



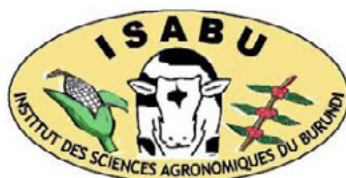
Powering beans in Burundi

Seven years of unleashing inclusive bean value chains

2015-2021

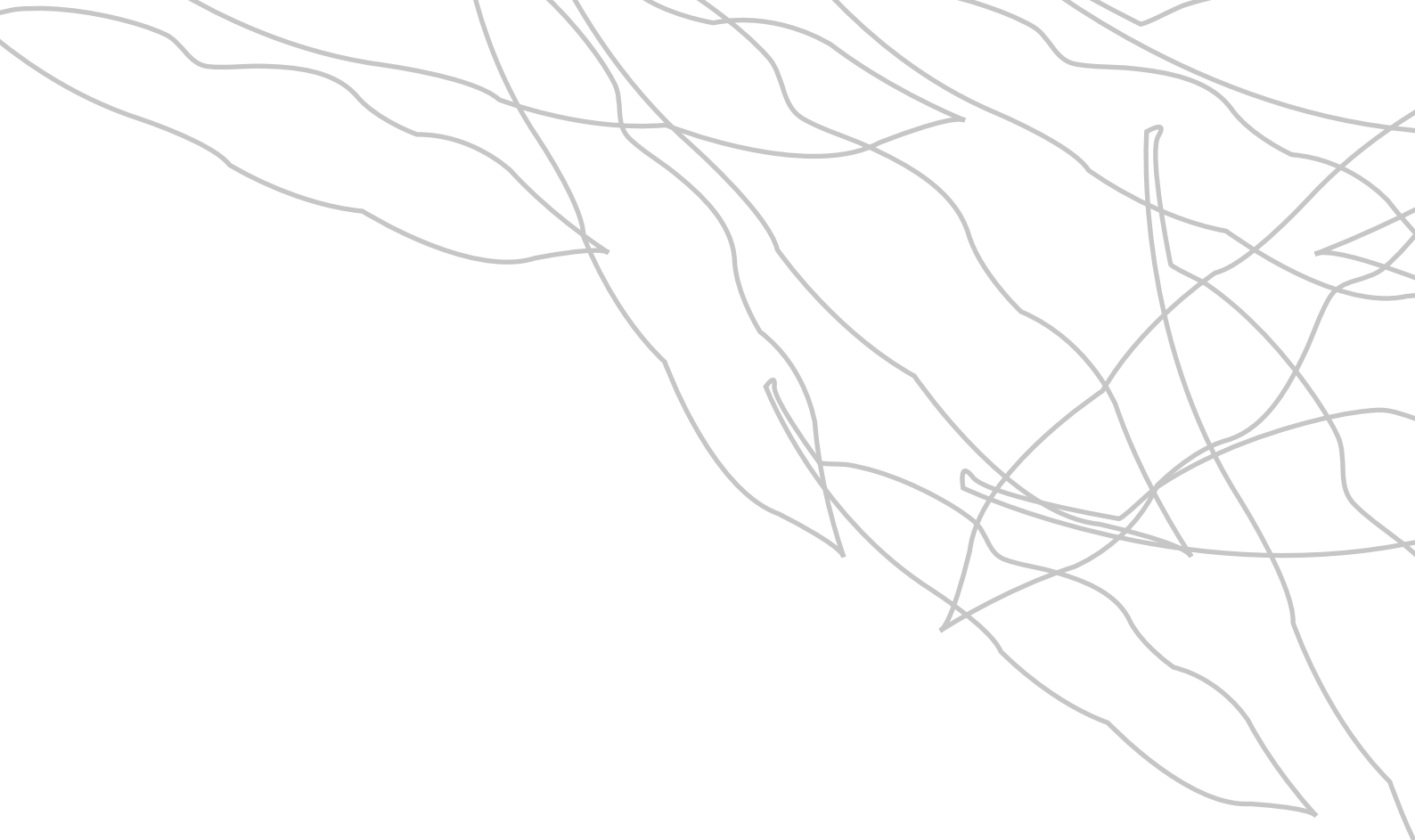


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The **Pan-Africa Bean Research Alliance (PABRA)** is a consortium of three regional bean networks:

The Eastern and Central Africa Bean Research Network (**ECABREN**), Southern African Bean Research Network (**SABRN**), and Western and Central Africa Bean Research Network (**WECABREN**), consisting of national agricultural research systems from 31 countries in sub-Saharan Africa, bean value chain actors from the public and private sectors, and the Alliance of Bioversity International and CIAT. PABRA is supported by a dedicated group of International development partners.

PABRA's focus is to improve bean productivity, use, and commercialization for the benefit of smallholder farmers and urban populations. Our goal is to enhance food and nutrition security, and income generation of poor communities in a gender-equitable and environmentally friendly manner.

www.pabra-africa.org

PABRA is facilitated by the **Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)**. The Alliance delivers research-based solutions that harness agricultural biodiversity and sustainably transform food systems to improve people's lives. Alliance solutions address the global crises of malnutrition, climate change, biodiversity loss, and environmental degradation.

With novel partnerships, the Alliance generates evidence and mainstreams innovations to transform food systems and landscapes so that they sustain the planet, drive prosperity, and nourish people in a climate crisis.

The Alliance is part of **CGIAR**, a global research partnership for a food-secure future dedicated to transforming food, land, and water systems in a climate crisis.

<https://alliancebioversityciat.org>

www.cgiar.org




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inclusive bean value chains**

2015-2021





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Preface

How demand-led research is driving the bean business, combatting malnutrition and empowering women

Historically in Burundi, managing the bean seed has been handled by women, while bean sales had been handled by men. But for the past seven years, the Pan-Africa Bean Research Alliance (PABRA) and the Institut des Sciences Agronomiques du Burundi (ISABU), supported by the Swiss Agency for Development and Cooperation (SDC) and Global Affairs Canada, have changed this culture and empowered women to become entrepreneurs, with knock-on impacts for the people of Burundi.

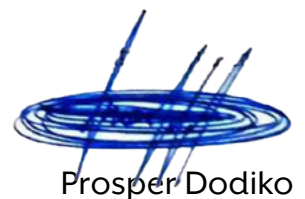
Today, half of all Burundi's 315 decentralized bean seed producers are women. The ripple effects of such enterprise can be felt throughout the economy: food and nutrition security has been enhanced, especially for vulnerable groups; feeding programs for children under-five through crèches have increased, supporting women to spend more time in enterprise; and equal participation among men and women in the seed business has led to production of more bean-based products. This has resulted in 81% levels of satisfaction amongst men and women using new bean-based products between 2019 and 2021.

Every year in Burundi, 5% growth in beans sold and increased productivity has translated into more profitable markets for both men and women, growing gradually from 43,834 (18% of them women headed) in 2015, to 158,541 (24% of them women headed) in 2021. The PABRA-ISABU partnership has catalyzed the development of more, highly market-demanded and climate-smart beans. These are early maturing, disease- and pest-tolerant varieties, adapted to different agro-ecological zones of Burundi.

