awareness and encouraging the adoption of improved agricultural innovations.

Table 8: Scaling events by type, and participants by gender and age, in Burundi.

Type	Target	Total actual participants				
		Women	Men	15-29	30+	Total
Field days	13,974	3,296	4,677	42	7,571	7,973
Sensitization events	19,043	15,178	22,026	4,984	32,220	37,204
Total	33,017	18,474	26,703	5,386	39,791	45,177

2.3.1.4. Strengthening the seed systems

To ensure the continued availability of quality seeds beyond the project's lifespan, seed producers and multipliers were engaged during input distribution events.

These events created opportunities for their direct interaction with farmers, allowing seed producers to share their contact

information and establish relationships for future seed orders. This initiative was implemented through the seed cover approach, where each seed seller or input agro-dealer put their contact and address on the cover of seed or input distributed.

With support from AID-I GLR, Burundi's seed system was strengthened through collaboration with ISABU, SSG, and

MINEAGRIE. In 2023, 23.8 metric tons (mt) of early-generation seeds (EGS) were produced (Table 9). By March 2025, cumulative production of EGS and certified seed had risen to 223.4 mt, with EGS accounting for 79.6 mt, of which beans and OFSP made up the largest shares, at 15.3 and 54.2 mt, respectively. Similarly, certified

seed production rose from 8.5 mt in 2023 to 65.8 mt by March 2025, totalling 143.8 mt, at the end of project. The largest gains were in bean seeds, which increased from 8.5 mt in 2023 to 63.8 mt in 2025, totalling 138.8 at the end of project (Table 9), reflecting strong market demand and efficient multiplication.

Table 9: EGS and certified seed production in Burundi.

Type of seed	Commodity	2023	2024	2025	Total
EGS	Maize	0	3.6	2.5	6.1
	Beans	1.8	10.6	2.9	15.3
	Rice	1.5	2.5	0	4
	OFSP	20.5	33.7	0	54.2
	Subtotal 1	23.8	50.4	5.4	79.6
Certified	Maize	0	0	2	
	Beans	8.5	66.5	63.8	138.8
	Rice	0	3	0	3
	Subtotal 2	8.5	69.5	65.8	143.8

To improve access to seed, especially in remote areas, the project strengthened agro-input distribution and marketing systems by requiring supported seed companies to identify and collaborate with agro-dealers across provinces to extend their market reach.

Under this strategy, Coop Eden recruited agro-dealers within its intervention zones, operating on a sales commission basis per

kilogram of seed sold; they also partnered with VBAs for outreach.

Similarly, Cooperative Haguruka Dufashanye built partnerships with both agro-dealers and VBAs in its target areas.

During the project's lifespan, these seed companies collectively sold 119.8 mt of seeds (Table 10).

Table 10: Sales by micro-enterprise market actors in Burundi.

Company	Input	Quantity sold	Value in USD
Cooperative Haguruka Dufashanye	Beans	85	108,592
Coop Eden	Beans	29.8	50,822
ISABU	Maize	2	4,000
Cooperative Dukorerehamwe	Rice	3	3,027.20
		119.8	166,442

Several seed varieties demonstrated impressive yields, further driving farmers' interest and demand.

Maize, in particular, recorded yield improvements of over 100% compared to the baseline. However, much of the maize seed was still being imported, often at high cost to farmers. To reduce dependence on costly imports, AID-I GLR introduced hybrid maize parent lines to ISABU for the first time.

This enabled the local production of basic seed, which could then be supplied to seed multipliers to produce certified seeds. This ensured a sustainable, affordable, and locally available supply to meet the growing demand from farmers.

To further build the input supply system, the project worked to identify and strengthen agro-dealers across the country by providing targeted training and input stock

support. The initiative aimed to enhance the capacity of agro-dealers to effectively supply quality agricultural inputs, promote improved seed access, and support smallholder farmers in adopting better production technologies.

Selection criteria for agro-dealers were: (i) existing agro-dealers/people selling other farm inputs, (ii) entrepreneurial VBAs, especially those aggregating seed demand from farmers and informing the seed producers, (iii) seed producers who have shops for selling the seed, and (iv) agro-dealers already working with seed producers.

The promotion of improved varieties through the small seed pack approach has boosted seed sales and created large-scale demand. Recognizing its

effectiveness in a competitive market, some of the seed companies like Nalweyo Seed Company Ltd (NASECO) continue to use this strategy and plan to expand it to further increase demand.

