



**USAID**  
FROM THE AMERICAN PEOPLE



# FINAL REPORT

## BANGLADESH USAID AGRICULTURAL VALUE CHAINS (AVC) PROJECT

This publication was produced by the Bangladesh Agricultural Value Chains Project under Contract No. AID-388-C-13-00003 at the request of the United States Agency for International Development. This document is made possible by the support of the American people through the United States Agency for International Development. Its contents are the sole responsibility of the author or authors and do not necessarily reflect the views of USAID or the U.S. Government.



# FINAL REPORT

## BANGLADESH USAID AGRICULTURAL VALUE CHAINS (AVC) PROJECT

Program Title:	BANGLADESH USAID AGRICULTURAL VALUE CHAINS (AVC) PROJECT
Sponsoring USAID Office:	USAID/Bangladesh
Contract Number:	AID 388-C-13-00003
Contractor:	DAI Global, LLC
Date of Publication:	March 30, 2019
Author:	Sarah Wall



# CONTENTS

<b>ACRONYMS AND ABBREVIATIONS</b>	<b>V</b>
<b>EXECUTIVE SUMMARY</b>	<b>VII</b>
<b>PROGRESS AGAINST RESULTS FRAMEWORK</b>	<b>I</b>
PROJECT OBJECTIVES	I
IR1: SUSTAINABLE, DIVERSIFIED AGRICULTURAL PRODUCTIVITY INCREASED	I
IR2: AGRICULTURAL MARKET SYSTEMS STRENGTHENED	3
IR3: INNOVATION AND VALUE CHAIN UPGRADING INCREASED	4
IR4: LOCAL CAPACITIES AND SYSTEMS STRENGTHENED	5
ADDITIONAL CUSTOM INDICATORS AND PROJECT RESULTS	5
<b>PROJECT APPROACH</b>	<b>9</b>
MARKET SYSTEMS	9
MANAGEMENT APPROACH	11
FINANCIAL MANAGEMENT AND COST EFFECTIVENESS	13
KEY CHALLENGES AND HOW AVC OVERCAME THEM	14
<b>SUMMARY OF IMPACT BY VALUE CHAIN</b>	<b>17</b>
PULSES	17
GROUNDNUT	17
SUMMER VEGETABLE	18
MANGO	19
TOMATO	19
POTATO	20
NATURAL FIBERS	20
<b>KEY SUCCESSES BY VALUE CHAIN</b>	<b>21</b>
PULSES	21
GROUNDNUT	25
SUMMER VEGETABLES	29
MANGO	35
TOMATO	40
POTATO	43
FLOWER	44
NATURAL FIBER	48
<b>INTERCONNECTED SYSTEMS</b>	<b>51</b>
TRANSPORTATION	51
AGRICULTURAL MECHANIZATION AND TECHNOLOGY COMMERCIALIZATION	51

ACCESS TO FINANCE	53
EDUCATIONAL/RESEARCH INSTITUTES	54
<b>KEY SUCCESSES IN CROSSCUTTING AREAS</b>	<b>57</b>
GENDER	57
FLOWER	57
VEGETABLES	57
HOMESTEAD GARDENING	58
NUTRITION	58
ENVIRONMENT	60
<b>LESSONS LEARNED</b>	<b>63</b>
TECHNICAL IMPLEMENTATION THROUGH A MARKET SYSTEMS APPROACH	63
OPERATIONS AND ADAPTIVE MANAGEMENT	64
<b>RECOMMENDATIONS FOR FUTURE PROGRAMMING</b>	<b>67</b>
<b>ANNEX 1: SUCCESS STORIES</b>	<b>69</b>
INTRODUCTION OF COMPOSTING IMPROVES SOIL FERTILITY, INCREASES FARM PRODUCTIVITY AND BENEFITS THE ENVIRONMENT IN THE SOUTHERN DELTA REGION OF BANGLADESH	69
LOCAL SERVICE PROVIDERS HELP SMALLHOLDER FARMERS BOOST PRODUCTIVITY IN RURAL BANGLADESH	71
INTRODUCTION OF COMPOSTING IMPROVES SOIL FERTILITY, INCREASES FARM PRODUCTIVITY AND BENEFITS THE ENVIRONMENT IN THE SOUTHERN DELTA REGION OF BANGLADESH	73
FOSTERING A MARKET FOR SAFE FOOD: BUILDING RELATIONSHIPS OF TRUST BETWEEN CONSUMER, AGRI-BUSINESSES AND PRODUCERS	75
<b>ANNEX 2: AVC CASE STUDIES AND BLOGS</b>	<b>79</b>

## TABLES AND FIGURES

### Tables

Table 1: AVC Overall Project Results Success.....	1
Table 2: AVC Results on IR1 Targets.....	2
Table 3: AVC Results on IR2 Targets.....	4
Table 4: AVC Results on IR3 Targets.....	5
Table 5: AVC Results on IR4 Targets.....	5
Table 7: AVC Indirect Farm-Level Beneficiary Results.....	7
Table 8: AVC Results: Household Members Benefited.....	7
Table 9: Farmer-Level Investment Increases.....	7

### Figures

Figure 1: Hybrid Vegetable Seed Contribution (share) of Overall Seed Sales in Percentage .....	31
Figure 2: Dyke vegetable test marketing.....	33





## ACRONYMS AND ABBREVIATIONS

ACI	Advanced Chemical Industries
AMAA	Adaptive Market Actor Agreement
APS	Annual Performance Study
AVC	Agricultural Value Chain
BAA	Blanket Activity Announcement
BARI	Bangladesh Agricultural Research Institute
BCC	behavior change communications
BDT	Bangladesh Taka (currency)
BJRI	Bangladesh Jute Research Institute
BFS	Bangladesh Flower Society
BINA	Bangladesh Institute of Nuclear Agricultural
BJDMEA	Bangladesh Jute Diversified Manufacturers and Exporters Association
BRAC	Bangladesh Rural Advancement Committee
BRAC Seeds	BRAC Seed and Agro Enterprise
CCN	cooperating country national
CLIN	Contract Line Item Number
DAE	Department of Agriculture Extension
DBI	DCCI Business Institute
DCCI	Dhaka Chamber of Commerce and Industry
ETC	Eastern Trade Corporation
FTF	Feed the Future
FY	fiscal year
GlobalG.A.P.	Global Good Agricultural Practices
GDIC	Green Delta Insurance Company
GOB	Government of Bangladesh
HH	household
IPM	integrated pest management
JCF	Jagorani Chakra Foundation
KMT	Knowledge Management Team
KSC	Konica Seed Company
LGED	Local Government Engineering Department
LOA	life of activity
LSP	local service provider

MFI	microfinance institution
MSME	micro, small, and medium-sized enterprise
MT	metric ton
MOU	memorandum of understanding
M&E	monitoring and evaluation
NGO	nongovernmental organization
NPKS	nitrogen-phosphorus-potassium-sulphate
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
SAU	Sher-e-Bangla Agricultural University
TNAU	Tamil Nadu Agricultural University
TOT	training of trainers
USG	United States Government
WE	welfare effort
WII	weather index insurance
USAID	United States Agency for International Development

## EXECUTIVE SUMMARY

In January 2019, the Agricultural Value Chains (AVC) project closed after five and a half years of successful implementation. Following a market systems approach, it forged key partnerships with 42 of the most influential private sector firms and organizations in Bangladesh. Through these agreements, AVC leveraged the private sector firms' and organizations' own interests and investment opportunities to drive more inclusive growth in the Southern Delta's agricultural sector. These interventions resulted in benefits to 307,419 rural households and saw 305,408 farmers applying new technologies or management practices. By introducing tools and strategies to increase yield and efficiency, the project supported a 131 percent increase in yield per hectare of targeted value chain crops, interventions created 111,662 full-time equivalent jobs, and incremental sales to the tune of \$117 million have been realized.

Additionally, AVC-supported activities were found to have improved the nutritional awareness of 59 percent of beneficiaries, leading to improved diets. Through partnerships with microfinance institutions (MFIs) and commercial banks, 6,370 micro, small, and medium-sized business owners and entrepreneurs, including farmers, gained access to loans and insurance products through private financial institutions as a result of AVC efforts. AVC also helped MFIs to refine and market their financial products to make them more suitable to the specific needs of their customers. Of those gaining access to financial services, 43.48 percent were women.

In addition to the exceptional indicator results highlighted above, AVC continued to implement all activities through a market systems approach, working to generate sustainable inclusive growth and behavior change among private sector firms. As a result, many partner organizations experienced impressive business growth and maturity, and these firms invested \$19.4 million into the agricultural sector. Such organizations attributed such growth directly to their relationship with the project, and the investments in their business as a result of interventions will continue to generate returns for the Southern Delta agricultural market for years to come.