Improved beans have increased in quantity and quality, promoting higher bean trade and commercialization. For instance, since 2019 TOTAHARA, a woman-led business, has partnered with crèches through World Vision to scale up benefits to children and vulnerable groups across the country, with positive educational benefits for the whole population.

Today, the number of households consuming beans bio-fortified with higher iron and zinc minerals, which support the development of the nation, has grown from 5,350 in 2015 to 107,109 in 2021. Bean commercialization and profitability have been mainstreamed into policy through the Cooperatives 'Sangwe,' found countrywide. Other policies to scale bean-based products include encouraging bean-based porridge and bio-fortified beans in school canteens and orphanages, supported by the Foundation Bonne action "Umugiraneza," led by the First Lady.

Such efforts highlight how beans are a key commodity to power Burundi's economy, contributing to nutrition, income, food security and climate-resilient benefits for all. We continue to pioneer these efforts with the generous support of our donors and our farmers, so that no one is left behind.



Prosper Dodiko

Minister of Environment, Agriculture and Livestock

The way forward

During the years of implementation of the Swiss Agency for Development and Cooperation (SDC) project (2015–2021) and Improving Bean Production and Marketing in Africa (IBPMA) project (2017–2022), through the Pan-Africa Bean Research Alliance (PABRA), good partnership with the Alliance of Bioversity International and CIAT has enhanced the capacity of our researchers, technicians, public sector, and private sector beyond beans. With the support of the SDC Flagship Initiative and the IBPMA project, Burundi has increased the production and productivity of common beans: bean production has experienced fivefold increase. This shows that common bean remains a crop of interest and investment for many Burundians.

Beans are versatile: they can be intercropped with others such as coffee, banana, cassava, and legumes (peas or pigeon peas), taking benefits to far beyond only bean farmers. Several PABRA approaches use transdisciplinary research and development, allowing for coordinated research and the exchange of technologies and lessons to be shared across the country. The Commodity Corridor model, commonly referred to as the “bean corridors” pioneered by PABRA, has facilitated structured planning and efficient bean production and commercialization, thus reducing information asymmetries among value chain actors.

Multi-stakeholder platforms across the bean corridors have accelerated and optimized seed production, tailoring varieties to market demand and catalyzing the development of other enterprises and services in the bean value chain and beyond. These mechanisms have been instrumental in achieving rural transformation through the development and dissemination of improved beans and complementary technologies, including climate-smart and market-demanded bean varieties, integrated crop management practices, nutritious value-added bean-based products, and other innovations that meet the needs of communities.

Despite the recorded progress, the country still faces challenges across the bean value chain. Certified seed and grain producers, off-takers and traders, processors, and farming communities still need support to increase production and resilience to the impacts of the climate change challenges they face to ensure a food-secure future. We look forward to continuously strengthening the partnerships within PABRA and with all development partners.

Dr. Alfred Niyokwishimira

Director General, ISABU





How it started: Better beans across Africa

For the last 27 years, PABRA has forged public–private partnerships that bring together experts, entrepreneurs, innovators, scientists, and investors with one aim: to improve the lives, incomes, nutrition, resilience, and empowerment of men and women across 31 countries in sub-Saharan Africa through beans.

Finding the best, strongest, and most resilient bean germplasm in the world, starting from Colombia – one of the centers of origin of the bean species – and painstakingly collecting, storing, and breeding these with the help of dedicated scientists and researchers across Africa, these partnerships have impacted the livelihoods of millions.

From a crop improvement network, the PABRA platform has grown into a research-powered investment platform generating millions in investment and creating multiple benefits along the bean value chain. PABRA's strength lies in its strategic public–private partnerships that meet the institutional, infrastructural, and technological demands for beans, tempered with cutting-edge research that keeps the technology ahead of the curve.

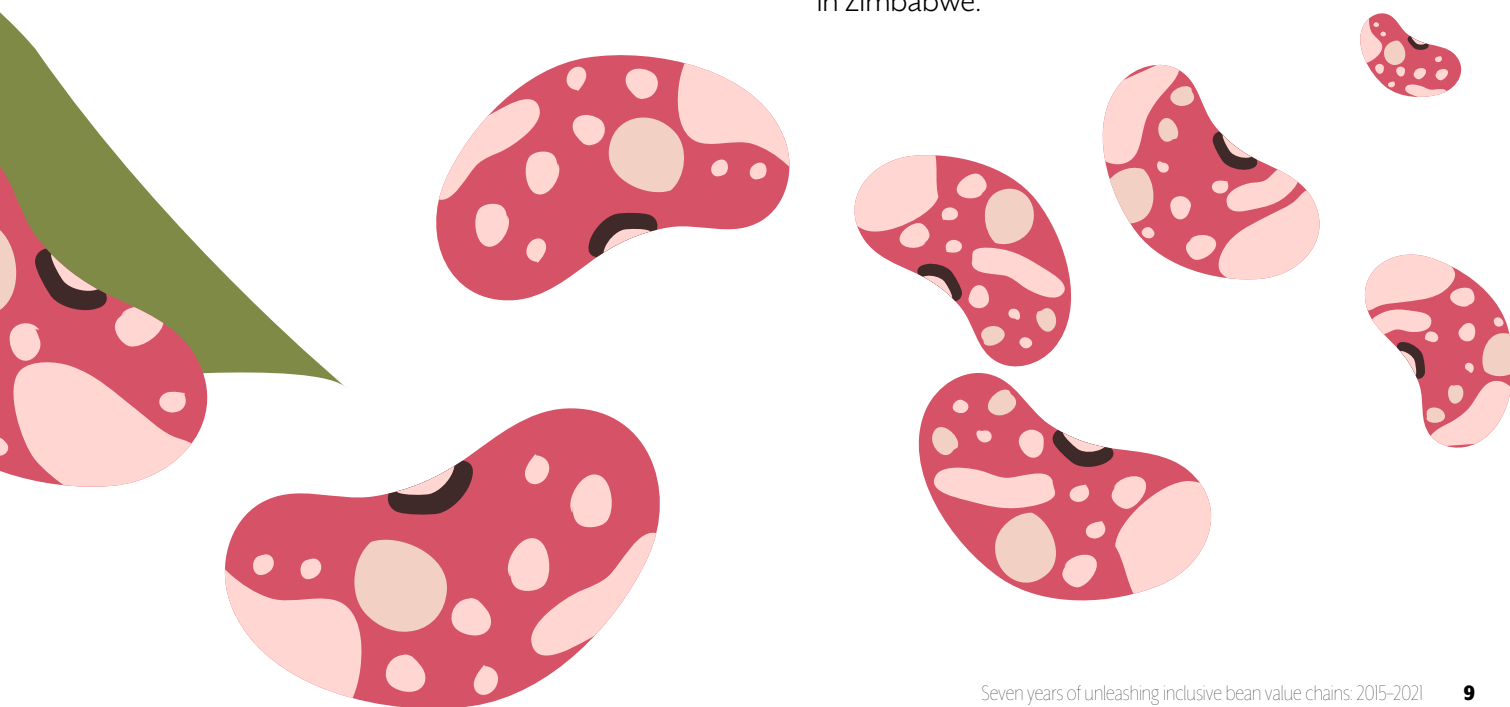
PABRA's breeding approach has evolved over the last 27 years. A critical component of the network's success lies in its demand-driven focus. Achievements to date include the release of more than 659 marketable, nutritious, resilient, and high-yielding bean varieties across Africa over the last 25 years. Promising breeding lines or new bean varieties developed in one country are shared across similar agro-ecologies, reaching local communities through research and development pathways and

through the efforts of entrepreneurial farmers and businesspeople.