Eighteen agro-dealers (a mix of cooperatives and individual entrepreneurs) were identified and screened. Most of them were small-scale operators with limited inventory. An assessment of all of them showed they all needed capacity strengthening, including stock diversification, infrastructure development, and training on seed-market dynamics to enhance agro-dealer performance and improve input accessibility for smallholder farmers. Sixteen agro-dealers were selected for matching grants to boost their operations (Table 11). The total matching grant offered to the agro-dealers was 46,915,000 Burundi francs (USD 15,830).



Some of the supported agro-dealers in Bubanza (A) and in Ngozi (B).

Table 11: List of agro-dealers selected for the agro-input matching-grant support in Burundi.

N°	Province	Commune	Location	Name	Gender
1	Bubanza	Bubanza	Ruvumvu	Fabrice Nibigira	Man
2	Bubanza	Mpanda	Musenyi	Erica Irakoze	Woman
3	Cibitoke	Mugina	Nyeshenza	Mazine Ndayizeye	Woman
4	Ngozi	Mwumba	Vyerwa	Dorine Iradukunda	Woman
5	Rutana	Bukemba	Gihofi	Delphine Nsanzimana	Woman
6	Kirundo	Kirundo	Kumunzenze	Jean Bertrand Minani	Man
7	Kirundo	Kirundo	Kirundo	Steve Mboninyibutse	Man
8	Cibitoke	Murambi	Cibitoke Centre	Agakura Cooperative (Alice)	Woman
9	Gitega	Gitega	Gitega market	Gloriose Nduwimana	Woman
10	Ngozi	Mwumba	Vyerwa	Vanessa Kaneza	Woman
11	Muramvya	Muramvya	Bugarama	Oscar Nicizanye	Man
12	Muramvya	Bukeye	Kibogoye	Denis Riziki	Man
13	Kirundo	Kirundo	Kumunzenze	Gyslain Rutaganda	Man
14	Gitega	Gitega	Gitega centre	Eliane Havyarimana	Woman
15	Rutana	Bukemba	Bugiga	Gerard Ndayishimiye	Man
16	Bururi	Matana	Matana market	Anselme Ntirakirwa	Man

2.3.2. Outcomes

2.3.2.1. Number of individuals who applied improved management practices/technologies

An annual survey conducted in 2024 assessed the level of application of promoted technologies and good agricultural practices across key value chains.

The findings indicated strong uptake among targeted farmers, particularly in the bean and maize value chains, which each reported an application rate of 91% (Figure 10).

These high levels of adoption suggest that dissemination efforts such as training, demonstrations and seed access have been effective for these commodities.

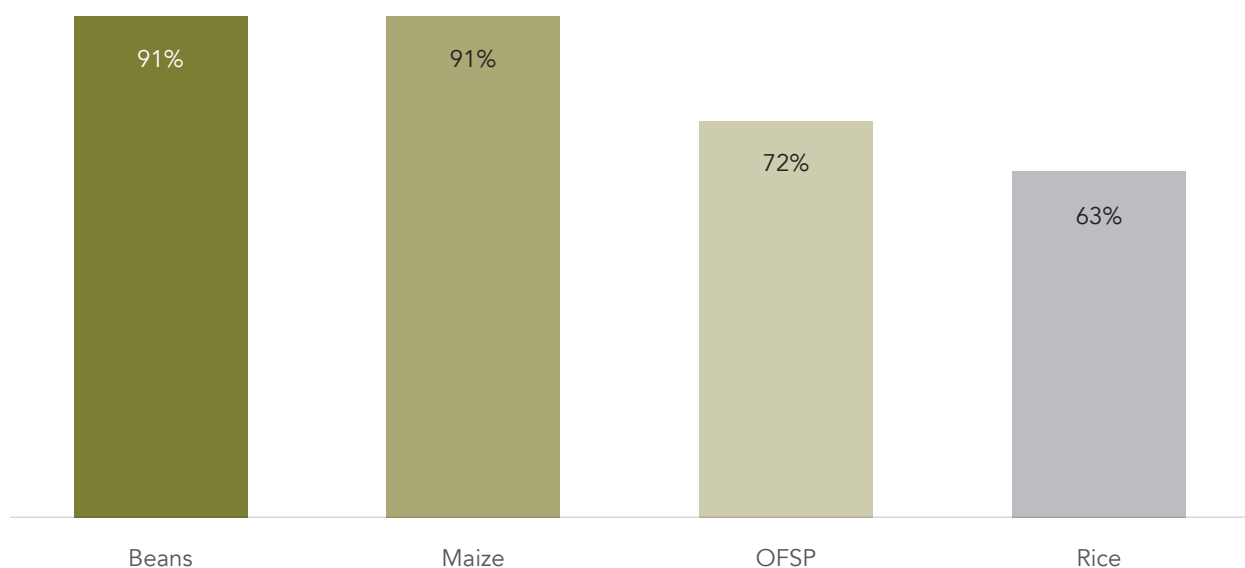


Figure 10: Level of application of new technologies in different crop value chains in Burundi.

