PABRA Markets, evolution and precedents

Introduction

One of PABRA's ultimate goals is to improve income and livelihoods of resource-poor smallholder families. This goal is to be achieved through increasing trade by men and women farmers in an equitable manner. PABRA has promoted access to profitable bean market opportunities among men and women farmers in Africa, so that millions of households can benefit from the improved markets. One of the major drivers of adoption of technologies is access to sustainable and profitable markets (besides access to health and nutritious foods). Usually farmers tend to adopt technologies when the benefits of the technologies are well articulated and that the benefits are actually achievable. It is recognized that without a market outlet for the outputs of improved technologies, the interventions may not be sustainable and impact will be limited.

Perspectives on the evolving PABRA markets and models

The Evolving PABRA Markets models (with examples in practice)

Participatory models (PVS)

PABRA's initial work in bean development began with participatory planting breeding that alternated with participatory variety selection (PVS) in the early 2000. The objective of the approach was to enhance adoption of varieties by users that ranged from producers to traders through training and use of the approach. The approach helped to explore varieties whose value-added traits were considered hidden (biofortified) or exhibited only in certain conditions (drought resistant) and for reaching the hard to reach farmers through traditional breeding and seed approaches alone. Later on PVS became an important tool for expanding private sector and other actor to uptake the varieties. Thus with this approach a foundation was laid to expand beyond the traditional breeding approaches, to engage non-breeders in the process of variety development

Market led breeding approaches

In the course of the decade ending 2009, and building on participatory variety selection innovation, a clear focus on markets was adopted. The focus beyond breeders and farmers meant that other key bean value chain actors such as traders increasingly became significant players in variety development. The approach was used to engage industry and high value markets in order to anticipate their market trends nationally, regionally and globally. In addition, the realization that farmers on their own may not link to markets played a significant part in the promotion of market linkages and the need for sustainable and remunerative markets as opposed to adhoc local markets. Thus linking farmers to markets worked closely with market-led breeding, to strengthen capacity to organize production and collective marketing and to understand allow for competitive linkages to markets. Development of competitive products while facilitating smallholder farmers, traders and other value chain actors to benefit from opportunities created by emerging new and expanding existing markets was a prime response from the new market-led breeding strategies. There were markets in rural and urban areas, that were sensitive to certain traits, e.g. cooking time became important for urban consumers due to fuel costs

and need for convenience foods. Some of the breeding efforts targeted niche markets, specialized, small but high value products for markets. Market classes began playing a bigger role in breeding work, as each class targeted different users/buyers or consumers based on their preferences. Hence, the question of breeding was whether there were sufficient commercializable varieties to meet the demands. Though the focus on market classes helped to accelerate specific varieties based on market preferences, sometimes information from the market end proved challenging for breeders to access, especially when varieties differed within the market classes. The focus also started shifting to value addition as extended niche markets, which required specific traits different from what producers or dry grain consumers would usually demand. This gave rise to separation of value chains within the bean products, each requiring specific efforts to develop. The market led approach is best illustrated by the Ethiopia case: because of focus on market, a combination of fit between the market demand and appropriate varieties (white pea beans) increased land under cultivation, increased the number of exporters responding to demand and better prices. The value of bean production, trade, and numbers of traders more than tripled within a period of 5 years between 2003 and 2008. These were lucrative market linkages increasing market orientation of the breeding program. The marketability of the varieties was central to market led breeding, which is now earns Ethiopia more than USD150million in exports per year, driven mainly by white pea beans and more recently the red beans.

Value chain-based approaches

Value chain approaches focus on holistic flows of products from end to end, by different actors. Bean was no longer a single value chain, but rather, a number of value chains clustered under beans, viz value chains for processed bean products (also various- flour, canned, grain, green etc). A value chain analysis of the bean products was used to support development of varieties and to increase targeting, thus achieving a better link to the markets. Thus, specific varieties would require specific value chain actors that were to be engaged. The market was no one, rather there were different markets based on different consumer clusters or market segments. For example, the Ethiopia case developed white pea beans for exports; while Tanzania developed red mottled beans for regional markets. The acknowledgement of the presence of differentiated markets for beans and products and the need for more inclusion of women and youth and other interest groups required coordinated efforts, and with bigger outcomes beyond incomes. More than support than value chain interventions were required to achieve this high-level efficiency. Thus, the introduction of innovation-based approaches such as innovation platforms were introduced in the later part of the decade in 2008.