As a result, countries with limited capacity to undertake their own breeding programs still benefit from the improved germplasm shared by other countries. Sharing of germplasm within the PABRA network has allowed breeders to shorten the time of variety development and presented them the opportunity to focus on challenges and share success with others; it is now part of the wider CGIAR approach to drive efficiency and achieve results at scale.

The SDC-supported flagship initiatives in both Zimbabwe and Burundi were specifically chosen to focus on building back fragile political, economic, and environmental ecosystems and to support breeding efforts in eastern and southern Africa. PABRA has facilitated National Agriculture Research Services (NARS) skills and knowledge-building among members such as Burundi and Zimbabwe, supporting their abilities to conduct demand-led research and catalyze partner development organizations and investment, thus resulting in a thriving bean market.

The US\$13.7 million flagship project “**Improving food security, nutrition, incomes, natural resource base, and gender equity for better livelihoods of smallholder households in sub-Saharan Africa**” has supported PABRA to boost yields, nutrition, and income generation and tackle climate challenges across eastern, central, and southern Africa but with more focus on building opportunities for women and men in Burundi and Zimbabwe. This impact report focuses on the achievements in Burundi. A separate report has been compiled to document the success in Zimbabwe.





**What was
at stake?**

Burundi is a small, landlocked country in central East Africa and among the most densely populated countries in Africa. The country's population has been expanding faster than its agricultural outputs. With a population of 12.9 million in 2022 – projected to double by 2050 – Burundi has a population density of 476 inhabitants per square kilometer.

Burundi's economy depends on agriculture, which contributes to around 40% of the Gross Domestic Product and over 95% of the food supplies. Beans are a key staple food crop, occupying about 40% of crop land. High pressure on land is a leading cause of soil fertility depletion, reducing the country's capacity to ramp up its food production for a growing population. Food and nutrition insecurity are alarmingly high. The civil unrest between 1993 and 2005 worsened the food security situation. This SDC flagship project was designed to address this challenge and aimed to mitigate its adverse social and economic effects on the population.

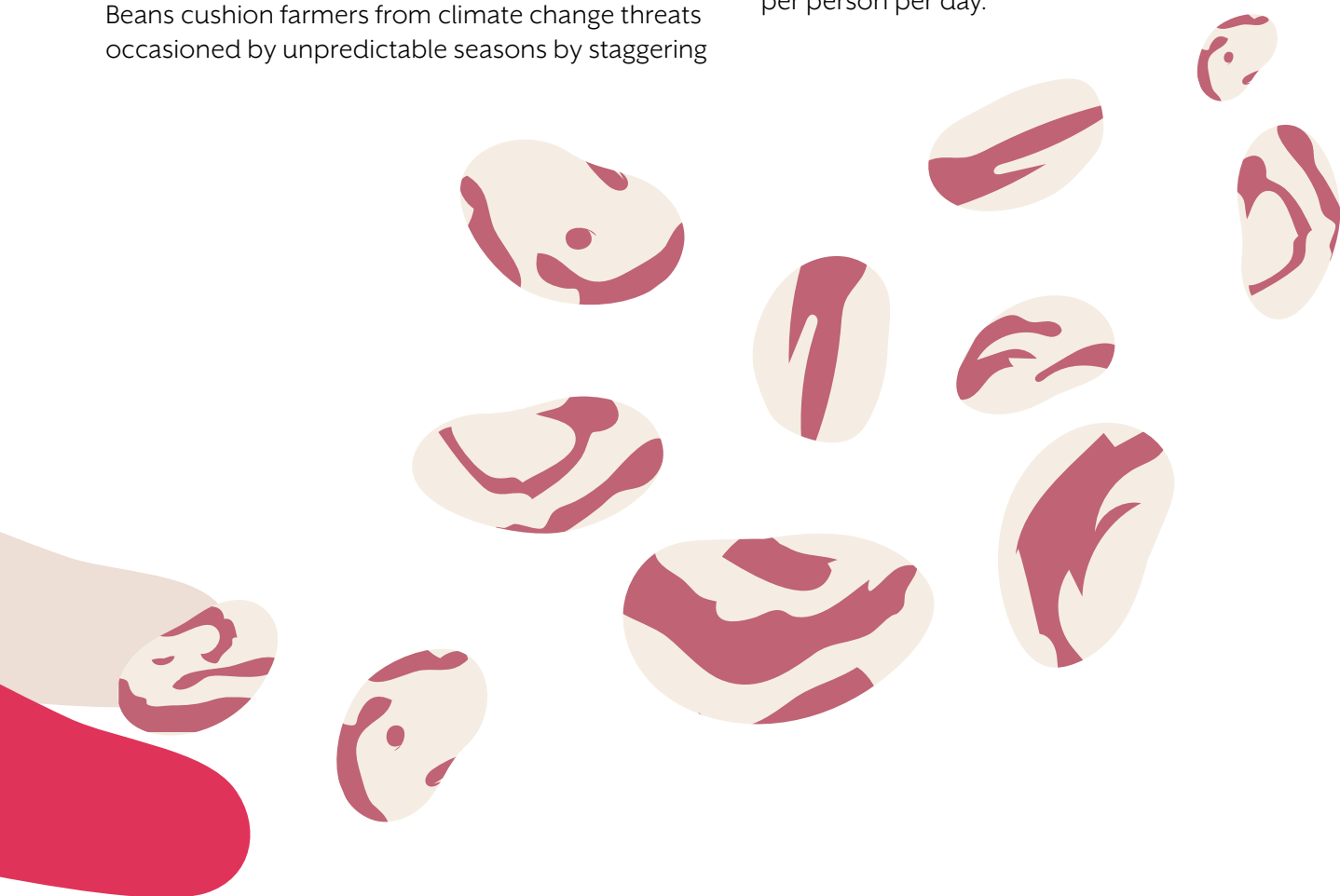
The SDC-supported flagship project sought to boost bean production and yields as it is a staple food crop providing 50% of daily protein and 20% of calories. Improved bean varieties with high levels of iron and zinc also alleviate micronutrient deficiencies, particularly in children and women. Beans cushion farmers from climate change threats occasioned by unpredictable seasons by staggering

the food supply with edible leaves and pods, thus providing food in lean seasons. In Burundi, government and non-governmental organizations (NGOs) have stepped up their efforts to promote school feeding using bio-fortified beans in the last two years.