In contrast, the OFSP and rice value chains showed comparatively lower levels of technology adoption, at 72% and 63%, respectively (Figure 10). The reduced application in these two chains may be attributed to limited seed availability in local markets, coupled with comparatively less intensive extension and training activities. These findings highlight the need for increased investment in dissemination efforts and input supply systems – particularly for OFSP and rice – to ensure that farmers benefit from improved technologies and practices across all target value chains.

Between 2023 and 2025, a total of 453,127 smallholder producers had applied for

AID-I GLR-promoted improved agricultural management practices or technologies, against a target of 453,643, achieving 100% of the target (Figure 11). This outcome reflects successful implementation of interventions aimed at enhancing productivity through better farming practices.

Disaggregated data by gender and age reveal important disparities. Although men farmers were the majority target group (317,550), only 267,534 applied the practices, achieving 84% of the target. In contrast, women farmers, with a lower target of 136,093, surpassed expectations by reaching 185,593 adopters, achieving an impressive 136% of the target (Figure 11).

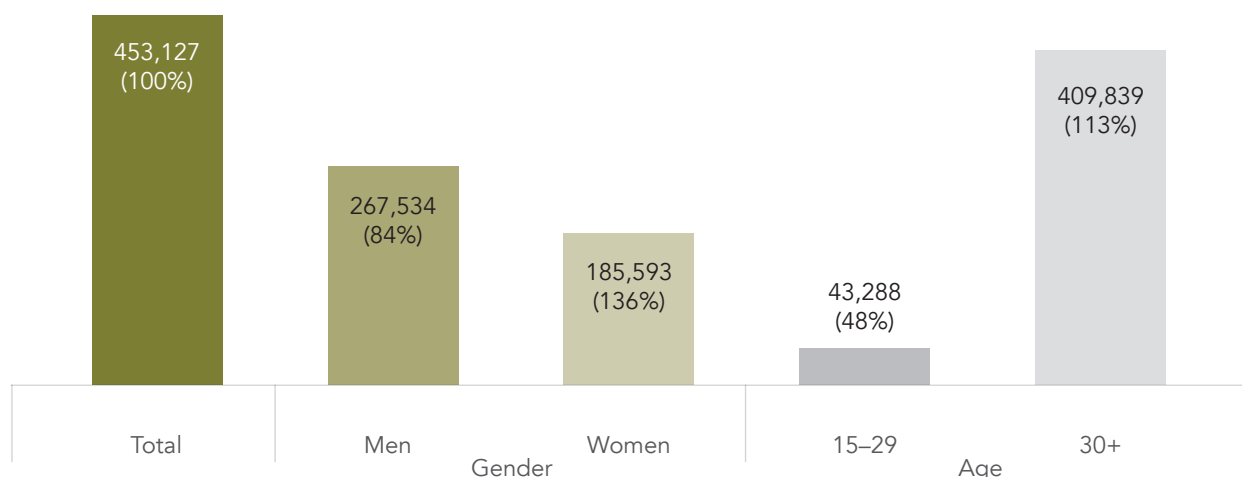


Figure 11: Number of individuals in the agriculture system who applied improved management practices or technologies in Burundi.

2.3.2.2. Number of hectares under improved management practices or technologies

This indicator measures the total area (in hectares [ha]) where project-promoted improved management practices or technologies were applied during the life of the project on land managed or cultivated by farming households participating in the AID-I GLR Project. The aim is to increase productivity and/or resilience. After 2023, the project operated under the hypothesis that, having been exposed to improved technologies, farmers would apply them on at least 5% (i.e., 0.025 ha per household) of their total cultivated land (averaging 0.5 ha per household).

The project recorded exceptional growth in the area under improved management in 2024. The area expanded from 957 ha in 2023 to 16,031 ha in 2024, surpassing the target of 5,317 ha by 301%. Cumulatively, the project reach was 16,988 ha, translating into 267% of the target, which was 6,360 hectares (Table 46 in Annexes). This surge validated the project's hypothesis: once farmers experienced the benefits of improved practices, they expanded adoption beyond the initial demonstration plots, significantly increasing the scale of application.

Table 12: Land area (ha) under improved technologies by farmers, and type of farmer by gender and age in Burundi.