## INPUT SUPPLY

In the input supply sector, AVC worked with key input supply companies to introduce and expand the sale and use of higher-quality inputs such as improved seeds, specialized varieties, and appropriate fertilizers and bio-pesticides. In Year 5, Ispahani, Partex, and NAAFCO Pharma provided embedded training to a combined 39,000 lead farmers in the use of high-quality inputs, resulting in an increase in sales of these products in southern districts of up to 60 percent. Each firm also strengthened its Southern Delta distribution channel, with Ispahani increasing its retailer and dealer sales force by 22 percent; Partex increasing dealers and retailers from 60 to 90 and 65 to 350, respectively; and NAAFCO Pharma continuing to provide capacity building to its 277 distributors. What is exceptional about AVC's approach is that the business strategies introduced by AVC align USAID priorities of improving farmer productivity, yield, and income with the business incentives of the firms. AVC witnessed firms scaling up the tactics and strategies introduced by the project and rolling them out in different regions, value chains, and even other sectors at their own cost. This indicates a system-level behavior change within these firms, resulting in more inclusive business practices that will continue to strengthen the agricultural sector in the Southern Delta and Bangladesh as a whole long after the close of the AVC project.

## SUPPLY CHAIN MANAGEMENT

In supply chain management, AVC's collaboration with the Dhaka Chamber of Commerce and Industry (DCCI) is particularly notable; and the project helped this business association play a sustainable, integral role in coordinating responses to joint challenges and opportunities in the agricultural sector. DCCI has emerged as a major player in driving the safe food movement through its alliance with GlobalG.A.P. and its subsequent elevation as the country representative for GlobalG.A.P. in Bangladesh. Additionally, through support from AVC, three large agribusinesses launched national-level safe food brands: Banglafresh (NAAFCO), Gardenfresh (Ispahani), and Shuddho (Shwapno). The launch of these brands in Year 5 represents the culmination of much preparation and training over AVC's life of activity (LOA) to introduce new agricultural practices and quality assurance procedures as part of directed contract farming arrangements to deliver certifiably safe food to consumers. Within three months of the introduction of the Shuddho brand, 45,203 customers have purchased 118 tons of Shuddho vegetables, generating sales revenue of approximately BDT16 million. Retail outlets identifying an opportunity for high-value crop sales and developing a branding and marketing strategy around that opportunity is a primary example of the market system-level changes in behavior that AVC has been able to achieve.

## ENABLING ENVIRONMENT

Finally, AVC has catalyzed changes in how firms share information and collaborate with one another, fostering a more productive business-enabling environment. By convening stakeholder workshops, sector-wide events and dialogues and regional and national agro-input, agro-technology, and value chain-specific industry fairs, the project has demonstrated the benefits of sector-level cooperation and information-sharing. AVC's efforts in this area were meant to shift firms away from competition, which was unproductive for the larger sector. As a result of these efforts, a number of partners have engaged in firm-to-firm cooperation, focusing on joint branding, marketing, or mutually beneficial investment opportunities. This represents a shift in how firms do business and how they view the benefits of firm-to-firm collaboration.

# PROGRESS AGAINST RESULTS FRAMEWORK

## PROJECT OBJECTIVES

After five and half years of implementation, the project reached 307,419 farmers, 102 percent of the LOA target of 300,000 (see Table 1). Activities were implemented in three divisions covering 19 districts, 67 upazilas, 291 unions, 1,081 mouzas, and 1,327 villages. AVC issued 126 grants to 80 grantees, including service providers, agribusinesses, business societies, nongovernmental organizations (NGOs), and farmer associations, and integrated the market actor partners into AVC's market systems interventions. AVC focused on improving resource allocation in favor of market actors that demonstrated their own interests in driving inclusive growth to improve sustainability of the new technologies, practices, and strategies introduced and promoted by AVC. Through the project's work with private sector market actors and linkage-building along the value chains, AVC substantially improved adoption rates of new technologies and cultivation practices among participating farmers.

AVC interventions resulted in approximately 750,000 metric tons (MT) of crops produced on 94,000 hectares of land. The interventions created 111,662 full-time new job equivalents, 125 percent of the LOA target. These results not only reflect AVC's efforts, but also they demonstrate private sector investments in the project's zone of influence and accelerated agribusiness growth in the zone, a promising predictor of future robust inclusive growth beyond AVC.

TABLE 1: AVC OVERALL PROJECT RESULTS SUCCESS

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014–FY2019 Q1)	% OF GOAL ACHIEVED
Percent change in income of targeted groups	75%	\$22,159,820	91%	121%
Number of rural households benefiting directly from U.S. Government (USG) interventions (Feed the Future [FTF] 4.5.2-13)	300,000	0	307,419	102%
Number of full-time equivalent jobs created as a result of AVC activities	89,000	0	111,662	125%

## IRI: SUSTAINABLE, DIVERSIFIED AGRICULTURAL PRODUCTIVITY INCREASED

Throughout the project period, in partnership with grantees and implementing partners, AVC conducted farmer training, ultimately reaching 191,531 farmers, reflecting 128 percent of the LOA target of 150,000 (see Table 2). To align the farmer training strategy with AVC's market systems approach, the project supported embedded training programs, where farmer training was conducted by private sector partners as part of a marketing strategy for newly introduced or newly commercialized improved inputs and products. AVC also assisted firms to identify appropriate levels of investment in embedded training, based on farmer current awareness of the product and difficulty of use.

The ability of the project to exceed its training target is the result of two factors. In Year 5, to ensure that it would reach its training targets, AVC renewed its focus on training programs that aligned with

the FTF training indicator definition. As indicated above, the project ensured that this training aligned with the market systems approach by integrating training sessions into the marketing strategies of firms that were introducing and commercializing new agri-technologies or agri-inputs. To meet the indicator requirements, AVC drastically increased multiple intervention platforms to generate farmer training opportunities, in some cases above levels initially recommended as part of a firm's sustainable marketing strategy. Because the main target was to meet the LOA goals of reaching 150,000 households through direct training and 300,000 households through outreach, the team was motivated to focus on programs that would reach the maximum number of households through training and other activities.

The partners offered training that incorporated experiential learning techniques and prioritized practical, field-based learning, which proved to be effective techniques to generate behavior change among farmers, leading to a higher rate of adoption. Embedded training provided by the firms was intended to subsequently integrate trained farmers into their supply chain/retail distribution networks, not only raising the quality and quantity of produce available, but also increasing demand for improved inputs. Through these training sessions, promotional activities, and knowledge sharing events, 307,419 farmers benefitted, which represents 102 percent of the LOA target. Out of this, approximately 305,408 beneficiaries applied one or more improved technology and/or management practices due to AVC's support.

AVC also agreed to report gross margin data for four value chains—mungbean, jute, groundnut, and tomato. The gross margin per hectare for mungbean increased significantly from 2017 but remained 15 percent short of the target. The gross margin for jute increased by 150 percent in Year 5 due to improved management practices, widespread use of high-quality jute seed, and post-harvest grading and sorting. The gross margin for groundnut was \$701 per hectare, 10 percent short of the yearly target. And in the case of tomato, the yearly target was set to \$4,435 per hectare and the gross margin successfully reached \$4,485 per hectare, or 101 percent of the LOA target.

AVC contributed to increasing crop yields by helping farmers overcome systemic weaknesses and by developing joint responses against crop diseases, addressing transportation challenges through cooperation with private sector leadership, and preparing for weather challenges based on forecasts.