The government of Burundi has also increased their efforts to reduce poverty and increase food security through the National Agricultural Strategy (SAN), which is linked to the Poverty Reduction Strategy Paper (PRSP), the Millennium Development Goals (MDG), and the Comprehensive Africa Agriculture Development Programme (CAADP). In addition, it is motivating the population to increase agricultural production, including that of the bean crop, as the basis of development and food security.

Indeed, common bean plays an important role in the livelihoods of more than 90% of small-scale farmers in Burundi; it is an important food security crop and source of income.

Burundians generally rely on common bean as their primary source of protein, with a consumption rate among the highest in the world, similar to Kenya and Rwanda – ranging from 31 to 66 kilograms per person per year or from 90 to 180 grams of beans per person per day.



PABRA innovations for bean sector transformation in Burundi between 2015 and 2022



Impactful partnerships: **three levels of partnerships** were established – between and among the bean research programs of the Alliance and NARS, partnerships between NARS and actors along the varied bean product value chains, and partnerships with technology end-users, including women and youth.

Through PABRA, the national *Institut des Sciences Agronomiques du Burundi* (ISABU) has released **thirty bean varieties adapted** to various diverse Burundi agro-ecologies, driven by farmer and consumer demand – five of which are bio-fortified with nutrients to beat micronutrient malnutrition.



The number of small and medium seed enterprises producing beans has increased from **15 producing 10 tons in 2014 to 315 (175 of them being women-led) producing 1,595 tons** of certified seed and quality declared seed (QDS) in 2021.

In 2015–2021, a total of 686,412 households, **50% represented by women**, in Burundi accessed quality seeds of improved varieties.



A total of 115,417 men and women value chain actors were trained on variety management, good agricultural practices, nutrition, and marketing through demonstrations and field days and received printed materials and digital information. **This was made possible through good partnership with several stakeholders, including NGOs, grain and seed traders, and farmer organizations.** Specific focus was placed on women participation in Farmers Field Schools, demonstration plots, and farmer field days.



Twin challenges in Burundi include a lack of space for producing food and the impacts of climate change. Between 2015 and 2021, heat-tolerant medium altitude climbers (MAC), which are resilient to the impacts of drought and can yield more in less space, **have expanded in production from seven to ten regions.**



Women have reported **gaining technical knowledge, acquiring new skills and abilities, and feeling empowered** by their participation in this program.



The percentage of women in leadership positions in producer organizations has increased from 35% before 2015 to 52% in 2021 across eleven provinces.





To boost the economic empowerment of women and men entrepreneurs, create demand for new variety adoption, and alleviate malnutrition at the household level, **the number of bean processing enterprises has increased from one to nine. Four of these enterprises are women-owned** (three women's organizations and one entrepreneur).

Thirteen high-yielding (six bush and seven climber) bean varieties have been supplied to 216,352 bean farmers at field demonstrations, field days, and farm visits. **More farmers accessed seeds from local businesses.**



Farmers in Burundi using improved bean varieties and complementary crop management practices obtain **33% more grain per kilogram of seed planted.**



Each Burundi Franc invested in cultivating one kilogram of improved varieties yielded 2.2 Burundi Francs in return, whereas a non-adopter received 1.28 Burundi Francs. **The program contributed to the cash incomes of some households that have surplus for sale.**

In terms of returns on investment, improved varieties are 73% more profitable than local varieties. This was observed among farmers who adopted improved bean varieties and good agronomic practices and achieved yields of 2,500 kilograms per hectare; non-adopters achieved an estimated production of 1,300 kilograms per hectare for climbing beans.



In 2015–2021, more than four million men, women, and children utilized bean-based processed products.



The number of households consuming bio-fortified varieties gradually **increased from 7,851 in 2015 to 23,946 in 2021.** In an average household of five people, the total number of people consuming bio-fortified varieties **increased from 39,255 in 2015 to 119,730 in 2021.**



Strong partnerships were established for implementing potential actions for the introduction of high-iron beans in schools, with a **focus on sustainable and home-grown school feeding program.**



**Jean Marie Vianney
Niyoyankunze**
Bean breeder, ISABU

“Our mission is to contribute to zero-hunger. We face many challenges, such as the growth of population leading to increased food demand, and I was inspired to join the breeding program as an important tool for promoting food security through enhancing crop yields, beans among them. Through the partnership with PABRA, we have also received technical support to interact better with the scientific community and improve knowledge and skills that translate into benefits for farmers through improved varieties that have been made available. Knowledge is key, and together we can achieve more while leading even to creativity. We conduct trials under research conditions and farmers’ participatory selection and compare varieties. After completing all trials, farmers decide which are the best-yielding varieties or best for the market, and the varieties are released and thereafter disseminated across the different agro-ecological areas. Then, we support the mass production of these seeds to multiply them across the country to reach more people. Before this research, communities would recycle the same varieties of seeds over generations, which also encouraged disease build-up and variety degeneration. After exposure to and testing new-improved varieties, they discovered they could get higher yields in less space by, for example, using climbing beans instead of bush beans, so they have been happy with the new varieties released.”



“As a member of PABRA, ISABU has really benefited common bean research development. PABRA enabled access to the right germplasm, and different bean lines resilient to biotic and abiotic conditions have been introduced in Burundi from member countries. These bean lines have been evaluated for their adaptability and performance in different agro-ecological zones of Burundi. The bean research team has been able to build an inclusive value chain, skills, and knowledge through various capacity-building sessions and training. To create a strong breeding program in Burundi, PABRA supported ISABU to establish a screen-house facility for bean crosses. Through CIAT/PABRA, the bean research team at ISABU has been able to engage value chain actors and build an inclusive value chain. Indeed, through breeding, we can deliver impactful solutions, and it is important to further invest in plant breeding, research, and development. Benefits to farmers include higher yields, improved quality, lower production costs, better crop management, and shorter cropping cycles to prevent losses. These imply good linkage between breeding and users, leading to more adoption. To enable people to generate income, we develop varieties that can respond to the needs of farmers and consumers and improve the entire bean value chain. We consult communities of traders, farmers, and others to find out what beans best generate income and transform livelihoods, and we provide training for maximum impact and skill-building to deliver quality beans in the market. The bean market has expanded to support male and female entrepreneurs, scaling up access to quality beans across the country. PABRA support also included skills and knowledge building through various capacity-building sessions and formal and informal training to different stakeholders in Burundi.”



Eric Nduwarugira
Bean breeder, ISABU



Blaise Ndabashinze
Bean breeder, ISABU

“Our objective is to respond to the challenges that farmers face related to not only climate change or resistance to pest and diseases but also low-yielding varieties. Being a member of PABRA allowed us to be in constant contact with other researchers and breeders, thus allowing us to receive the latest scientific updates and share germplasm. We also learned skills and received training to increase our work efficiency and effectiveness, which has benefited our farmers and changed their livelihoods. For instance, we are developing varieties that can mature earlier, increase yield, provide important nutrients such as iron or zinc, or become more resilient to the impacts of climate change. Developing varieties that respond to demand helps our farmers to improve food security and income generation. My vision is to ensure we can continue to meet the needs of farmers and support the community to become more resilient.”