Innovation based approaches (innovation platforms perspectives- DRC)

Innovation platforms were an approach that attempted to address value chain development based on synchrony of actions among stakeholders rather than a linear research problem solving approach. It uses action research, in the sense that research happens based on emerging constraints, and key stakeholders needed to address the constraints are available on the same table, hence making it faster to solve problem. Innovation platforms consist of multistakeholders, they were tested in the Lake Kivu region in Uganda, the DRC and Rwanda. They provided insights on how problems could be solved by active involvement of actors and supporting stakeholders, across different disciplines. Markets were at the center of innovation platforms, to find faster ways to communicate between the market end and the technology research and developers, thus enhancing the research for development model.

Despite the innovations above, bean product value chains are not well developed for actors to benefit from the improved bean innovations. One of the key challenges is ensuring that investments made in developing new bean varieties and associated technologies at the technology generation stage upstream have a downstream impact and improve the income and nutrition levels of farm families and especially women who do most of the work at the ground level. Strengthening linkages among actors in the bean value chain has been identified by all project partners (both public and private sector) in PABRA countries as a priority issue to be addressed. This means facilitating linkages between upstream and downstream actors such as NARS, seed companies, grain traders and farmer organizations as well as creating strong relationships among actors in the bean subsector to ensure effective dissemination of new varieties to support impact at the farmer and consumer levels. To facilitate these downstream linkages PABRA continued to establish

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and strengthen bean value chain platforms (BVCP) of key stakeholders in the bean subsector in each of the PABRA partner countries while ensuring at least 30% participation of women in the platforms. Local BVCPs have the mandate to participate in the design, implementation, and Monitoring of bean enterprise activities with a view to achieving the expected outcomes. This design achieved faster and targeted impact from bean technologies and access to sustainable and profitable markets

Platform models (illustrations from selected corridors and countries- Zambia, Zimbabwe, Malawi, Tanzania, Rwanda)

Later on, PABRA refreshed the markets work further post 2010, integrating innovation platforms and reorienting them to focus on sustainable practices. Whereas innovation platforms were largely driven by research and projects, PABRA sought to have the platforms driven largely by the private sector, based on lessons learned from participation in the innovation platforms approach under the sub-Saharan Africa challenge program. Sustainability required aligning the interests of key value chain actors and supporters in such a way sufficient reason to continue actions beyond catalytic actions based on projects. Hence, the lead firm approach was adopted and the platforms were referred to as bean business platforms, with strengthened profit motive and wider public interests converging. The key drivers are the major traders, processors, exporters and seed companies that have well defined markets for the produce they demand. Examples of business platforms abound across the PABRA countries, among them the Ethiopian business platforms (8), Rwanda business platforms, Uganda, Kenya, Zambia, Zimbabwe, Malawi, Madagascar, Ghana, and Cameroon among others (insert table of selected lead firms and countries). The platforms have been used as a faster means of introducing new and promoting new technologies especially varieties to key actors, from the market end to seed supplies and variety development, cutting the time of response from markets to variety development and seed supplies. PABRA continues to deploy business platforms and reinforcing them further under the bean corridor approach.

The bean commodity corridor approach (yellow bean example)

Pan-Africa Bean Research Alliance (PABRA), drawing on over 20 years of work in the continent, has developed an approach to intensify bean production, marketing and consumption. The approach referred to as the “commodity corridors” and put into use in 2017, aims to address and eliminate bottlenecks at different key stages of the bean value chain, so that improved beans and products are accessed, used and benefit more consumers. The commodity corridors that PABRA has defined are based on extensive assessments of the bean production and trade in Africa. The

analyses reveal the existence of unstructured major flows of the bean commodity between areas of production and consumption, connected by unorganized distribution networks. In the new PABRA approach, the bean value chain efforts are aligned and focused on enhancing the efficiency of the three interlinked "hubs" of the corridor: the production, distribution, and consumption hubs, which constitute the components of a corridor (figure 1). Production hubs are defined as sites or regions where large volumes of beans are or can be produced in response to market needs; by targeting and dissemination market demanded varieties, improving productivity and production through good agricultural practices (GAPs), developing and sustaining seed systems, and strengthening the capacity of farmer producers units for collective marketing. Distribution hubs include product distribution centers, aggregation centers, warehouses, storage points, or commodity exchanges, for distributing beans to consumers. Consumption hubs are the major market outlets and processing units, supermarkets, and bean dealers. Consumption hubs could be located in rural, peri-urban and