		Target	Actual	2023		2024		% achieved
				Target	Actual	Target	Actual	
Gender	Men	4,430	9,396	708	581	3,722	8,815	212%
	Women	1,899	7,592	304	376	1,595	7,216	400%
Age	15-29	1,266	1,315	202	117	1,063	1,198	104%
	30+	5,063	15,673	810	840	4,254	14,833	310%

Both men and women significantly expanded the application of improved management practices in 2024. Men-managed land accounted for 9,396 ha, representing 212% of the annual target. Women-managed land reached 7,592 ha, achieving a spectacular 400% of the target (Table 12). This notable performance among women highlights their strong participation and leadership in technology adoption across project areas.

By age group, farmers aged 30 years and above were the largest adopters, accounting for 15,673 ha (310% of the target). Younger farmers, aged 15–29, applied improved practices on 1,315 ha (104% of the target) (Table 12). While older farmers demonstrated greater absolute adoption levels, younger farmers also exceeded expectations, indicating promising engagement from the next generation of agricultural producers.

The most widely applied interventions were crop genetics and cultural practices, each applied on more than 16,000 ha, alongside soil fertility and conservation practices, which covered more than 13,000 ha. Pest and disease management registered exceptional gains, expanding to 7,817 ha (692% of the target), reflecting both the relevance of these practices and the responsiveness of farmers to pest-related challenges. (Table 46 in Annexes).

Climate-adaptation practices – tracked for the first time in 2024 – covered 6,253 ha, providing an encouraging baseline for future measurement. In contrast, irrigation adoption lagged, reaching 798 hectares or 82% of the target, indicating an area requiring further attention and support.

Table 13: Comparison of land under application per farmer: Actual average area vs target based on small packs distributed in Burundi.

	Area target for small packs (m ²)	Average actual area from survey (m ²)
Maize	40	162
Beans	17	600
OFSP	18	16
Rice	33	57

Findings from the 2024 outcome survey confirm that farmers are not only adopting improved practices but also expanding their application well beyond the initial input packages distributed by the project.

The analysis compared the expected planted area from the 100-gram small packs with the average area planted during the survey period. In most cases – particularly for maize, beans, and rice – the actual area planted was several times more than projected. For example, beans increased from an expected 17 m² to an average of 600 m² per farmer, while maize grew from an expected 40 m² to 162 m² per farmer (Table 13). This demonstrates

both strong acceptance and rapid scaling of the technologies. In contrast, for OFSP, the average application area (16 m²) fell slightly short of the expected area (18 m²), suggesting limited expansion beyond the original plots and highlighting a potential area for targeted promotion.

2.3.2.3. Yield

A comparative analysis of yield performance across baseline, target, and actual values for 2023 and 2024 reveals distinct trends for each commodity.

Actual maize yields greatly exceeded the target of 0.85 mt/ha, reaching 5.3 mt/

ha in 2024. This exceptional performance indicates substantial improvements in productivity, likely driven by the adoption of improved agricultural technologies and good agronomic practices. Beans also performed better than expected. Actual yields reached 1.1 mt/ha against a target of

0.67 mt/ha in 2023, rising further to 1.8 mt/ha in 2024.

For OFSP, the yield was 11.23 mt/ha and 16 mt/ha in 2023 and 2024 respectively, both above a national baseline of 9.4 mt/ha. In contrast, there was no change in rice. Indeed, at 4 mt/ha, actual yield mirrored the baseline.

Table 14: Yield (mt/ha) of targeted agricultural commodities among program participants in Burundi.

	Yield				
	Baseline	2023		2024	
		Target	Actual	Target	Actual
Maize	0.77	0.85	-	0.85	5.3
Beans	0.61	0.67	1.1	0.67	1.8
OFSP	9.4	10.34	11.23	10.34	16
Rice	4	4.4	-	4.4	4

TESTIMONIAL

Box 5: Improving bean seed systems using the small-pack approach in Burundi

Marie-Jose Niyonizera is a farmer in Rutoke Village, Rugari Zone, in Burundi's Muyinga Province. Here is her AID-I GLR story. (In Burundi, AID-I GLR is known as Kugwiza, which in Kirundi means to increase).

I joined the Kugwiza Project after seeing my neighbouring farmers harvesting an impressive yield. By joining, I became part of a cooperative which received small packs of high-iron bean seeds to test at home. The training and information we got have been very helpful, such as spacing between lines of seeds, application of organic and inorganic fertilizers, and proper follow-up. I learned that you can plant a few seeds but harvest more. The project gave me 100 grams of Musore bean seeds, which yielded two kilos. This made me realize that this was a high-yielding variety. So, I went back to the seed company to buy eight more kilos of seed to add to my two kilos. From the 10 kilos I planted, I harvested 130 kilos. We will eat some of the harvest at home and I will sell the remaining part and buy a goat, which will give me fertilizer for future planting seasons.