TABLE 2: AVC RESULTS ON IRI TARGETS

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014-FY2019 Q1)	% OF GOAL ACHIEVED
Gross margin per hectare (FTF 4.5-16,17,18) - mungbean	538	389	460	86%
Gross margin per hectare (FTF 4.5-16,17,18) - tomato	4,435	3,696	4,485	101%
Gross margin per hectare (FTF 4.5-16,17,18) - ground nuts	781	521	701	90%
Gross margin per hectare (FTF 4.5-16,17,18) - jute (fiber only)	183	160	344	150%
Percent change in yield of value chain crops per hectare - mungbean	34%	0.9	7%	21%
Percent change in yield of value chain crops per hectare - lentil	34%	0.7	91%	268%
Percent change in yield of value chain crops per hectare - mango	60%	5	116%	193%
Percent change in yield of value chain crops per hectare - tomato	84%	31	41%	49%

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014-FY2019 Q1)	% OF GOAL ACHIEVED
Percent change in yield of value chain crops per hectare - groundnuts	67%	2	- 6%	-9%
Percent change in yield of value chain crops per hectare - potato	32%	14	51%	159%
Percent change in yield of value chain crops per hectare - vegetables	25%	19	67%	268%
Percent change in yield of value chain crops per hectare - flowers	25%	46	-3%	-12%
Percent change in yield of value chain crops per hectare - jute	11%	2	—	36%
Percent change in yield of value chain crops per hectare - total	28%	—	—	468%
Number of hectares under improved technologies or management practices as a result of USG assistance (FTF 4.5.2-2)	75,000	—	159,500	213%
Number of individuals who have received USG supported short-term agricultural sector productivity or food security training (FTF 4.5.2-7)	150,000	—	191,531	128%
Percent of beneficiaries with awareness on nutritional diets receiving nutritional information	10%	0%	59%	590%

## IR2: AGRICULTURAL MARKET SYSTEMS STRENGTHENED

AVC's technical strategy focused on improving agricultural sales and incomes by strengthening pull signals from consumers. To achieve this, it facilitated increased demand for high-quality horticultural products, while simultaneously strengthening the firms' abilities to push out higher-quality inputs and products to rural areas. AVC also raised consumer signaling through promotional events, marketing strategies, and joint events/workshops for input sellers, producers, processors, and retailers. By supporting firms to invest in strengthening their distribution channel for high-quality inputs and supply chain for quality produce through contract farming agreements, retailer and dealer networks, preferred retailer schemes, and after sales extension service strategies, overall support across the value chains or market systems contributed to incremental sales at the producer level of \$117 million in Quarter I of fiscal year (FY) 2019, which represents 98 percent of the LOA target (see Table 3).

Based on additional context gathered during initial implementation, AVC revised the target for micro, small, and medium-sized enterprises (MSMEs) from 2,000 to 5,900. During the life of the activity, AVC aided 6,370 MSMEs, representing 108 percent of the target goal. The number of independent producers involved in organized production and market systems surpassed the contract target (achieving 119 percent of the LOA goal), with firms such as Konica, Eastern Trade Corporation, and Partex engaging in contract farming agreements initially supported by AVC that incorporated supply chain and performance management mechanisms introduced by the project.

TABLE 3: AVC RESULTS ON IR2 TARGETS

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014-FY2019 Q1)	% OF GOAL ACHIEVED
Value of incremental sales at farm level attributed to Feed the Future implementation (FTF 4.5.2-23)-million	\$120	\$11.07	\$117	98%
Number of independent producers involved in organized production, marketing systems	25,000	0	29,701	119%
Number of MSMEs, including farmers, receiving USG assistance to access loans (FTF 4.5.2-30)	5,900	0	6,370	108%

### IR3: INNOVATION AND VALUE CHAIN UPGRADING INCREASED

A unique grant process facilitated flexibility and adaptation in co-designing activities with private sector partners—80 partners were provided with 126 grants (see Table 4). While below the initial grant target of 200, this process allowed a single grant to be continuously implemented for one year, extended up to four adaptive modifications, with each modification dictating a new set of activities that built upon or adapted from those implemented in the previous four to six months of the grant.

AVC continued to leverage training programs to introduce new technologies and practices. In some cases, the project contracted training firms to provide large-scale pre-season training sessions for specific value chains. While these training sessions were effective, AVC wanted to ensure that a more sustainable training program was established. To achieve this, private sector implementing partners were leveraged to conduct embedded training as part of a firm's marketing strategy to introduce new technologies and product lines that were of benefit to farmers. These dual approaches directly contributed to 305,408 farmers applying new technologies and management practices such as improved cultivation techniques, post-harvest management, improved seed varieties, and integrated pest management practices. The capital investment indicator was a source of difficulty but because of changes in the Global Food Security Strategy handbook in 2018, AVC can now categorize working capital, operational cost, loans, and grants under this indicator. In Year 5, several firms that were interested in making operational and capital investments, consultants, business development services, and support that could bring these investments to fruition were identified. Due to these partnerships and interventions, the value of private sector investment in agribusiness was \$19.17 million in the LOA, which contributed to build a more resilient agricultural infrastructure on a large scale.

The adoption rate of new or innovative services, technology, and management practices by value chain actors jumped to 66 percent in the final year of the project, 314 percent of the LOA percentage increase target. This demonstrates the effectiveness of AVC's market systems approach in disseminating information to farmers in ways that incentivize/motivate them to change their behavior. Thirty-two meetings, dialogues, and workshops demonstrated the project's commitment to addressing the enabling environment for the agricultural value chains.



TABLE 4: AVC RESULTS ON IR3 TARGETS

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014-FY2019 Q1)	% OF GOAL ACHIEVED
Number of farmers and others who have applied new technologies or management practices as a result of USG assistance (FTF 4.5.2-5)	255,000	0	304,531	119%
Value of new private sector investment in the agriculture sector or food chain leveraged by FTF implementation (FTF 4.5.2-38)	\$21	0	\$19.17m	91%
Number of grants to private sector organizations	200	0	126	63%
Number of new technologies and management practices introduced for transfer	20	0	32	160%
Percentage adoption of new and/or innovative services, technology and/or management practices by value chain actors	21%	0	66%	314%
Number of meeting/dialogue/works hops held with relevant partners to discuss business environment constraints that impede economic growth	12	0	32	267%

## IR4: LOCAL CAPACITIES AND SYSTEMS STRENGTHENED

By Year 4, the project had already achieved the allocated LOA targets that were set for the two indicators under IR 4 (see Table 5). For the rest of the LOA, AVC continued to support existing partners in the two categories. A final report on Component 4 was submitted with the Year 4 Annual Report.

TABLE 5: AVC RESULTS ON IR4 TARGETS

INDICATOR	CONTRACT GOAL AT COMPLETION	BASELINE (2014)	LOA CUMULATIVE RESULT (FY2014-FY2019 Q1)	% OF GOAL ACHIEVED
Number of organizations eligible to receive direct funding for value chain activities	5	0	5	100%
Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance (FTF 4.5.2-11)	65	0	964	1,483%

## ADDITIONAL CUSTOM INDICATORS AND PROJECT RESULTS

One of the lessons learned from implementation is that the FTF indicators, as written, are not able to capture the full impact of the project's work. To document results and achievements not captured in the indicators above, AVC tracked a number of additional customer indicators and project results.

***The value of annual sales of AVC-supported firms.*** AVC's contract stipulated that agricultural sector growth supported by AVC be private-sector driven and sustainable. As such, the project worked largely through private sector partners, providing grants to leverage and buy down risk of investment in the agricultural sector and tracked the performance results of nine private sector implementing partners

that worked across the AVC-supported value chains to improve their business performance in the Southern Delta. Overall, investment and business strategies resulted in a total shared annual sales value of \$43 million in FY 2018 and \$32 million in FY 2017, representing a 34 percent increase in just one calendar year. This increase in sales indicates that more farmers are purchasing high-quality inputs and services that are essential to improved yields and incomes from these Southern Delta firms. Moreover, the substantial increase in sales allows these firms to reinvest in business expansion, continuing sector growth year after year.

**Indirect farm-level beneficiaries.** FTF indicators include all beneficiaries that are directly impacted by the project, that is, those who receive support directly from the project or an implementing partner. Need-based mini studies were also conducted, which captured overall adoption rates and the extent to which AVC-provided information and strategies were spreading throughout the market system. This data was collected as part of an Annual Performance Study (APS) to understand the extent to which AVC-supported firms were driving a crowding-in effect and creating an overall evidence of change in the market system. In FY 2018, the APS captured *indirect beneficiaries*, or farmers that learned technology and management practices indirectly from AVC's direct farmer beneficiaries. The study found that 35 percent of respondents indicated that they have taught one or more technology and/or management practice to their neighbor farmers or other peers. These respondents, on average, had shared knowledge with 3.1 other neighbor farmers. The spillover effects of the adoption of technology and management practices part of demonstration effect are shown in Table 7.

TABLE 7: AVC INDIRECT FARM-LEVEL BENEFICIARY RESULTS

DETAILS	REACHED INDIVIDUAL	REMARKS
<b>A. AVC direct beneficiaries reached</b>	<b>307,419</b>	By AVC interventions across the value chains
Number of direct beneficiaries involved in one to one knowledge extension or in demonstration effects	107,597	35% of the sampled respondents, who indicated Yes when asked if they have been involved in one-to-one knowledge extension.
Mean person reached indirectly or impacted by transforming knowledge by the respondent farmers	3.1	Average neighbor farmers indicated by respondents above of being engaged in knowledge share
The total Indirect outreach of the project	333,551	107,597 * 3.1 = 333,551
<b>B. AVC's attribution of indirect beneficiaries reached with one to one knowledge share</b>	<b>233,486</b>	70% of total above. 30% excluded to avoid overlaps
Project Total Outreach (A+B)	540,905	Including direct and Indirect

Source: AVC FY 2018 Beneficiary based Annual Monitoring Survey

**HHs members benefited.** Additional indirect beneficiaries include those who are living in the same household as direct beneficiaries, reaching 306,496 households, representing approximately 1.4 million individuals whose lives have been affected positively by the project's interventions over the past five years (see Table 8).