“As a breeder, I also acknowledge PABRA’s support to ISABU to establish a screen-house facility that enabled the ISABU bean program to initiate capacity development in crop hybridization (crossing) that will enable ISABU to contribute to the development of new demand-led varieties in the region, just like EIAR in Ethiopia, KARLO-Kakamega in Kenya, and NARO in Uganda.” The screen house will also enable ISABU to conduct more targeted screening of germplasm for specific constraints (both biotic and abiotic) with less disruption from environmental hazards faced under natural field conditions.

A photograph of a person in a blue shirt working in a field, with a focus on a climbing plant on a wooden stake. The background is blurred, showing the person and other plants. The foreground shows a close-up of a green vine with leaves and tendrils climbing a dark wooden stake. The text is overlaid on the bottom right of the image, partially obscured by a decorative orange and beige wavy shape.

**How we beat
challenges:
what has worked**

Through PABRA and ISABU, the release of improved varieties combined with improved crop management have supported farmers in harvesting 33% more from the same size of land than they would with local landraces, making extra income available for households.

Nicknamed the “sovereignty crop” in Burundi, beans are prioritized by the Ministry of Environment, Agriculture and Livestock in Burundi as a key crop for development, income, and nutrition delivery.

The use of high-iron beans to achieve multiple development goals has been institutionalized in government policies and practices, and impactful bean research has attracted government support, which contributed to increased public investments in the bean value chain. According to Dr. Alfred Niyokwishimira, director general of ISABU, at a stakeholder forum in March 2022, *“As a result of this highly impactful bean research partnership, ISABU has expanded demand-led research to other commodities, starting with maize and potato.”*

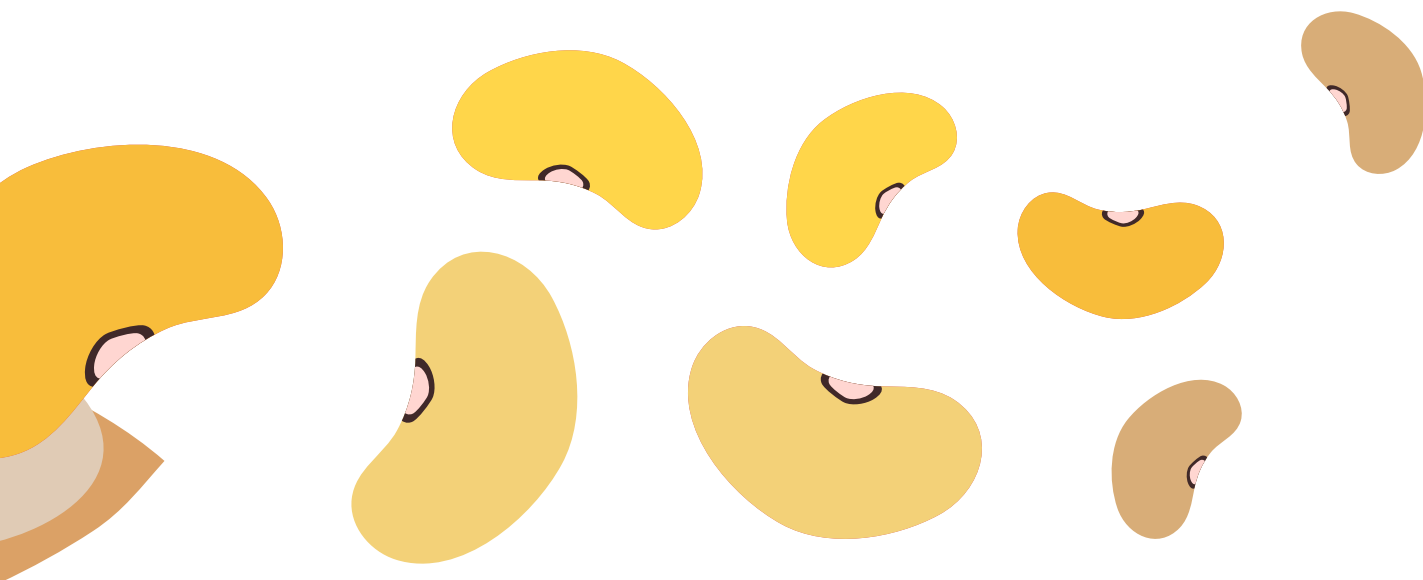


Bertin Nduwayo
Project manager,
World Vision

“We have gained important skills, training, and manuals through the ISABU–PABRA partnership to improve bean cultivation techniques. We have also been linked with processors to support the community in processing the beans through value-addition into flour, which was an important opportunity. Further, we increased our reach from 3,800 households to 6,000 households as well as men, women, and youth – including 700 households of the marginalized Batwa people – with high-quality, nutritious seed; going forward, we have doubled our ambition to reach 12,000 households in the community due to demand. The increased yields achieved have created employment opportunities.

At the same time, the women formed groups to promote community childcare in the crèches to free up time to tend their farms and improve their businesses ([Women in Burundi supported to save time and improve children’s nutrition | PABRA \(pabra-africa.org\)](#)). Owing to the demand for services of crèches, the number of crèches has grown from 0 in 2015 to 60 in 2021, with bean processors such as TOTAHARA being contracted to supply bean-based flours to World Vision-supported crèches.

Our vision is to continue providing new, quality seeds of beans, sweet potato, and now maize to the wider community and reach more smallholder farmers to improve more livelihoods in the future. We also plan to work with communities to address the higher price of bio-fortified seeds in the market.”



Partnerships

The PABRA network fosters strong relationships with partners to build and transfer expertise and scientific knowledge and to spread high-quality technologies and information to rural and urban communities. In Burundi, strong partnerships with ISABU were critical in addition to partnerships with public, private, and NGO partners such as World Vision International, International Fertiliser

Development Center (IFDC), PRODEFI, CARITAS Burundi, Catholic Relief Services (CRS), *La Confédération des Associations des Producteurs Agricoles pour le Développement* (CAPAD), *Appui au Développement Intégral et à la Solidarité sur les Collines* (ADISCO), Foundation Stamm, ENABEL, Food for the Hungry, and *Tubura* (One-Acre Fund).



Ernest Ndihekubway
Agronomist in charge of
partnership and seed systems,
IFDC Burundi

“IFDC works with smallholders to improve their revenues using certified seed. We worked with communities to test new, high-yielding bean varieties developed by PABRA and ISABU and were very happy to see our beneficiaries get high yields and much better revenue, which has also increased their motivation. We are working with ISABU and PABRA to promote these new varieties in the rural fields, and they inform us about what is demanded in the communities and which new varieties can increase impact. Women and youth, who are most involved in agriculture, have received large quantities of seed to sell and have increased their revenues and become successful entrepreneurs. By sowing bean seeds, they can increase their own home consumption and their income by selling in the market. We plan to reach 650,000 people in the next four years, strengthen the partnership with PABRA and ISABU to meet the needs of smallholder farmers, and increase the quantities of bio-fortified varieties so that smallholder farmers can obtain varieties with important micronutrients such as iron, magnesium, and calcium at a lower price.”