Compared to our previous seeds, these bean seeds from Kugwiza are very beneficial and their production is quite impressive. Before, we used to plant non-certified bean seeds. But now we plant certified and improved seeds. There is a huge difference in yield – because we now plant in lines mixing both compost and fertilizer. Also, just as importantly, this bean variety is very rich in nutrients, thereby reducing malnutrition – particularly critical for children and pregnant women. I plan to continue planting this bean seed.

I thank the Kugwiza Project for linking us to seed producers: they are now very close to us. And even though their seeds are expensive, I will sell a portion of my previous harvest to enable me to buy the seeds for the next planting season.

2.4 Assessment of the theory of change

A theory of change (ToC) maps the cause-effect pathway from project activities and inputs to specific outputs, intermediate outcomes, and ultimately, the intended impact.

Private and public partners were willing to invest in input supply systems

Following the awareness created through technology dissemination events and input distribution, combined with the positive evidence of yield improvements from distributed seeds, farmers' demand for improved inputs rose significantly.

However, community seed producers were initially unable to fully meet this surge in demand.

In response, with AID-I GLR support, CGIAR centers – as technology developers – partnered with ISABU to produce early-generation seeds, which were then made available to community seed producers for certified-seed production.

Additionally, seed producers within the project intervention areas were identified and trained in seed business management to strengthen their capacity and ensure sustainable supply.

Until recently, hybrid maize seed in Burundi remained largely imported, making it expensive and limiting accessibility. This was despite the project's efforts to directly link agro-dealers with importers such as NASECO.

In the first-ever such effort in Burundi, the project supported two local cooperatives to initiate hybrid maize seed production to address this challenge. Similarly, to expand the supply of OFSP planting materials, 11 new decentralized vine multipliers (DVMs) were established and trained across different regions.

These developments demonstrate tangible investments and commitments from both public and private partners in strengthening input supply systems.

1. Coop Eden – Advancing local seed production and distribution

- Planted 1 ha of maize seed (AM1912-29) in January to March 2025.

- Bean seeds: planted 1 ha of 'Muhoro' and 2 ha of 'Musore' in October 2024.
- Contracted 400 farmers and partnered with 7 agro-dealers and 7 village-based networks to expand distribution.

2. Haguruka Dufashanye – Scaling bean and maize seed production

- Planted 50 ha of bean seed for production (30 ha Musore, 10 ha Kinure, 10 ha Mugwiza), targeting ~70 mt of high-performance, nutrient-rich varieties.
- Produced three-way hybrid maize (AN19-11) on 1 ha: expected yields are 0.8–1 mt. A joint review with ISABU experts was conducted to identify improvement measures.

3. Orange-fleshed sweet potatoes – Expanding decentralized multiplication

- 11 DVMs established across the country.
- 3 OFSP varieties promoted (Naspot 9, 12, and 13).
- 16 mt of early generation seed produced at ISABU stations (CIP/ISABU).
- 44,534,600 certified vine cuttings produced as at January 2024.

Linking input supply and demand

To strengthen the link between input supply and farmer demand, the project developed a practical model that required each supported seed company to establish networks of agro-dealers and VBAs across provinces. These actors served as intermediaries, ensuring that improved seed varieties were accessible to farmers while also facilitating information flow and extension support.

For example, Coop Eden identified five agro-dealers and seven VBAs operating across three provinces. These partners were motivated through a commission-based incentive, whereby a percentage return is provided on the quantity of seed sold. Similarly, Cooperative Haguruka Dufashanye established partnerships with 11 agro-dealers and 15 VBAs in two provinces, expanding both reach and farmer engagement. In parallel, ESM (*Entreprise Semencier de Mubuga*) seed producers are working with seven VBAs, mainly focusing on the promotion of bean and maize seeds, while also providing extension services to farmers.

This network-based approach demonstrates how the project fostered functional links between seed supply and market demand. By mobilizing agro-dealers and VBAs as trusted local actors, the project initiated the creation of sustainable pathways for both distribution and knowledge transfer, thereby contributing to the continued realization of the theory of change.

The project exceeded its outreach target by reaching 626,504 people with different technologies disseminated, against a target of 554,760 (113% achievement). Of these, 264,855 were women and 75,319 were youth, demonstrating strong progress

toward inclusiveness. Of the total number of people reached, 624,221 were farmers.

But it is important to separate farmer reach from farmer adoption: of those reached, 436,682 farmers (70%) applied the technologies. Notably, adoption was significant among women (230,746 applied) and youth (64,854 applied), showing that diverse social categories are not only accessing information but also acting on it. This evidence confirmed that the project effectively enabled smallholder farmers to make informed adoption decisions, in line with the ToC. The strong adoption rate suggests that the technologies promoted are perceived as beneficial.