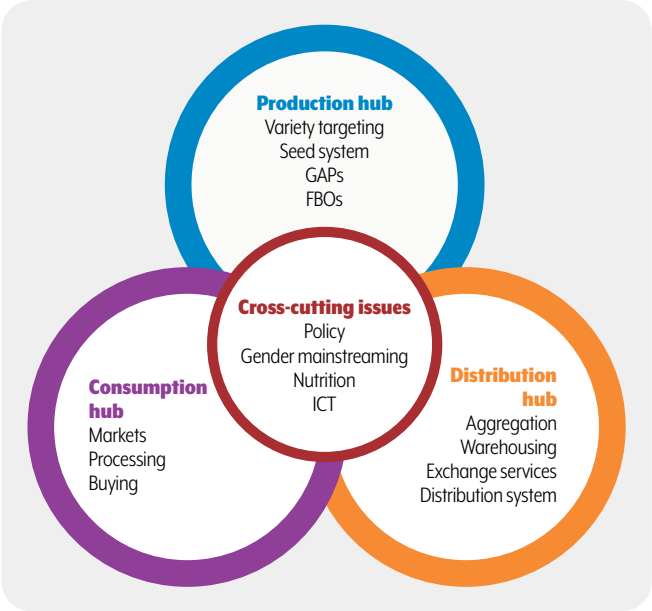

Figure 1: Elements of the Bean Corridor.

urban areas (also within the production areas)

Within PABRA, the commodity corridor approach is being used to link seed development and enterprises to users within the production hubs. In this way, seed demand is better channeled from producers within the production hubs to seed enterprises, which appropriately responds to supply the quantities demanded. Corridors are driven by major bean products (include bean varieties or types), information of which is useful to seed enterprises that use it to plan for their volumes of seed to produce, and of the types of varieties demanded by producers. The bean corridors are built around lead firms- the lead firms include large-scale grain traders, bean processors or seed enterprises with well-defined markets for their seeds, all linked up to large numbers of grain producers or seed producers which constitutes the bean business platforms. The corridors helps to create market-driven, rural agricultural transformation by linking all members of the white pea bean value chain while stimulating, developing and intensifying use of support services such as credit, insurance, and ICT among others.

To implement the bean corridor activities, two business platforms are established in each corridor, driven by private sector lead firms (buyers/ processors/exporters), each strongly linked to the production hubs or sub-hubs. The lead firms provide grain volume projections to farmers based on their market off take. The volume projections drive seed requirements and other support services such as credit, mechanization requirements transportation and storage among others. Each business platform is made up of representatives of farmers (cooperatives/ groups), the buyer lead firms, service providers supported by policy, extension and research among others.