TABLE 8: AVC RESULTS: HOUSEHOLD MEMBERS BENEFITED

	AVC'S OUTREACH (NUMBER OF HH)	AVG. HH SIZE (N-3400)	APPROXIMATE NUMBER OF PEOPLE REACHED
Number of HH reached	307,419	4.7	1,444,869

**Value of Private Sector Investment at Producer or Farmer Level.** There is a standard indicator (EG.3.2- 22 (RAA)) that tracks private sector capital investments. Yet a significant amount of investment at the producer or farmer level being facilitated is not reported in any indicators while nonetheless having a significant impact on the growth of the sector. Based on the FY 2018 APS, farmers invest \$42 on average. The 2018 APS surveyed 3,400 respondents across all value chains and used these findings to extrapolate producer-level investment based on the number of households reached by AVC's interventions. The total producer level new capital investment in 2018 was \$12.87 million, and producer-level investment totaled to \$22.28 million over the last three fiscal years (see Table 9).

TABLE 9: FARMER-LEVEL INVESTMENT INCREASES

YEARS	TOTAL HHS REACHED	TOTAL (MILLION \$)	PER FARMER (\$)
2016	92,707	\$3.24	\$35
2017	158,037	\$6.16	\$39
2018	306,490	\$12.87	\$42
<b>Total</b>		<b>\$22.28</b>	



## PROJECT APPROACH

AVC successfully demonstrated the value of applying a systems approach, as the project's investments in value chains, interconnected systems, and the enabling environment generated significant returns for the project's beneficiaries, implementing partners, and Bangladesh's agricultural sector as a whole. All LOA targets were met or surpassed, and the activity catalyzed shifts towards inclusive business growth in the core input and buyer, support services, and interconnected service markets.

Launched in 2013 and implemented through a value chains approach, the first two years of implementation were characterized by in-depth value chain and end market assessments, as well as extensive technical training for farmers. These efforts enabled the team to identify a wide network of private sector partners, organizations, and institutions in order to develop a nuanced understanding of each of the target value chain. However, the team faced various challenges in Years 1 and 2, including nationwide protests and political instability that restricted the ability of AVC staff to move freely. The biggest obstacle was that the approach did not address many of the underlying barriers faced by beneficiaries. Additionally, AVC's initial internal staff structure and approach to grant making did not effectively attract private sector partners. The project also did not successfully engage with the leading agribusinesses who drive sector growth.

At the end of Year 2, AVC did not see the systemic impact that the project was designed to achieve. To combat this, in Year 3, the team shifted the project's focus to better align with a systems approach. The project then refocused its technical strategy, staff organizational structure, market actor management, and knowledge management strategies to conform to and support a systems-based approach and strategy. The main features of the market systems' approach included:

- Addressing the underlying reasons, incentives, and biases for how, and why, businesses, people, and networks (i.e., the system) have not adapted to come up with a solution organically;
- Extending beyond individual value chains to build the capacity and resilience of local systems; and
- Considering behavior patterns, flows of information and finance, relational networks, trust and dispute patterns, and interconnectivity and patterns of influence between market systems and other social systems (i.e., political, civil society, communal/friends and family, etc.).

The shift to a market systems approach allowed the project to work more closely with private sector partners, who were positioned to contribute to broad-based economic growth in the agricultural sector. AVC shifted methods to work with firms on inclusive business strategies, thereby building stronger relationships with farmers and benefiting the rural, poor households targeted by the FTF initiative. By the end of the project, the project had forged key relationships with over 40 of Bangladesh's leading agricultural firms who are leading efforts to transform strategies in the agricultural sector and to drive inclusive growth that will benefit smallholder farmers.

## MARKET SYSTEMS

AVC's approach to market systems development was guided by three core principles:

1. **Facilitation:** AVC worked collaboratively with partners to ensure project activities were owned and driven by local stakeholders. AVC did this by identifying and seizing opportunities to facilitate dialogues and seminars to encourage joint responses to opportunities and challenges. AVC co-invested in private sector business strategies to help influential firms innovate, adopt new strategies and tactics to include smallholder customers/suppliers, invest in new technologies or business lines.
2. **Targeting:** AVC targeted private sector firms that were already interested in pursuing inclusive growth strategies, suited to tackling specific windows of opportunity or addressing systemic challenges in each value chain, and influential in the market to affect systemic change. Firms were targeted based on their potential to facilitate widespread adoption of new technologies, to provide key business support services, to engage women, or other address other systemic market system constraints.
3. **3. Self-selection:** AVC's grants program required all firms and organizations to continuously self-select into AVC partnership. AVC matched the level of assistance provided to firms with the firms' own level of commitment to investing in business growth and inclusive strategies. This ensured that all partners receiving support were willing to invest and expand, and not just looking for "free" donor funds.<sup>1</sup> Guided by the principles above, AVC worked through private sector partners to align business incentives with development results by identifying first mover lead firms that were able to draw in competing firms based on success. The project also introduced initiatives piloted by initial lead firms, including safe food brands, local service provider models, and improved marketing strategies, which were then copied by competitors, resulting in a shift in business tactics sector-wide.
4. AVC also focused on introducing strategies for sector growth, not one-off success stories. AVC focused on impacting the core functions of the market system (the inputs and buyer markets), and other supporting market functions (such as financial systems, transportation, and academia). For example, AVC worked with multiple private sector firms to improve the ways in which new technologies can be introduced, tested, and commercialized; introduced strategies to improve input and product distribution to rural areas; improved customer service and after sales service models; and promoted incorporating information and training into marketing and branding strategies. AVC interventions focused on three core technical areas:

**Input Distribution Models:** AVC partnered with agricultural input suppliers to align their business growth goals with strategies that benefit smallholder farmer customers. The project also worked with input partners to see how strengthening rural dealer and retailer networks and leveraging retailers to serve as both sales and customer service agents could significantly increase rural sales, while also providing much-needed extension services to farmer customers. Finally, AVC promoted modern marketing and promotional strategies that incorporated information dissemination and knowledge transfer.

**Supply Chain Management:** Similarly, AVC facilitated agricultural firms, traders and processors' increased buying of smallholder-grown produce. The project introduced and promoted advanced supply chain management practices, adapted to rural contexts, that encouraged firms to invest in the smallholder

---

<sup>1</sup> Citation and recommended continued reading on AVC's approach to market systems and adaptive management: *Adaptive Management to Support Market Systems Development: Case Study of USAID's Agricultural Value Chains Activity in Bangladesh*, prepared by Margie Brand from EcoVentures International with funding from USAID Feed the Future's Knowledge-Driven Agricultural Development Project, August 2017.

farmers that supply produce to their processing firms or retail outlets. These interventions resulted in significant numbers of smallholder farmers being integrated into formal supply chain networks or contract farming agreements with large processors. Additionally, these initiatives resulted in the launch of three national safe food brands by leading retail outlets, requiring significant investments in supply chain management, benefiting the smallholder farmer suppliers.

**Interconnected systems and support services:** AVC targeted a range of important interconnected market systems and agricultural support services including: agricultural machinery firms, specialized agricultural services, agricultural universities and research institutes, policy and advocacy organizations, media, and financial services. AVC built the capacity of support service providers and linked them with core agribusiness partners. Additionally, AVC played a key role in building the capacity of policy and advocacy organizations, most notably the Dhaka Chamber of Commerce and Industry, to convene stakeholders in the agricultural sector and facilitate discussions around joint opportunities and challenges.

## MANAGEMENT APPROACH

AVC's technical and operational management strategy drew upon the tenants of adaptive management in four fundamental ways:

First, AVC revisited the project's organizational chart to ensure that the personnel structure mirrored the technical approach. The technical team was reorganized into a core Market Systems team, supported by an Interconnected Systems team that cut across all value chains in the agricultural sector. The Market Systems team focused on supporting a portfolio of market actor partners and interventions, rather than specific value chains. This more closely mirrored the agricultural market system in the Southern Delta, as the project identified that many challenges and opportunities were common across crops. The Interconnected Systems team represented an expanded version of the crosscutting team that previously focused on AVC's crosscutting themes (gender, nutrition, and environment) to now include expertise that the Market Systems Team could draw upon to support partners – marketing and branding, media and strategic communications, behavior change, entrepreneurship, and research and technology. This new team structure facilitated learning and collaboration, as each portfolio manager was able to see how specific strategies work in practice, compare pilot activities and outcomes, and work with the crosscutting team to gather additional technical resources in response to demand. This diversity more closely matched the complexity of the outer system. The internal change also shifted the role of technical work from crop-focused to business-focused, requiring AVC staff to hone new skills in agribusiness and portfolio management. AVC began offering training opportunities as part of the annual performance reward system for high-performing team members. The project also offered a simulation-based training module to allow teams to put themselves in the shoes of their private sector partners to understand first-hand the investment options available to partner firms and how those decisions impact farmer-customers. The learning opportunities helped the staff gain a deeper insight into partners' perspectives in order to better co-design interventions. This culture of learning and the new norms and incentives, encouraged staff to share insights, successes, and failures with one another on a regular basis, which in turn encouraged responsive adaptation and modification towards better practices.