The project effectively realized its theory of change, surpassing its outreach target by reaching 626,504 people – 113% of the planned goal – with farmers, women, and youth meaningfully included.

2.5 Challenges, lessons learned and recommendations

2.5.1. Value chain and innovation

Challenges

- Limited coverage of certain value chains: pigs, potatoes, and vegetables (seeds) were not initially prioritized, despite their importance for livelihoods and nutrition.
- Some innovations, particularly in rabbit production, faced high mortality rates and insufficient documentation, reducing farmer confidence.
- Rice varieties disseminated in high-altitude zones faced competition from Chinese hybrids, indicating a mismatch with farmer preferences.
- Uneven availability of seed producers in certain regions caused supply gaps and delayed access to quality seed.
- Post-project sustainability of VBA links weakened for some value chains (beans, OFSP, rice, livestock innovations).

- High cost of certified seed relative to other agricultural inputs jeopardizes long-term sustainability.
- Private-sector engagement in seed production exists but the implementation framework is still weak, especially for rice, limiting scale-up and access.

Lessons learned

- Selecting locally relevant, nutrition-sensitive, and manageable innovations increases adoption potential.
- Testing innovations thoroughly before large-scale promotion ensures farmer confidence and performance reliability.
- The small-pack approach, coupled with mother and baby demonstrations, effectively stimulates farmer testing, peer learning, and demand for certified seed.

- Sub-hill deployment of VBAs improves last-mile delivery and responsiveness to farmer needs.
- Complementary extension systems involving VBAs, government monitors, cooperatives, and agro-dealers create coherent dissemination structures.
- Field demonstrations and farmer-reported yields reinforce adoption and trust in improved varieties.
- Private-sector engagement (e.g., NASECO) enhances continuity and sustainability of seed systems.
- Leadership assignment within consortia caused concerns regarding recognition and hierarchy.
- Administrative delays in partner selection and funding agreements slowed early project implementation.
- Limited availability of private technical partners hindered dissemination of specialized innovations, e.g., artificial insemination and animal vaccination.

Lessons learned

Recommendations

- Broaden and diversify value-chain interventions to include pigs, potatoes, and vegetable seeds.
- Develop locally adapted vegetable seeds to reduce import dependency and improve accessibility.
- Validate innovations with uncertain outcomes (e.g., rabbit production, rabbit urine use) before scaling.
- Promote high-performing rice varieties suitable for high- and mid-altitude zones.
- Prioritize value chains that contribute to both nutrition and income, targeting women, young children, and pregnant women.
- Although VBAs remain present in communities, their links with seed companies have weakened since the project ended, especially for beans, OFSP, rice, and livestock innovations. Strengthening these connections is essential to sustain farmers' access to improved technologies.
- The project's overachievement among women suggests a strong response to targeted gender-sensitive programming and highlights the potential for further engagement with women producers.
- Strategic partner selection based on expertise, geographic coverage, and value chain mastery accelerates innovation dissemination.
- Structured coordination (joint planning, review meetings) harmonizes approaches, clarifies roles, and strengthens collaboration.
- Leveraging public institutions (CNIAAG, ISABU, ONCSS, veterinary services) fills technical gaps and ensures continuity.
- Multi-channel dissemination involving VBAs, cooperatives, seed companies, and demonstration plots increases adoption and sustains demand.
- Well-structured partnerships can continue beyond project timelines, integrating technologies into new initiatives.

Recommendations

- Establish long-term partnership agreements (minimum two years) to improve stability and commitment.
- Clearly define consortium leadership roles based on comparative advantage to reduce conflicts.
- Expand private technical partnerships for specialized technologies to ensure comprehensive coverage.
- Institutionalize sub-hill VBA deployment to sustain last-mile delivery.
- Strengthen VBA-private sector through incentives and collaboration.
- Apply structured coordination mechanisms and alignment with national systems in future projects to replicate successes.

2.5.2. Partnership and coordination

Challenges

- Managing large, multi-actor consortia was complex and initially affected collaboration and decision-making.
- Differences in perceived institutional capacity created reluctance among some partners to work with smaller or farmer-based organizations.

5

CHAPTER ANNEXES

5.2. Chapter 2 (Burundi)

Table 41: Project participants/beneficiaries in Burundi (as at March 2025).