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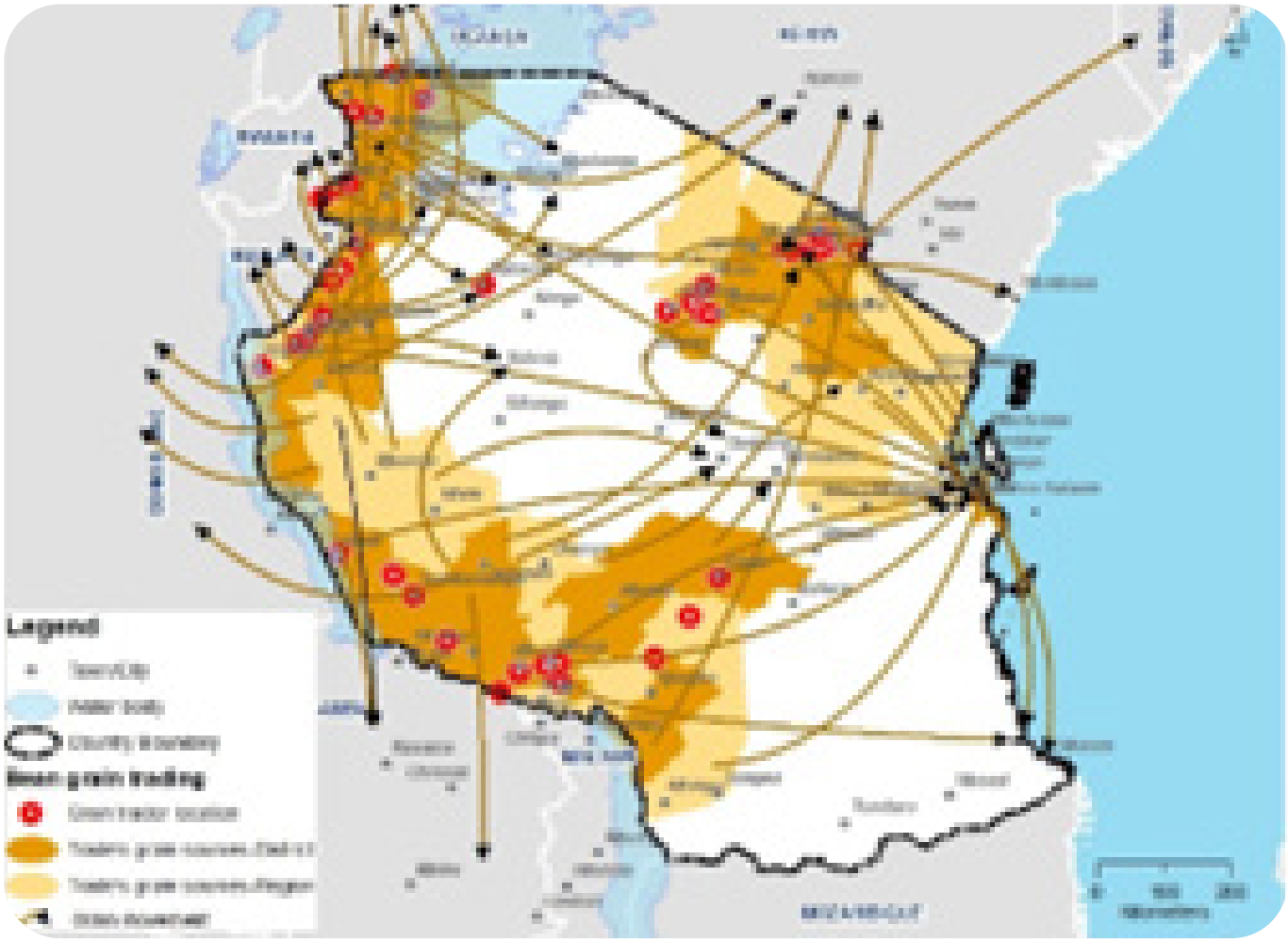

Figure 2: The yellow bean corridor: Tanzania hubs.
The yellow bean corridor has 3 production hubs in Southern Highlands of Tanzania, the West, The Lake Zone (Kagera), and the Northern Zone including the Eastern Zone (Tanga). The major distribution hubs include the Kagera region, the Northern Zone (Arusha, Mount Kilimanjaro) while the consumption hubs are found in major cities such as Arusha, Dar es Salam, Mwanza and others but also significantly in neighbouring countries such as Kenya and the DRC among others (7 countries). Assessment of about 300 yellow bean traders reveal trade value of more than 40,000 metric tons valued at more than USD 27million.

ICT supported integrative models and digital marketplaces (illustrations from Uganda and Tanzania)

To increase efficiency in the value chains and corridors, PABRA initiated inclusive digitalization of bean value chains as part of business support services. With the realization that agriculture contributes between 10% and 35% of GDP in developing countries and employs 1.34 billion people globally, including 1.31 billion in developing countries, digitalization is key to enhance these benefits. However, the financial access gap in rural areas in developing countries, where 53% of the population live, means most smallholders are still unbanked. Most smallholder farmers operate in a cash economy, receiving cash payments for the sale of agricultural produce and for government transfers.

Small-scale farmers are trapped in a cycle of cash use and informal business operations in selling their produce to traders or intermediaries at very low prices. This cycle limits their ability to grow financially and generate formal financial histories. However, smallholder farmers want more than 'cashless payments. They want access to finance and market to sell their produce at better market prices, lower cost of inputs and efficient marketing of their produce to buyers. Existing financial services are either too complex or not appropriate for smallholder farmers' day-to-day needs. However, more than 80% of the transactions take place between farmer and buyer is in cash. Due to a lack of financial histories, smallholder farmers are unable to access lending to access financial credit services from financial institutions. Digitalization and automation are increasingly being used to enhance labor efficiency in production, and to increase productivity. Mastercard Farmer Network Digital Agriculture Platform (MFN) that has been tested by PABRA and Mastercard with select producers, is a hosted platform that digitizes information,