Secondly, AVC reinforced these structural changes with a conscious cultural shift. The project became an intentional learning organization by incorporating a regular series of learning events and courses to

reorient staff towards the purpose, knowledge and processes of facilitating system-wide change. The following are a few key initiatives:

- **Quarterly Portfolio Reviews:** This event allowed the entire team to reflect on the project's performance and its partners from the previous quarter. The event was structured as a series of small group discussions around emerging trends and strategies, remaining challenges within both the project and partners' approaches, as well as joint market challenges or opportunities across multiple firms. As part of the review, the technical team is asked to "grade" partners from A to C based on their level of commitment to pursuing growth strategies. This grading system allows the team to better allocate resources to high performing partners and withdraw support of underperformers.
- **Learning Lunches:** Monthly lunches were implemented to allow staff members to highlight activities they were pursuing with a partner. This could be a highly successful activity that held potential for replication with other partners. It also offered the project a chance to learn from their interventions and reflect on assumptions that did not work in practice. When appropriate, the partner was also invited to share insights.
- **Systems Talks:** These small group discussions centered on specific systems-thinking topics to deepen interested staffs' understanding of the theoretical basis underlying the project approach. Each talk utilized case study examples from one or more partners.

Third, AVC expanded the mandate of the Monitoring and Evaluating (M&E) team to include not only data collection and monitoring, but also knowledge management and the Collaborating, Learning, and Adapting (CLA) function. It was retitled the Knowledge Management Team (KMT) to reflect this change. Additionally, AVC hired Field Monitoring Officers to take over the field intervention monitoring and basic data collection roles. This built the foundation for more holistic analyses to identify interventions that were, or were not having, the desired effects. The KMT was responsible for organizing the learning events outlined above, supporting case studies of key AVC initiatives, and designing frameworks to track and evaluate the performance of AVC's market actor partners.

Finally, AVC realigned its partnership engagement strategy to coincide with the new technical approach by being adaptive, strategy driven, and accessible to private sector firms. The market systems approach not only requires the project to think about constraints in a systemic way, but also encourages our partners to look at constraints in the agricultural sector through a systemic lens. To achieve this, AVC modified and adapted the U.S. Government's Broad Agency Announcement<sup>2</sup> and developed a unique project-level grants and procurement solicitation, the Blanket Activity Announcement (BAA). Instead of accepting grant applications for interventions that were designed by AVC, it issued an annual BAA to solicit strategic business plans submissions by market actors that included details regarding their business goals. The BAA allowed AVC to compliantly, co-design formal, long-term agreements with key private sector market actors whom had the largest potential to catalyze systemic change. Through a series of co-creation meetings, each selected firm signed an Adaptive Market Actor Agreement (AMAA), which laid out a business plan of collaborative interventions and AVC-facilitated growth initiatives. AMAAs specify the technical support that AVC will give to the firm, as well as the investments and interventions that the firm will run independently at each stage of the process. Because the AMAA sets forth the overarching goals of the partnership, AVC could then issue multiple three- to six-month grants

---

<sup>2</sup> Federal Broad Agency Announcements are described in Federal Acquisition Regulation (FAR) 35.016.



to pilot initiatives, creating a culture of ongoing learning and adaptation among the project team members and private sector partners. Because the grants were issued in 6-month increments, AVC and the market actor enjoyed designated periods of reflection and evaluation without having to complete additional burdensome administrative requirements. This BAA to AMAA process allowed the project to apply a dynamic market systems technical approach while remaining compliant with USAID procurement and grants regulations.<sup>3</sup>

## FINANCIAL MANAGEMENT AND COST EFFECTIVENESS

AVC had various financial management challenges which were mitigated through the activity's adherence to adaptive management principles. As mentioned above, nation-wide protests and political instability in the first year and a half of project implementation restricted staff movements and limited the project's ability to spend money through grants and technical programming. In Year 3, faced with a low grant disbursement rate, the newly onboarded Finance and Grants Manager, launched the new grant framework described above, which allowed AVC to forge partnerships with leading agribusinesses. As a result, the project significantly increased expenditure rates, particularly grant disbursements. DAI committed \$1.4 million in grants during the first three quarters of Year 4. This matched the total number of grants committed by AVC in Year 3, and more than tripled the number of grants from Year 2.

In Year 4, AVC requested a budget realignment to shift funds from Contract Line Item Number (CLIN) 1: *Project Management Cost (Salaries)* and CLIN 4: *Indirect Costs* and to CLIN 2: *Other Direct Costs*. DAI's original organizational strategy included two field offices with a large number of full-time, Cooperating Country National (CCN) positions, including administrative staff, technical experts, and capacity building/training specialists. This large field team presence corresponded with AVC's initial strategy to provide direct delivery farmer training and capacity building outreach to small, local NGO partners. However, as the project progressed, many of these CCN positions remained vacant due to the evolution of the organizational structure. AVC refocused its efforts on the market systems development approach in order to develop partnerships with large, Dhaka-based agribusinesses. The elimination of many unfulfilled positions, as well as staff moving to the Dhaka office, provided opportunities for operational efficiencies and additional cost saving in CLINs 1 and 4. The budget realignment provided best value to the USG by increasing return on investment and strengthening the project's potential to provide sustainable, systemic development for Bangladesh's Southern Delta through increased income for target beneficiaries, new private sector investments, and improved relationships throughout the selected value chains.

At the end of Year 4, AVC faced its most significant funding challenge when an unexpected 4-month delay in AVC's obligation caused the project having to slow down or cancel a number of interventions, resulting in a loss of momentum for the program at a critical junction. This Year 4 funding shortfall had a significant impact on AVC's ability to expend the total contract funding. Additional information regarding AVC's strategy to mitigate the effect of this challenge is provided below in the Key Challenges section. Although this was a challenge for the project, AVC maintained, and even increased, operational

---

<sup>3</sup> Citation and recommended additional reading on AVC's BAA to AMAA process: "How to! Develop adaptive partnerships with private sector firms without breaking the rules of compliance," Gwendolyn Oliver Armstrong Tweed, Beam Exchange, [https://beamexchange.org/uploads/filer\\_public/57/60/57605085-23dc-4ce1-8d8e-eeb9a14a7726/how\\_to\\_develop\\_adaptive\\_partnerships.pdf](https://beamexchange.org/uploads/filer_public/57/60/57605085-23dc-4ce1-8d8e-eeb9a14a7726/how_to_develop_adaptive_partnerships.pdf)

efficiency and impact. In Year 5, despite the staff reduction and funding delays, AVC achieved its highest grants burn rate of \$2,877,096, representing 170 percent of Year 4's grants disbursement.

In Year 5, AVC worked closely with USAID counterparts to effectively propose and finalize a 6-month no cost extension, which allowed the project to maximize returns to USAID. The project received the extension on July 24, 2018, just 6 days prior to the initial contract end date. Despite being well into the closedown process, AVC was able to quickly mobilize the newly-received obligation to fund key activities that would build upon successes to date, continue to stimulate systemic change, and ensure that the project would reach all of its contractual targets in less than a month, AVC designed and issued over \$950,000 in new grant money to proven, successful AVC partners. All of these grants and activities were specifically designed to build upon existing relationships with high achieving partners by continuing to fuel sustainable, systemic change in markets for high quality inputs distribution, advanced agricultural technologies, and supply chain management. The grants incorporated embedded trainings, led by the private sector, to speed adoption rates of advanced practices and technologies among beneficiary farmers. Additionally, the project implemented over \$250,000 in technical activities and procurements. Because AVC had developed trusted relationships with private sector partners, new activities were designed efficiently, and an additional 54,359 in farmer training and 90,333 in farmer outreach was realized during the no cost extension period.

Overall, with only a few exceptions, AVC exceeded all of the project indicators, and achieved at least 90 percent of the remaining two indicators. This is exceptional, as AVC achieved these targets while utilizing only approximately \$30.5 million, or 88 percent, of the contract ceiling value, demonstrating best value to USAID.