“We are members of an association that is training us in modern agriculture. We grow beans and maize. All began with the STAMM Foundation. There was someone training us in modern agriculture; those who were interested joined the association, and then I was elected as president. The biggest challenge we’ve had is shortage of fertilizers. They had given us chemical fertilizers, and we brought organic fertilizers. The intervention of ISABU and the STAMM Foundation helped me to sow a small quantity of seeds and harvest a big quantity. Even the practice of sowing per row saves organic fertilizers. After we applied the new skills they taught us, we saw that harvest quantities increased and the quantity of manure fertilizers needed decreased. Even the community around us took us as a model and is starting applying these skills in their agricultural practices. I would recommend farmers to join associations and work together so that they learn from each other. As we got this chance of training support, now we go back and train others.”



Venancia Gakobwa
Farmer, Ruhororo Commune



Sophia Kubwimana
Farmer, Gashikanwa Commune

“My farm was recommended by ISABU researchers. I was taught how to grow beans—how to sow per row and apply fertilizers. My harvest increased remarkably in comparison to what I used to harvest before applying the skills they taught me. I applied the skills they taught me and harvested 100 kilograms from a small field. It was the first time in my life that I harvested such a quantity from a small field. In the following year, I expanded the field and harvested 200 kilograms. I have also learned skills of keeping the harvest safe. I am recommending other people to cultivate using modern techniques because even if the field is small, the harvest is considerable. I have taught about 10 other people and request ISABU to continue giving us selected seeds.”

Bean corridors

In 2017, PABRA developed the bean corridor approach to respond to the increasing demand for climate-smart, farmer- and consumer-preferred bean varieties. Bean corridors were set up as a solution for market concentration. The objective was to resolve unstructured bean trade flows across key market and processing outlets, aggregation hubs, and places with substantial bean production.

The corridors were steered by private sector-led enterprises among buyers, processors, and

exporters and were facilitated via a business platform. The approach focuses on intensifying bean production to respond to the market and consumption needs by addressing and eliminating bottlenecks at key stages of the bean value chain so that improved beans and products are accessed and used. Investments in the corridor are aligned and focused on enhancing the efficiency of the three interlinked “hubs”: production, distribution, and consumption.



Larissa Igiraneza
Seed multiplier,
Gashoho Commune

I have 25 hectares of land. This season, I grew beans on 15 hectares. At the beginning, we saw that it was very tiresome work and even thought about quitting. But in 2017, after I had understood what this profession is all about, I earned a seed multiplier certificate. I began with a one-hectare plot and a new variety of beans called Magorori, and I harvested one and a half tons. Today, I can get 20–25 tons or more depending on the climate. The very first benefit at the family level is that we can educate our children, buy larger plots of land, and have means of transportation. I have a car, a motorbike, and a nice house. Neighboring farmers have access to seeds near them and this increases the production. And as the bean varieties we are multiplying are rich in nutrition, malnutrition cases have considerably decreased in this area. We hire more than 70 people; about 80% of them are women. We also started working with homeless poor people; today, some of them have nice houses. Our collaboration with ISABU and CIAT is based on the trainings and seeds that they give us. We wish that they continue giving us trainings in farming and appropriate, up-to-date equipment.

Between 2015 and 2021, four bean corridors have been established – yellow, sugar, red, and red mottled bean corridors – based on consumption and production zones, thus increasing the consumption of bean at the household level and expanding market opportunities to smallholder farmers in the country. Old varieties have been replaced by new varieties at scale (see [Participatory approaches and demand-led research making bean seed accessible to millions of smallholders in Burundi \(pabra-africa.org\)](#)).

The higher demand for improved seed resulted in increased number of small and medium seed enterprises. The yield gain resulting from the adoption of improved varieties and crop management practices in Burundi raised the national bean production by more than 87,000 tons: sufficient to feed almost two million people per year if most people in the region eat on average 45 kilograms of beans a year.

“After a big financial loss in 2012, I started growing potatoes and producing seeds. For the first time, I harvested 60 tons. Each time I harvested potatoes, I grew beans. Then, organizations started coming to buy selected seeds from me. I realized that alone I was not going to satisfy them, so I thought about giving seeds to small farmers from different areas of the country so that we together can satisfy the increasing market demand: that is why we called our cooperative ‘COPROSEB Nyunganira,’ which means that we help one another. When they are well grown, beans present little risk in comparison to potatoes. And the price of seeds is a bit higher than that of consumption beans. Before collaborating with ISABU, we were not known in general. But thanks to ISABU, we get much assistance. We now employ more than 300 people and collaborate within 13 provinces: currently, we are expecting more than 200 tons of seeds to be delivered. I estimate we have more than 80 seeds multipliers in different provinces.”

For more information about Leonidas and COPROSEB, see more details: [Bean seed multiplication business attracting more investment | PABRA \(pabra-africa.org\)](#).



Leonidas Nimpagaritse
Seed multiplier
COPROSEB Nyunganira
Cooperative



Regina Kabirori,
Seed multiplier, Kirundo

In 2018, I registered via a local NGO to multiply the bean variety Reseau Burundi 2000+ from ISABU. After we were approved as seeds multipliers, I made much progress. On a plot of land where we sowed 50 kilograms of seed before, now we only sow 12 kilograms in rows. I started with half a hectare and currently have 20 hectares of beans. I built a house, I bought a car, I continued growing beans, and people buy selected seeds in large quantities from me. I have sent all my children to school, all thanks to this business of beans. Many other people have taken me as their model and made much progress: they have also bought motorbikes and cars and built houses. I am grateful because ISABU gave us training on how to prepare the field, how to apply fertilizers, and how to treat crops against diseases. Together with ISABU and CIAT, they also trained us to use machines when selecting seeds and harvesting beans and to prepare flour from beans. Today, I package beans; I even hope that I will be able to export them to Rwanda.

Summary of this story: [Empowering women entrepreneurs to deliver quality bean seed in Burundi | PABRA \(pabra-africa.org\)](#)

Unleashing women's businesses through increased trade

The demand for and trade of grain and seed of improved varieties increased across the bean corridors owing to enhanced partnerships, including those among individual farmers and cooperatives, associations producing highly marketable varieties, and seed producers responding to the needs of farmers. The volume of improved dry bean varieties traded per year increased from 56,596 to 306,727 tons between 2015 and 2021. In 2015, only 20% of bean

sold in local markets was of the improved type; this increased to 50% in 2021.

This was attributable to the increased access to seed of improved and highly marketable varieties, which was made possible by investments in seed systems to raise the capacity of seed entrepreneurs multiplying various categories of bean seed – from basic to certified seed and QDS.



Marietta Ntirampeba,
Seed multiplier, Rugari Zone

“Through World Vision, I started multiplying beans as a profession. The cash I earned enabled me to educate my children. I enlarged my plot of land; now I can cultivate up to 15 hectares. Before growing beans, there was a disagreement with my husband, but when he saw changes taking place in our family because of this activity, he changed his mind and joined me. We employ other people, especially those with no sources of income. I even hired two qualified monitors who follow up my activities and help me pay taxes to the Burundi Revenue Authority. I have about 100 employees; the majority of them are women: they say that they cannot rely on their husbands on everything. We collaborate with ISABU for the multiplication of bean seeds; they gave us training, and we got improved seeds from them.”