payments, workflows and farmer transaction history within the agricultural sector. As such, it looks at circumventing the key barriers to effective agriculture value chain performance and targets to connect key value chain stakeholders. It is a marketplace linking (Farmer Producer Organizations) FPOs, their members and traders to local, regional and international buyers, thereby making agricultural supply and demand meet. The tool also integrates financial institutions and providers of value-added services and connects them to the FPOs and farmers. Bundling the services is important to enhance the business case for farmers and SMEs to invest in them in order to sustain them beyond project interventions. Applications that run trading or business transactions have better potential to support modules that do not generate immediate cash flows, example being climate advisories and other extension services that have not yet been commercialized. MasterCard Farmer Network (MFN) has been tested and expanded by the joint action by Alliance –PABRA and MasterCard in Tanzania[1] and Uganda and have proved to be effective in collecting, bulking, and aggregating agricultural produce from SSPs in a cost-effective manner (especially with regards to transport), with more than 370,000 small scale producers digitally registered in the MFN in Tanzania and Uganda. more than 50,000 were able to utilize the services which has generated incomes of more than USD 12 million for SSPs and attracted credit of USD 3 million from commercial banks to the SSPs. The SSPs have demonstrated willingness to pay for the services

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Outcomes and Impacts of current market models in PABRA

After a decade of implementing various market led models and specifically based on the corridor model, a number of outcomes have been realized. The corridor model has resulted in increased incomes. The mid-term evaluation of the project in three corridors (6 countries) indicated that gained more income from increased sales due to expanded markets, locally and internationally. An assessment of offtakers in Kenya and Tanzania also indicated that their incomes from beans increased by 20%. The volume of bean trade increased to about 6.4 million tons and the number of producers linked to the bean increased to 3.5 million in 18 countries during the period. Both these figures were lower when the Covid-19 pandemic set in during the year 2020, but assure farmers of stable incomes. The traded bean generated incomes amounting to USD 3.4billion at the farm gate (USD 0.6 per kg) for 3.5 million farmers in 18 countries in Africa. About 51% of the farmers that traded in beans are women.

Over the year, 277 new enterprises were engaged in bean grain, seed and processed product trade, an indication of anticipated potential income they will get. The corridor model provided a framework to support the enterprises and information on potential benefits to be gained from engaging in bean trade.

Varieties are now released more into the hands of the private sector players, responding to consumer and market demands. Canning types in Zimbabwe were released on demand for canning quality types that substitute for imports. Canners on release contracted seed companies. Red mottled varieties in Kenya were released based on consumer preferred red mottled beans (nyota), seed companies trying

1 Farmer digital platform delivers financial inclusion: a case of KADERES in partnership with Tanzanian farmers and banks - (pabra-africa.org)

to keeping pace with seed demand by producers. In Rwanda, release of sugar beans directly to producers to meet market demands by offtakers required low efforts to promote the varieties. The demand-led breeding is now more focused in its investments in variety development that respond to market demands. Developing gender-responsive product profiles has been prioritized to support breeders to integrate demand and gender information to guide breeding priorities. Building on the existing variety Product Profiles (PP) developed through the Demand Led Breeding (DLB) work, PABRA has been part of the co-designing of the Gender + customer and product profile tool piloted in some corridors EAREM and TAZAMA) by the bean team but also by other CGIAR centres working on cassava, sweet potatoes, lentils and plantain in different countries.

There has been increased interest in grain trade and processing arising from increasing knowledge and interactions among bean value chain actors based on bean corridors and bean business platforms. More knowledge on markets and demands has reduced uncertainties for investors. More women continue to engage in bean production, trade and processing. Value addition to bean has been increased over the years. Consumption of processed bean-based products has remarkably improved during the last five years from zero in 2017 to 1.9% of the population in 2021 (about 5 million (3.387,719 women and 1,824,156 men)). The trend in value addition and processing has continued as it presents an opportunity to diversify diets and provide stable markets for producers of bean grains.

Access to market and advisory services, specifically, digital payment services (MFN) achieved high growth from 0 in 2017 to 379,000 (2021) with women constituting the majority of the new users at 55%. During the period, about 55000 farmers transacted produce worth USD 12million on the platform, 55% of these farmers in 2021 were women that were able to generate incomes for themselves and their families. Business services and advisories have had demand increasing and suppliers responding to new business opportunities in this area. Digital payment services have led to more inclusion of women and increased access to credit from financial institutions. Some of these outcomes are illustrated in table 1.