## **KEY CHALLENGES AND HOW AVC OVERCAME THEM**

***Year 4 Funding Uncertainty.*** In Year 4, AVC faced an unexpected delay in 2018 funding and could not access incremental funding due to USAID budgetary adjustments that delayed the Mission's obligation. Multiple interventions were put on hold or slowed down in anticipation of the reduced funding. This process presented many relational and change-momentum challenges for the project. AVC responded by building on its highest performing investments and leveraging more private sector investment resources. At the time that AVC learned of the funding shortage, a number of grants had already been negotiated with core partners. The remaining AVC technical and grants staff, in partnership with the AVC senior leadership team, re-negotiated grant overall budgets and lengthened timelines for implementation to ensure that the project could comply with new funding realities without damaging important relationships with private sector firms. Thanks to efforts made by the team in previous years to establish relationships with firms based on trust and business strategy, AVC was able to keep firms engaged in activities that generated returns through Fall 2017 despite not being able to incentivize with consistent grant disbursements. The project also chose to streamline operational efficiency by retrenching 19 staff, particularly a large portion of technical staff leads, including one Team Lead, Deputy Team Leads, Technical Officers, a portion of the crosscutting team, and a regional office, which allowed AVC to maximize the funding available for grants and program activities. These shifts required the project to continue to perform at a very high level with approximately 30 percent less staff.

***Restructuring the AVC organogram to facilitate collaboration and learning.*** During the first two years of implementation, the project's organizational structure divided staff into teams based on the value chain. While this allowed the staff to specialize in challenges that affected each specific crop, it also

limited cross-learning between peers. Additionally, it did not mirror the structure of the market system AVC was trying to influence, where farmers were producing multiple crops, agribusinesses were developing products for the sector, and as described above, many of the value chains were facing the same opportunities and challenges. In Year 3, AVC restructured the project team to allow for improved collaboration by placing each Deputy Team Lead in charge of a portfolio of private sector partners, rather than a value chain, and asked them to provide key business services and strategic technical assistance to firm management. This structure promoted internal collaboration between AVC technical staff, and better mirrored the market system in which AVC was working.

***Collaboration between the Technical and Operations Team.*** During AVC's first three years of implementation, the project was plagued by a misalignment between the expectations and structure of the operations and technical teams. To address this, AVC created an Operations and Technical Liaison Team, a team specifically dedicated to serving as a bridge between the two teams. This team of specialists was responsible for coordinating with the technical team to facilitate efficient management of grant award, technical procurement design and solicitation, and deliverable collection and processing. This team was instrumental in ensuring that the AVC technical and operations teams worked together effectively.



## SUMMARY OF IMPACT BY VALUE CHAIN

Key baseline constraints for each value chain were identified in the End Market Assessment. These constraints were further outlined in Annex 1 of the Year 2 Annual Report: Value Chain Opportunity Narratives. Below are summaries of the action taken by AVC to address each baseline constraint identified, and the impact of AVC support in each value chain.

### PULSES

BASILINE CONSTRAINT	ACTION TAKEN	IMPACT
No locally-produced, locally-replicated high yield pulse seeds available in the market. Over 90 percent of farmers use retained, low-yield seed.	5 tons of BARI 6 and BARI 7 seeds replicated and introduced to 17,000 trained farmers. Facilitated sustainable input distribution channels in the Southern Delta by supporting the addition of 135 trained rural retailers and dealers in the Southern Delta. A range of advanced promotional and marketing events reach over 9,000 rural farmers.	Commercialized two local, high yield varieties: BARI 6 and BARI 7; with farmers seeing a 30 percent increase in yield. Partex sees a 300 percent increase in sales and farmer reach in the Southern Delta. Partex forecast sales of 35 MT and 50 MT of high-yield lentil and mungbean seeds, respectively, in the 2018-19 season.
Locally-grown lentils only meet 30 percent of domestic demand	Partex reached 79,155 farmers in LOA through advanced marketing strategies and embedded training to popularize high-yield seeds and improved cultivation techniques.	Partex reports increased farmer productivity among customers of at least 25 percent, due to the application of new cultivation techniques.
50 percent of locally-demanded mungbeans are processing varieties but almost no Southern Delta smallholders produce appropriate varieties. Limited investment in drying, processing, and milling facilities/equipment.	Two regional pulse mills established in the Southern Delta. Over 6,000 farmers engaged in a contract farming mechanism managed by Prantojon. Contract farmers are supported by 225 new regional supply agents. Pulse production hub with four regional collection points established.	Farmers engaged in contract farming mechanisms to supply the mills increase productivity by up to 25 percent. Successful hub for pulse processing established in the South, alleviating previous issues with supply chain and transportation to Northern processors.
Investments in improved production practices and inputs are not being made at the farmer level. Limited farm-level investment in machinery in the Southern Delta.	AVC activities resulted in the training of 40,124 pulse farmers in improved practices or technologies. Alim reached over 3,000 households in the pulse value chain through trainings and promotional programs and created a network of over 200 trained LSPs and mechanics. Metal sold 3,695 agri-machineries in the Southern Delta, a region in which the company previously had very little market penetration.	Alim and Metal saw a 20 percent and 34 percent growth in annual agri-machinery sales respectively in the Southern Delta Alim estimates that the yields of targeted farmers have increased by at least 15 percent, generating increases in income of at least 10 percent.

### GROUNDNUT

BASILINE CONSTRAINT	ACTION TAKEN	IMPACT
Poor access to premium quality seeds and low pressure to adopt improved inputs	Import and multiplication of high-yield seeds varieties from China. Network of an additional 90 rural retailers established to market	Partex is producing 25MT of high-yield seeds annually through contract farmers. Partex saw a 56 percent increase in groundnut seed sales in the Southern Delta, translating to an

BASILINE CONSTRAINT	ACTION TAKEN	IMPACT
	improved seeds to farmers and provide after sales services including training. AVC co-invested marketing efforts, resulting in 4,000 Southern Delta farmers purchasing improved seeds.	estimated 35 percent increase in crop yields and a 30 percent increase in farmer income.
Traditional cultivation methods that limit quality and quantity of yield	AVC activities resulted in the training of 14,624 groundnut farmers in the application of high-yield seeds and improved cultivation techniques.	As a result of improved yields, the gross margin per hectare of groundnut land is reported at BDT 40,854 (\$524), a 5 percent increase over the 2014 baseline.  Trained farmers were able to sell 74 percent of groundnut yield at a rate of \$820 per MT. Household income of groundnut farmers increased by \$44 due to AVC interventions, a 101 percent increase over baseline data.
Limited vertical linkages between producers and drying/processing facilities	AVC co-invested with Bombay Sweets in a supplier network linking 175 farmer groups, reaching 2,400 supplier farmers.  Bombay Sweets invested another BDT 5.5 million to develop an inventory management system, through which it will support its entire supplier farmer network.	Over 4,900 farmers are included in formal contract farming or supplier networks.  BDT 25 million invested in cargo ships to improve transportation and link Southern Delta production hub with northern processors and markets.

## SUMMER VEGETABLE

BASILINE CONSTRAINT	ACTION TAKEN	IMPACT
Weak distribution channels for high quality inputs/seeds.	710 dealers and retailers of improved seeds added and trained.	70 percent increase in repeat customers for Ispahani indicates farmer adoption of improved seed varieties.
Limited understanding of modern cultivation and post-harvest techniques.	31,260 farmers trained in the use of high-quality summer vegetable seeds and IPM products.	Increased farmer earnings of an average of 70 percent.  25 percent average reduction in crop loss due to improved practices.
High agro-chemical residues weakening sector ability to respond to consumer demand for safe product.	12,000 farmers trained in appropriate use of integrated pest management products; over 300,000 farmers reached with IPM promotional campaigns.  470 dealers and retailers of IPM products added and trained.	130 percent sales growth in IPM products.  Chemical spray reduced by up to 75 percent among targeted farmers.
Weak infrastructure to adopt production standards/grades	Launched a sustainable, long-term partnership between the DCCI and GlobalG.A.P.  Safe food and GlobalG.A.P. seminars held in partnership with local chambers, reaching 400 key stakeholders.  40 supermarket owners engaged in safe food dialogues.	17 certified Farm Assurers and three licensed GlobalG.A.P. farm assurer practitioners active in the Southern Delta.  DCCI was elevated to serve as the country representative for GlobalG.A.P. in Bangladesh, the only other country representative globally besides Colombia in Latin America.  Leading retailer, Shwapno, is a member of the GlobalG.A.P. network.  Three safe food brands launched by leading retail outlets, incorporating supply chain management practices for farmer suppliers and attracting 15,000 customers monthly.