Building women's capacity in leadership and imparting them with skills and knowledge in business and entrepreneurship increased their participation in technology development, and their increased access to research products has unleashed their business acumen. Subsequently, several women established bean seed and grain enterprises/businesses, such as food processing.

For instance, in 2015, the project started with one bean processor, and by 2021, a total of eight small and medium enterprises were processing bean-composite flour in the Bujumbura, Kayanza, Ngozi, and Kirundo provinces. The high demand for bean-based products at local markets is primarily driven by the introduction of these products for feeding children at community crèches (see [Women in Burundi supported to save time and improve children's nutrition | \(pabra-africa.org\)](#)).



Roger Hakizimana
Trader, Gatabo Commune

"I began trading beans in 2003, and I have not changed so far. I began trading beans using a bicycle to bring a few kilograms from the market. First 100, then 200, then 300 kilograms. But today I have my own shop. Today, I can even buy four and a half tons of beans per day and send them to Bujumbura and elsewhere on the same day. Today, my family lives thanks to this business; I bought a plot of land, I built a house, and my children are going to school – I am really grateful. The organizations I worked with inculcated in me this love for the business of beans, and today I made a network of more than 25 people in the bean business. We employ 10 women and 5 men and give them money to go to different markets to buy beans for us. Even neighboring farmers sell their harvest to us, and when they want to buy beans, they come to us. The network of CIAT, ISABU, and PABBRA did not give us money; but they trained us, and trainings are more important than money: there is much improvement in our working system."

Value-addition

During 2015–2021, the project implemented three approaches: establish community crèches, train the trainers at the community level on how to prepare bean-based porridge, and support bean processors with quality assurance. Results were achieved owing to the strong partnership with stakeholders promoting and disseminating these approaches, such as the *Programme National Intégré de l'Alimentation et de la Nutrition* (PRONIANUT) and World Vision International.

Three adapted business models that link seed producers to grain producers were set up. Traders have established links with collectors based in different provinces across Burundi. The platforms were established to improve efficiency between actors working in the production, distribution, and consumption hubs. The platforms aim to strengthen communication among the network members and enhance their capacity of quality seed production.

During project implementation, the bean flour product has been promoted due to its versatility, convenience, and nutritional value. Among the bean-based products, consumers ranked the bean porridge the highest, followed by doughnuts (mandazi). Eight bean processors from four provinces – namely, TOTAHARA Ltd. in Bujumbura, KAFLOBE in Bujumbura, Rengerubuzima in Kayanza, Ifu y'ibiharage in Gashikanwa of Ngozi province, Ifu y'ibiharage in Vumbi commune of Kirundo province, TUBEHO NEZA of Makamba commune, CEREALIS in Bujumbura, and Burundi Fortified Foods in Bukumbura – have increasingly invested in the processing of bean flour, whereas food vendors in the open markets mostly produced bean-based doughnut (mandazi).

“We manufacture porridge flour made of beans, soya, wheat, sorghum, maize, and sesame. Thanks to nutrition training, I began making porridge at home. If a guest comes home, we could give them porridge and they appreciated it. Later, as my family was going through hard times after my husband lost his job, I began making porridge for sale. By collaborating with ISABU and CIAT who had supported me technically and financially, I bought some equipment. With my little means, I purchased some small machines, and then I saw that it was a profession. My production increased from 2 tons per month in 2014 to 30 tons per month currently. Now, I employ 12 mothers and 20 young people. We work with 5,200 farmers grouped in women farmers’ associations. I have expanded to the Democratic Republic of Congo, and I am planning to expand to Rwanda. We hope our enterprise will grow so that everyone who would like the porridge we produce gets it.”



Christella Ndayishimiye
Food processor/entrepreneur,
TOTOHARA, Bujumbura

Building higher-yielding and stress-tolerant food systems

During the seven years of the project, thirty new, preferred, high-yielding, and stress-tolerant dry bean varieties were released, contributing to varietal diversity in terms of tolerance to climatic stresses such as increased drought or floods. Breeding efforts also addressed land scarcity issues, with climbing bean and bush bean varieties yielding more harvest in less space in addition to adapting to soil-related constraints and diseases such as root rot. Together with PABRA, partners, and the ISABU bean program, eight new high-iron bean varieties, containing higher amounts of iron and zinc, have been released among the newly released varieties aimed at improving nutrition.

Beans for women and youth empowerment

Across PABRA's work, a deliberate effort has been made to engage and empower women, men, and youth under 35. For instance, 55% of the 315 local seed entrepreneurs are women ([Empowering women entrepreneurs to deliver quality bean seed in Burundi | PABRA \(pabra-africa.org\)](#)).

Of the 115,417 people who were trained, 46,167 (40%) were women. Among the eight processors, four (50%) are owned by women and youth. Follow-up surveys showed that 65% of the targeted women and youth utilized the new technical knowledge, skills, and abilities they acquired, and more than 88% of women reported that they felt empowered by their participation in the program. The flagship facilitated the development of women entrepreneurs in various segments of the value chain, including farming as business, seed enterprise development (55% of seed entrepreneurs), and value-addition (two of eight).

The flagship project contributed to enhanced food and nutrition security for vulnerable groups (women and children). In addition, the partnership with development partners and ISABU contributed to innovative feeding programs for children under 5 years of age through crèches while creating more productive time for women (see [Women in Burundi supported to save time and improve children's nutrition | \(pabra-africa.org\)](#)). Through the partnership with development organizations, training sessions on gender equality and inclusive bean business skills were introduced to targeted communities. This resulted in equal participation of men and women in the seed business and bean-based product development.

Bio-fortified beans have been integrated in various government policies. For instance, PRONIANUT of the Ministry of Health has partnered with ISABU

and development partners to promote bean-based products and bio-fortified beans. In provinces such as Muyinga, Kirundo, Karusi, Rutana, and Cankuzo, where World Vision International operates, the number of people accessing bean-based products significantly increased.

A policy brief developed and disseminated to different stakeholders in 2020 contributed to the impactful results in high-iron bean promotion ((PDF) [Bio-fortified beans: A vehicle for improving nutrition, income and food security in Burundi \(researchgate.net\)](#)). Following the recommendations of the policy

brief, Her Excellency Angeline Ndayishimiye, First Lady of Burundi – through her foundation *Umugiraneza* – is promoting the consumption of bio-fortified beans in school canteens in collaboration with Caritas Burundi and World Food Program (WFP).

The several training sessions on gender mainstreaming (at both community and platform levels) have led to significant improvements in the participation of women in the bean value chain. The sessions have also influenced women's access to quality seed of improved varieties, technologies, and market information.



Catalyzing more investments in nutrition for increased minimum dietary diversity score (MDDS) in mothers and children

Currently, efforts to contribute to the eradication of malnutrition have increased in Burundi, supported by the first lady, Her Excellency Angeline Ndayishimiye through the OPDD-Burundi *Office de la Première Dame pour le développement au Burundi*: Office of the First Lady for Development-Burundi. The organization is supporting school canteens by promoting the consumption of bio-fortified crops, including high-iron beans, in primary schools.