		Target	Actual	Achievement(%)	2023		2024		2025	
					Target	Actual	Target	Actual	Target	Actual
Number and type of individuals participating in food-security programs		554,760	626,504	113%	267,740	191,874	312,174	374,357	50,712	60,273
Gender	Men	331,130	361,649	109%	160,644	112,521	189,908	214,838	28,701	34,290
	Women	223,630	264,855	118%	107,096	79,353	122,266	159,519	22,011	25,983
Age	15–29	109,183	75,319	69%	53,548	23,588	77,222	42,441	8,373	9,290
	30+	445,577	551,185	124%	214,192	168,286	234,952	331,916	42,339	50,983
Category	Government		1,347			342	291	645	45	360
	Proprietors of US Government-assisted private-sector firms		567			72	225	174	2	321
	Civil society		369			104	558	221	15	44
	Producers (small-holders)		624,221			191,356	311,100	373,317	50,650	59,548

Table 42: Distribution of small packs of technologies in Burundi.

Packs of technologies distributed	Target	Actual	% progress	Number of farmers reached by small packs				Total
				Women	Men	15–29	30+	
Seeds								
Maize	538,783	265,817	49%	102,484	137,445	29,029	210,900	239,929
Beans	463,287	266,574	58%	105,567	152,899	24,560	233,906	258,466
OFSP	125,346	68,723	55%	29,881	38,956	5,079	63,758	68,837
Rice	34,933	31,373	90%	11,413	14,516	6,664	19,265	25,929
Fodder	86,803	32,604	38%	9,166	18,121	2,157	25,130	27,287
Bananas	39,200	6,514	17%	2,716	3,137	734	5,119	5,853
Cassava	39,029	12,324	32%	4,703	5,618	1,022	9,299	10,321
Total 1	1,327,381	683,929	52%	265,930	370,692	69,245	567,377	636,622
Other inputs								
Fertilizer	388,026	204,307	53%	73,804	108,288	20,644	161,448	182,092
Bio-pesticides	3,600	28,822	801%	12,936	15,626	3,116	25,446	28,562
Vaccine	2,807	4,597	164%	860	2,976	408	3,428	3,836
Artificial insemination	3,412	5,015	147%	1,209	3,216	366	4,059	4,425
Chicks	6,150	5,419	93%	2,235	1,943	546	3,632	4,178
Rabbits	1,250	878	70%	341	213	282	272	554
Total 2	405,245	249,038	61%	91,385	132,262	25,362	198,285	223,647
Grand total	1,732,626	932,967	54%	357,315	502,954	94,607	765,662	860,269

Table 43: Demonstration plots established in Burundi.

Crop	Target	2023	2024	S1 2025	Grand total
Maize	279	86	80	92	258
Beans	173	74	79	8	161
OFSP	141	49	68	15	132
Rice	66	6	39	18	63
Cassava	22		10	10	20
Bananas	74		39	33	72
Forage crops	6		5	0	5
Total	761	215	320	176	711

Table 44: Sales by micro-enterprise actors by year in metric tons (mt) in Burundi.

Company	Input	2024		S1 2025		Total	
		Quantity (mt) sold	Total value of sales (USD)	Quantity (mt) sold	Total value of sales (USD)	Total quantity (mt) sold	Total value of sales (USD)
Cooperative Haguruka Dukore	Beans	16	16,000	69	92,592	85	108,592
Coop Eden	Beans	28	47,022	1.8	3,800	29.8	50,822
ISABU	Maize	0	0	2	4,000	2	4,000
Cooperative Dukorehamwe	Rice	3	3,027.20	0	0	3	3,027.20
Total		47	66,049.20	72.8	100,392	119.8	166,442

Table 45: Number of individuals in the agriculture system who applied improved management practices or technologies with AID-I GLR assistance in Burundi.

		Target	Actual	% achieved	2023		2024	
					Target	Actual	Target	Actual
		453,643	453,127	100%	240,966	169,458	212,677	283,669
Smallholder producers								283,669
Gender	Men	317,550	267,534	84%	168,676	98,295	148,874	169,239
	Women	136,093	185,593	136%	72,290	71,163	63,803	114,430
Age	15-29	90,729	43,288	48%	48,193	18,602	42,535	24,686
	30+	362,915	409,839	113%	192,773	150,856	170,142	258,983
Management practice or technology type	Crop genetics	453,643	449,611	99%	240,966	169,458	212,677	280,153
	Cultural practices	453,643	430,697	95%	240,966	157,832	212,677	272,865
	Livestock management	36,900	24,616	67%	18,450		18,450	24,616
	Pest and disease management	77,424	149,426	193%	38,712	26,404	38,712	123,022
	Soil-related fertility and conservation	302,429	363,286	120%	160,644	137,068	141,785	226,218
	Irrigation	77,424	51,642	67%	38,712	29,517	38,712	22,125
	Climate adaptation	-	153,356					153,356
	Post-harvest handling and storage	248,881	238,521	96%	107,096	55,921	141,785	182,600
Commodity	Maize	434,133	143,608	33%	236,574		197,559	143,608
	OFSP	225,095	55,445	25%	169,794	23,637	55,301	31,808
	Rice	124,701	9,622	8%	108,579		16,122	9,622
	Beans	380,068	244,452	64%	236,574	145,821	143,494	98,631

Table 46: Area under improved practices or technologies in Burundi.