Table 1: Name?.

	Baseline 2017	2021
Volume of trade increased 2017-2021	1.9 million	6.4 million valued at US$ 3.8 billion to farmers (at farm gate)
Number of male and female farmers linked to profitable markets	297,500	3.5 million
Number of men and women linked to market and advisory services	0	379,000
Number of SMEs in bean trading and processing	52	277
Number of countries with SMEs processing bean products	0	12
Number of countries with bean business platforms	0	18
Number of bean business platforms	0	78
Number of women and youth in platform leadership position	0	181
Incomes earned by farmers through digital payment services	0	US$12 million

Conclusions and future perspectives

PABRA's market facing approach has evolved over the last 2 decades, with a strong client focus. It has evolved from participatory planting breeding through participatory variety selection, niche market breeding, value chain focus, innovation platforms, demand led breeding and to corridor approach and lately with digital inclusion. The current demand led corridor model was introduced by PABRA to provide a framework for catalyzing and intensifying production, distribution and marketing and consumption of beans and bean products. By applying this model, we draw some lessons learned so far:

- Market demand-pull rather than supply pull has sustained increased production, trade in beans, across grains, and seed supplies in the bean corridors. The market demand-pull has been key for investments in varieties and seed systems to meet the demand for the beans from consumers and bean enterprises across the corridors. Thus, demand for beans has been defined by preferences for specific bean types and varieties that have been promoted by the project across the corridors.
- The bean corridor model has contributed to increased investments by both private and public sector to respond to bean demand across the corridors. Notable examples include new bean processing enterprises, new seed enterprises, new varieties and producers intensifying production. These have also invested in quality assurance to safeguard and protect their markets. Thus, demand aggregation has been achieved for both grain and seed, leading to informed investments. Specific bean types or varieties making it easier for bean value chain actors to plan their enterprises define each corridor. For example, the number of bean related enterprises have more than doubled because of anticipated benefits from increased

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incomes from reduced uncertainties in the bean value chains- better market information and known buyers and producers from structured trade. Public investments by governments and development partners are now better targeted to achieve higher impacts.

- PABRA has enabled re-organization and support for the national research systems to prioritize better their interventions and investments for impact. These are able to investment in breeding and variety improvements that respond directly to demands of their clients in seed and grain markets. They are also able to better support other value chain actors by advising where they can also invest and source for their bean and seed supplies.
- The corridor model has also contributed to policy discourse and support for eliminating barriers to trade in seed and grain, within countries, and across borders, due to commonality of the corridor demands in different countries across the bean corridors.
- PABRA has also demonstrated that improvements in income and women participation can be supported without disadvantaging women. Instead, women have progressive also invested in high value sections of the bean value chain such as processing, services provision, and aggregation over the project period, when they are supported by extension and market linkages. Assessments in the project reveal that more women were more satisfied with incomes and market access benefits than men were. The corridor model interventions thus lay a foundation for wider scaling and promotion of gender friendly interventions in commodity production and trade.
- Due to enhanced focus in bean production and trade using the bean corridor model, the benefits of digital agriculture have been demonstrated in two countries with major results. Introduction of digital payment services in collaboration with the private sector (Mastercard) with about 379,000 producers registered on the platforms and cumulative transaction worth more than USD15

million for producers points to the importance of digitalization of smallholder farmers. Both financial inclusion for women as well as market access were achieved, providing an indicator of what needs to follow commodity interventions for more benefits to the sections of the populations that under normal circumstances are easily excluded.

- The corridor model provided an avenue to increase production to respond to market demands by producers through mechanization and automation of production activities. Threshers, seeders, land preparation equipment were among those piloted, and raised demand for technologies that reduce drudgery. These provides opportunities for scaling to benefit more, especially women.
- The large number of enterprises that responded to invest in the corridors also generated new demands and need for support so that they can grow their businesses. PABRA may not have been ready for such new demands such as business support and acceleration for growth, however, to some extent, PABRA began establishing linkages with enterprise support organizations and impact investors to support their growth in the business. Enterprise financing models requires further attention by PABRA and partners, to ensure that many of the enterprises that recently engaged in the value chain are able to grow and benefit producers.
- The use of the products of the corridors in school feeding innovations was also a new way to increase local markets for produce. School feeding, especially when using high iron beans provide potential to grow incomes and better the nutrition of children and households. It has potential to integrate school systems into the bean market. This needs to be scale out.

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