## MANGO

BASELINE CONSTRAINT	ACTION TAKEN	IMPACT
Use of high levels of chemical pesticides and traditional farming techniques.	<p>14,686 farmers trained in improved mango production practices.</p> <p>257 new spray service providers are trained to provide chemical spray services on orchards.</p> <p>Three new biofertilizer and biopesticide products, mango bagging techniques, and pheromone traps are introduced and commercialized.</p> <p>90 dealers and 380 retailers trained to effectively promote and sell biotech inputs in the Southern Delta mango sector.</p>	<p>Ispahani sees a 20% increase in input sales in its biotech line; NAAFCO sees an 80% product sales growth due to products sold through service provider networks, both of which indicate significant increases in technology adoption rates in the Southern Delta.</p> <p>Consumers see safer products with less chemical residue.</p> <p>Chemical spray reduced by up to 75 percent among targeted farmers.</p>
Consumer perceptions of unsafe mango production practices	<p>DCCI plays a leadership role in supporting the industry's enabling environment for safe mango marketing.</p> <p>Mango sector dialogues held from 2015 to 2017 to eliminate misinformation and promote investment in the sector.</p> <p>7,000 visitors attend safe mango promotional fairs, covered extensively by national media, to improve customer perceptions.</p>	<p>DCCI, Department of Agricultural Extension (DAE), and regional chambers play an important role in engaging market actors, law enforcement, media, and others to address future threats to the sector and develop joint responses to threats and challenges.</p> <p>Consumers' willingness to pay for high-quality mango increased.</p>
Lack of consistently applied grades and standards in the sector	<p>Mangoes incorporated into safe produce brands launched by leading retailers.</p> <p>Over 200 farmers engaged in contract farming and supply chain agreements to supply Suddho safe food brand.</p>	<p>24MT of mango sold through Ispahani's Garden Fresh brand; 7.5MT mangoes sold under NAAFCO's Bangla Fresh brand from contracted Southern Delta orchards.</p> <p>Within the first 6-months of launch of the brand, Shwapno's Suddho brand sold 45MT of mangoes.</p>

## TOMATO

Baseline Constraint	Action Taken	Impact
Weak resilience against threats of pest and disease and overapplication of chemical inputs	<p>50 leading stakeholders engaged in pre-season dialogues on <i>tuta absoluta</i>.</p> <p>NAAFCO introduced new IPM products for tomatoes through 100 field demonstrations and 70 promotional plots, training 1,492 farmers.</p> <p>GME trained 1,511 farmers in Trichoderma.</p> <p>Ispahani reached 11,000 farmers through IPM awareness campaigns.</p>	<p>Research wing of GOB incorporated control measures into research activities and DAE supports regular pheromone trap training for farmers.</p> <p>Number of retailers and dealers for IPM products that are regularly providing services to tomato farmers increased by 40 percent.</p>
Failure to meet standards for 'safe' foods at a premium price	<p>90 contract farmers engaged to supply to retail outlets with safe tomatoes.</p> <p>16,993 tomato farmers trained in safe cultivation practices.</p>	<p>Tomato integrated into three safe brand product lines.</p> <p>Shuddo brand resulted in a 18 percent increase in Shwapno sales and an average 15 percent increase in income for engaged farmers.</p>
Limited access to financial services	Green Delta Insurance Company (GDIC) introduces and pilots weather-based crop insurance products with tomato farmers.	1,000 tomato farmers covered by the product are insured for BDT 4 million.

## POTATO

BASELINE CONSTRAINT	ACTION TAKEN	IMPACT
Market saturation for fresh potatoes leading to declining prices, but limited inputs or practices for industrial potato contract farming the South	Three new industrial varieties introduced in the South. 7,550 Southern Delta farmers trained in appropriate cultivation techniques.	Bombay Sweets leveraged BDT 169 million (USD 2.1 million) of their own money to establish a new processing center.  Eastern Trade Company (ETC) invested BDT 8 million (approximately \$100,000) in a french fry processing line.
Weak linkages between producer networks and processors	Supply chain management mechanism established between ETC and Bombay Sweets, supplying 2,000MT of industrial potatoes to Bombay Sweets annually.	Bombay Sweets to establish a potato procurement center in Bhola to source and store Southern Delta potatoes for processing.

## NATURAL FIBERS

BASELINE CONSTRAINT	ACTION TAKEN	IMPACT
Poor Quality Inputs lead to low fiber quality	20 promotional plots for high quality jute seeds established by Konica Seed Company (KSC) in 6 districts. 100 trained retailers added to KSC's input distribution network. 35,939 jute and coir farmers trained in improved cultivation techniques.	KSC and Bangladesh Jute Research Institute replicate 21 MT of seeds through 175 contracted growers, representing a successful research institute-private sector partnership.  KSC targeted farmers saw a 24 percent increase in income and 12% increase in yield.  KSC sales increase by 130 percent and 47 percent in 2017 and 2018 respectively, demonstrating significant farmer adoption.
Limited investment in jute diversified products for high-end markets	TOT in designing and manufacturing high-end jute products Seminar on Eco-Friendly Pulp and Paper Processing from Jute	Increased capacity of jute sector private sector firms to expand the high-end jute product market in Bangladesh.
Missed opportunities in coir sector to diversify coir pith products as agricultural inputs	Co-investment with Natural Fiber in a coir pith block machine. Market exploration to identify potential diversified products in jute and alternative uses for coir	35 full time jobs created.  New business channel established for coir use in floriculture and horticulture.



## KEY SUCCESSES BY VALUE CHAIN

### PULSES

Domestic demand for pulses has been steadily on the rise in Bangladesh during the LOA, and market data indicates that local varieties attract a 5-10 percent price premium. There is also a growing demand for processed pulses, driven by increases in consumer preferences for ready-to-eat snacks. The opportunity for import substitution is high, as project inception, locally-grown lentils only provide 30 percent of domestic demand, with the rest being imported. AVC selected pulses as a target crop in part because growth in the pulse sector has the potential to disproportionately improve the livelihoods of smallholder farmers, as the crop has a relatively low cost of production and because pulses grow well on land typically defined as less fertile or inappropriate for other crops. Despite these opportunities, there were significant weaknesses in the pulse sector at AVC's inception that prevented smallholders and other market actors from taking advantage of these emerging opportunities. Farmers had limited access to and knowledge of high-quality inputs as well as modern technologies and practices. Further, farmers did not have access to extension services or other sources of market information and advanced inputs or practices.

To improve sector growth and the ability of smallholders to seize emerging opportunities, AVC focused on five core areas:

- Strengthen structured input distribution models, especially of high-yield seeds, to reach rural, smallholder farmers;
- Improve capacity of key market actors to design and implement effective marketing and promotion campaigns to drive ongoing innovation and productivity gains;
- Increase mechanization in the sector and improve farmer access to technology and machinery service providers;
- Facilitate the emergence of a processing hub for pulses in the Southern Delta; and
- Leverage MSME traders as a lever point for driving upgrades in yield and consistency of quality output.

The activities in the pulse sector provided training to over 40,000 farmers, introduced and commercialized two new locally-replicated varieties, and established two of the first Southern Delta-based pulse processing mills.

### INPUT DISTRIBUTION CHANNEL

One of the critical constraints in the pulse system, identified through AVC's 2015 End Market Analysis, is the lack of locally-produced or locally-replicated high yield pulse seeds. The 2015 analysis found that over 90 percent of farmers use retained, low-yield seeds. The Bangladesh Agricultural Research Institute (BARI) developed two local varieties of pulse seeds, BARI 6 (mungbean) and BARI 7 (lentil); however, these seeds were not yet available in the commercial market. To introduce and commercialize improved seeds, AVC partnered BARI with a number of Southern Delta-based NGOs and farmer associations to

leverage contract farming models to replicate the new varieties and train member or associated farmers in their application. AVC facilitated information on yield outcomes between the implementing partners and BARI. Through this intervention, 5 tons of BARI 6 and BARI 7 pulse seeds were replicated and introduced to 17,000 trained farmers. Trial demonstration plots saw 30 percent increases in yield in comparison to the commonly-used retained seeds. Establishing sustainable linkages, such as this one, for research organizations and the private sector to collaborate on agro-technology commercialization was a core market change targeted by AVC.

To further scale up rural farmer access to improved inputs, AVC sought to identify larger agribusinesses to facilitate the establishment of rural distribution models. To achieve this, AVC identified a lead firm, Partex Agro, that was interested in expanding its input business by commercializing the BARI 6 and 7 pulse seeds. After several meetings, AVC and Partex mutually identified weaknesses in their input distribution and rural sales strategies. Weak input distribution strategies was a consistent business problem across agribusinesses, and the project was interested in supporting Partex's commitment to strengthening its input distribution model. AVC started by connecting firms, with an international consultant specializing in input distribution and supply chain management strategies for agricultural products. This consultant reviewed Partex's current strategy and target market segments and made recommendations to upgrade its distribution network. Based on these recommendations, AVC began co-investing with Partex in strategies that Partex was most interested in pursuing.