		Target	Actual	% achieved	2023		2024	
					Target	Actual	Target	Actual
Crop land		6,329	16,988	268%	1,012	957	5,317	16,031
Gender	Men	4,430	9,396	212%	708	581	3,722	8,815
	Women	1,899	7,592	400%	304	376	1,595	7,216
Age	15–29	1,266	1,315	104%	202	117	1,063	1,198
	30+	5,063	15,673	310%	810	840	4,254	14,833
Management practice or technology type	Crop genetics	6,329	16,922	267%	1,012	949	5,317	15,973
	Cultural practices	6,329	16,902	267%	1,012	929	5,317	15,973
	Pest and disease management	1,130	7,817	692%	163	373	968	7,444
	Soil-related fertility and conservation	4,219	13,742	326%	675	715	3,545	13,027
	Irrigation	1,130	891	79%	163	93	968	798
	Climate adaptation	-	6,253	-	-	-	-	6,253
Commodity	Maize	3,416	9,505	278%	946	-	2,469	9,505
	OFSP	1,303	680	52%	611	154	691	526
	RICE	506	273	54%	304	-	202	273
	Beans	2,267	6,531	288%	473	803	1,794	5,728

Table 47: Assessing the theory of change using 3F2R framework in Burundi.

Value chain	Farmer exposure (+ to +++)	Farmer appreciation (+ to +++)	Farmer demand (+ to +++)	Seed system readiness and response (+ to +++)
Beans	Disseminated varieties spread beyond the project's intervention areas through training support provided to seed producers. +++	High yield (>90%), taste and market price. +++	Demand for disseminated varieties was very high. ++	The seed system was launched and strengthened through capacity building to respond to demand. ++
Rice	Exposure rate satisfactory (>60%) +++	High yield (>70%), not easily affordable (53%) +++	Demand for the disseminated seeds was high due to the yield increase. +++	The system was not ready to respond to the demand. Seed producers/multipliers were trained but they lacked enough material to produce certified seed. ++
Maize	Farmers were exposed to the technology in all the areas of intervention ++++	High yield (almost five times higher than the common varieties), good taste +++	High demand driven by high yield. ++++	The system response to the demand was still low given that the seeds are imported, but the VBA approach connected farmers to suppliers. The investor was willing to produce the seed locally and some trials were ongoing when the project ended. +++

Value chain	Farmer exposure (+ to +++)	Farmer appreciation (+ to +++)	Farmer demand (+ to +++)	Seed system readiness and response (+ to +++)
OFSP	++++ 3 varieties disseminated - Delivery of cuttings was better - Exposure to good agricultural practices (GAPs)	++++ High yield and highly appreciated for processing	++++ - After exposure, farmers expressed the need to diversify several OFSP varieties. - Farmers demanded more cuttings	+++ The system was prepared to meet demand, with strong collaboration between CIP, ISABU, and seed multipliers. ISABU supplied EGS to seed producers for certified seed production, and 11 DVMs were established to provide material for vine multiplication.
Livestock				
AI	++++ Gestation diagnosis reached 60% of the target.60%	++++ Much appreciated	++++ Demand exists	+++ The project engaged existing livestock technicians and involved the existing system to facilitate the response to the demand through specialized government institutions. However, the engagement of the private sector remained very low due to the complexity of the supply chain (authorization, storage, etc.).
Immuni- zation	++++ Many campaigns were organized for awareness and exposure to the technology	++++ Positive appreciation	++++ Demand exists, but storing bovine theileriosis vaccine is complex and requires the availability of liquid nitrogen.	+++ Same as above
Licking blocks (LBs)	++++ The importance of LBs is known	++++ LBs were used in cattle feeding	++++ Continuous local production and marketing	N/A

Table 48: Smallholder crop yield in metric tons per hectare in Burundi.

	Yield (mt/ha)				Average	Expert projection
	2023		2024			
	Target	Actual	Target	Actual		
Maize	–	–	0.85	5.3	5.3	4–8
Beans	0.67	1.05	0.67	1.8	1.43	1–2.5
OFSP	10.34	11.23	10.34	16	13.61	9–14
Rice	–	–	4.4	4	4	4–7

Addresses

IITA Burundi

Email: IITA-Burundi@cgiar.org

International Institute of Tropical Agriculture

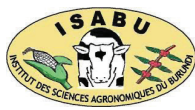
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