In Burundi, the MDDS score for women of reproductive age increased by 4.6% among families that adopted improved bean varieties, highlighting

their impact on community nutrition. During the seven years of the project, ten training sessions for partner organizations were organized. The impact assessment shows an associated increase in dietary diversity scores. Nutrition education reduced the probability of falling sick by 17%. The project also promoted bean-based processed products for nutrition. In Burundi, the number of households consuming bean-based processed products made by local entrepreneurs in the intervention areas increased from 15,271 in 2015 to 252,126 in 2021.

Knowledge is power

Specific focus was placed on greater women participation in Farmers Field Schools, demonstration plots, and farmer field days. Strong collaboration with public, private, and NGO partners facilitated improved knowledge about new bean and variety dissemination across the country, supported by improved communication

through the media and agriculture fairs. During the seven years, more than one million men and women accessed information through training sessions, printed materials, demonstrations, and agricultural radio programs developed by ISABU's Bean Programme and development partners.



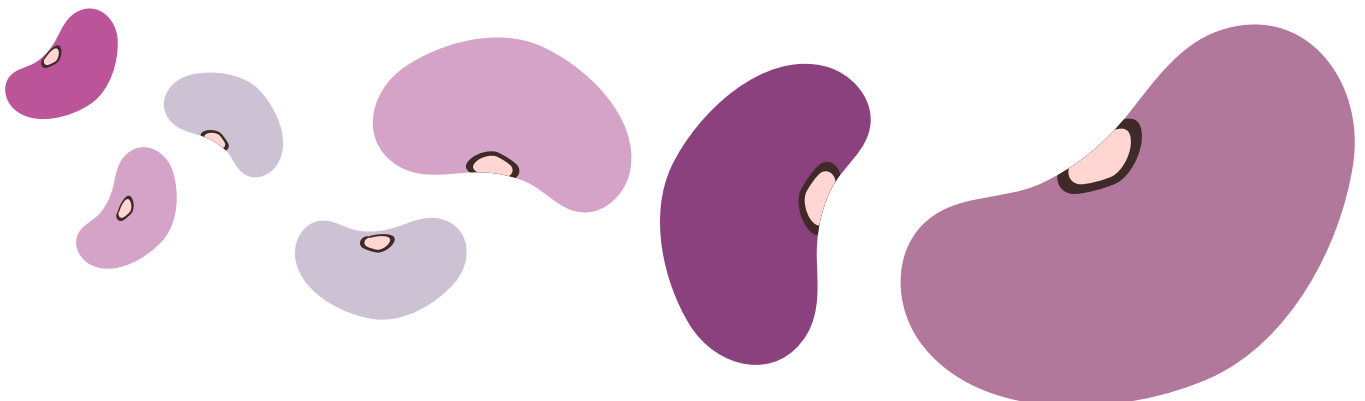
Pelagia Namiburo
Member of Giriteka Kirundo
Cooperative Society

“Our cooperative has 85 members – 45 women and 40 men. ISABU found that we lacked knowledge of the importance of selected seeds and trained us on their importance. They guided us in the process of becoming seed multipliers, but they did not stop by there. ISABU continued training us, starting with how to prepare the field, how to use chemical and organic fertilizers, and how to grow different crops on the same field. We were also trained in how to know different diseases that attack crops and what to do to avoid them, how to know the appropriate harvest time, and how to keep crops safe until harvest. Later, CAPAD trained us on how to provide for our daily needs via farming; our fields are a source of inspiration for neighbors, who come to ask for seeds and are really grateful for the quality of seeds we give them without having to go far. We have fought against hunger and thus employ others. I can currently provide for my daily needs and can sell beans. I bought plots of land and a cow, and I built a modern house. I can say that about 70% of those who benefit from our services are women. We wish that in the future, we can enlarge our markets and export our products.

Cross-country learning and capacity-building

Before 2015, the high-iron bean varieties used in Burundi were developed in Rwanda by the Rwanda Agriculture and Animal Resources Development Board (RAB) in partnership with the Alliance (CIAT) breeding team through the Eastern Africa Bean Research Network (ECABREN)/PABRA. With cross-

learning between institutes, breeding capacity within ISABU has been enhanced to evaluate and select high-iron bean lines shared by the Alliance. One agronomist/climate action scientist was trained to the PhD level. Another is currently undertaking his PhD in bean breeding.



“Since 1998, I have manufactured porridge flour called Uburyohe. I began with my brother; but at that time, our ingredients were only maize, wheat, and sorghum, and we were selling each flour separately for clients to mix themselves. Between 2015 and 2016, I began collaborating with ISABU, CIAT, and PABRA. They gave us a complete grinding machine to rent, and thanks to their support, we have acquired electrical equipment and include bean flour. I could produce 2 tons per month, but today, since we included beans, we produce four tons per month and employ 28 women and men. In the future, if we get enough materials, KAFLOB plans to employ many workers so that we produce enough flour porridge made of beans and feed our 10,000–25,000 clients – young people and pupils – for their good health and for decreasing unemployment.”



Osias Nkurunziza
Representative of the KAFLOB
porridge flour manufacturing
company





**Lessons learned:
de-risking for the future**

- ▶ **Leveraging partnerships for wider impact:** Bringing together multiple stakeholders in Burundi – ISABU, farmers, and private sector and Alliance researchers – led to strong collaboration and project implementation. The initial challenge was to make changes within a short time, but collaboration has led to long-term impact. Strong partnership contributed to the achievements of the project. The ISABU's bean program partnered with multiple stakeholders to achieve the project's objectives.
- ▶ **Effective communication and engagement:** The effective communication and constant engagement between the ISABU bean team and the PABRA team has cascaded to national/local partners, including smallholder farmers/other value chain actors, and fostered ownership of results for long-term sustainability. Bringing together multiple stakeholders on platforms contributed to tremendous success.

- ▶ **Strengthening digital and technical solutions:** Network members were able to quickly pivot to find digital and virtual solutions when the COVID-19 pandemic hit. Despite restrictions, most of the field activities were implemented. The need to build and strengthen digital solutions is a key lesson to take forward. Other innovations include the use of PICS bags to control bruchid, promotion of bean-based products to enhance nutrition at the household and community levels, promotion and dissemination of bio-fortified bean varieties, to manage and share climate information.
- ▶ **Staying ahead of threats for a more resilient future:** Burundi continues to experience the burden of climate change. Extreme droughts, rainfall, and floods; depleted and unsuitable soils; and unreliable rainfall are coupled with associated challenges posed by pest and diseases, impacting bean production. PABRA must continue testing and deploying climate adaptation measures to significantly accelerate the replacement of existing varieties with newer ones adapted to tomorrow's changing climates. These varieties will be supported by appropriate climate-smart agronomic practices. In addition to introducing climate-smart varieties, the project stepped up the delivery of Climate Information Services (CIS) by deploying training.