Partex, with support from AVC, designed a rural retailer and dealer network that would connect directly with their target customers, Southern Delta farmers. Partex also incorporated 135 new retailers and dealers into their input distribution network, more than quadrupling the size of their network, making significant investments in capacity building for this network through an initial 4-day business development training course focusing on customer service, sales strategies, and Partex product-specific knowledge to ensure the new retailers and dealers were integrated into the core salesforce and to improve its capacity to provide product and market information and services to farmers. Partex immediately saw returns from the increased investment in a structured input distribution model, in the form of significant sales increases and a 300 percent increase in farmer reach. Based on these early results, Partex deepened its investment in the retailer and dealer networks, creating four Retailer Loyalty Clubs, comprised of the highest performing members who received performance-based rewards in the form of additional resources and trainings. As a result of these changes, Partex reported sales of 6.29 tons of mungbean seeds and 16 tons of lentil seeds, distributed through its established network of retailers and distributors in the Southern Delta achieving a drastic increase in sales, from 1 MT of lentil and 3 MT of mungbean sold in the 2015-16 season to 18 MT of lentil (worth BDT 2,430,000) and 28 MT of mungbean (worth BDT 4,200,000) in the 2017-18 season. Partex Agro sold improved seeds to approximately 16,000 Southern Delta farmers during the project period. Based on success to date, Partex forecast sales of 35 MT and 50 MT of lentil and mungbean seeds, respectively, in the 2018-19 season.

## MARKETING AND BRANDING

To complement improvements in input distribution, AVC supported agribusinesses like Partex to improve marketing and branding strategies, leveraging marketing tactics to increase farmer demand for high quality inputs. The intention was to ensure that supply-side distribution strategies were balanced by increased farmer demand, creating a push-pull dynamic to further scale up the intervention. With the support of AVC, Partex designed a rural marketing campaign that included the following components over the life of the activity:

- Five regional agro-inputs festivals, which incorporated training and demonstration components as well as promotional discount packages for Partex products;
- 58 farmer stakeholder meetings and 315 promotion events throughout Barishal and Jashore, organized by dealers and retailers; and
- 83 mobile video shows, reaching a combined 9,000 farmers.

Additional investments were made into a hotline, staffed by trained interns who were available to respond to farmers' requests for information, product troubleshooting, and to answer customer service requests.

For the new high yield seeds to be effective, it was critical that farmers not only purchased them but to also use them in the right way to maximize effectiveness and output. AVC worked with Partex to help the firm understand the importance of integrating information, education, and product training into a marketing strategy. The higher yields the farmers saw with the seeds, the more likely they were to purchase them again in future seasons. Correct application of the seeds was also critical to Partex's sales strategy. To reinforce behavior change in the firm, AVC co-invested in a number of farmer training strategies. Partex launched an embedded training program, hiring consultants to train farmers in advanced pulse cultivation and post-harvest practices. Partex also demonstrated which products were useful at each stage of the production lifecycle. By linking farmer outcomes with Partex's business growth strategy, AVC was able to demonstrate the value of provided after sales and extension services as a component of a marketing strategy; and previous unserved farmers gained access to extension services and upgraded cultivation practices. Through its embedded training program, Partex trained 7,000 mungbean farmers and 4,500 lentil farmers over the life of the activity.

Aside from the embedded training program, one of Partex's most successful initiatives was launching the Farmers Night School, a social gathering where farmers share and discuss common issues, hosted and facilitated by a member of Partex's Farmer Loyalty Club, who served as a witness for improved input products. These events were important and successful in that they allowed farmers to learn from the experience of their peers, increasing behavior change among participants. AVC pulse partners, like Partex, invested in business strategies that are customer-centric, to achieve increased direct customer interaction/customer service and improve customer retention. These efforts significantly impacted Partex sales, as noted above, but also ensured that farmers in the Southern Delta have access to high quality inputs, after sales services, and extension services. Partex reported that farmer productivity increased by at least 25 percent due to the application of new cultivation techniques and improved seeds. Overall, through these new outreach and customer service strategies, Partex reached 79,155 farmers both directly and indirectly (30,444 lentil farmers and 48,711 mungbean farmers) in the Southern Delta.

Finally, AVC supported Partex and Prantojon, a processed pulse firm, to redesign their branding and packaging materials and better align with customer preferences. Based on test marketing and preference polling with target Partex customers, Partex re-designed packaging so that buyers could see the color, size, and uniformity of seeds inside the packaging prior to purchasing, giving farmer customers confidence to invest in premium seeds. Similarly, for processed products, AVC supported Prantojon to launch its "Deshi" brand of mungbean products through a range of promotional events. Prantojon developed premium packaging to establish a stronger brand name around its premium products, and

developed new packaging in a range of price and quantity segments to align with consumer segment preferences.

## MECHANIZATION AND ACCESS TO LOCAL SERVICE PROVIDERS

Low levels of mechanization in the pulse sector also limited increases in yield and improvements in quality. AVC identified lead agro-machinery firms – Metal, Janata, and Alim Industries – that were interested in better promoting their product offerings to the pulse sector – axial flow pumps, power-tiller operated seeders, threshers, and hand power tillers. AVC worked with each firm to co-design strategies to launch strategic promotional and capacity development activities and improve farmer access to mechanization. Each firm trained local service providers (LSPs), trained in both the use of the machines and marketing techniques to improve rural sales to invest, operate, and fix machinery, and mechanics, who provided after sales services. Prior to engagement with AVC, LSPs and mechanics in rural areas were largely untrained and unable to assist farmers with challenges. Through the lead firms' LSP training programs, LSPs and mechanics were professionalized and became key resources in their communities to market the value of mechanization.

The firms saw huge results from this initiative, with LSPs, mechanics, and farmers investing in machinery. Alim and Metal saw a 20 percent and 34 percent growth in sales respectively in the Southern Delta. Alim reached over 3,000 households in the pulse value chain through trainings and promotional programs and created a network of over 200 trained LSPs and mechanics. Through this LSP network, pulse farmers in the Southern Delta can now identify suitable farm machinery and technologies that mitigate labor shortages, minimize the cost of production, and reduce postharvest losses. Alim estimates that the yields of targeted farmers have increased by at least 15 percent, generating increases in income of at least 10 percent. Between October 2016 – September 2018, Metal sold 3,695 agri-machineries in the Southern Delta, a region in which the company previously had very little market penetration.

## PROCESSING

Approximately 50 percent of mungbeans demanded by the domestic markets are for processing, but a very low percentage of Southern Delta smallholders are producing appropriate varieties. To increase farmer awareness of opportunities in the processing sector and to promote the appropriate inputs, AVC partnered with lead firms Partex and Prantojan to market processing-grade pulse inputs in the Southern Delta. Partex introduced two high-yielding varieties of pulses, BARI-6 seed variety for mungbeans and BARI 7 seed variety for lentil. AVC facilitated a partnership between Prantojan and SACO under which Prantojan contracted 70 farmers to test and promote these new seed varieties and provided embedded training to farmers on improved cultivation techniques including line-sowing and bed-raising methods, which are gradually replacing inefficient broadcasting planting. AVC partners reported that farmer productivity increased by at least 25 per cent due to the application of these new cultivation techniques and improved seed varieties.

Entrepreneurs in the South use outdated milling practices and primitive machinery for husking pulses, which results in broken, misshaped, and discolored kernels unsuitable for premium markets. In partnership with Prantojan, AVC co-invested in establishing a pulse mill in Barishal. Prantojan established a contract farming network, with over 6000 farmers, to ensure consistent supply of high quality processing-grade pulses, providing embedded training services to these farmers to upgrade quality, and formed a network of 225 supply agents to streamline the supply chain, through which Prantojan purchases raw mungbean for processing. It also established four regional pulse collection centers to

serve contract farmers and supply agents farmers and consolidate supply. AVC also co-invested with SACO, an entrepreneur in establishing a pulse mill in the Southern Delta, by providing machinery through an in kind grant. SACO invested in infrastructure, set up, and developed a network of 500 contract farmers to feed into the pulse mill, processing over 45MT pulses in the mill in 2017.

The Prantojan and SACO pulse mills are two of the first pulse processing centers in the Southern Delta region. Given the transportation limitations of Southern-produced pulses reaching Northern processors, these new ventures are a significant first step in establishing a processing hub in the South.

## **SME/TRADER SUPPORT**

Through contracted business consulting firms, AVC facilitated a peer to peer learning network with traders and other MSMEs in the pulse sector. A MSME cluster in Pautakhali built upon discussions around shared challenges in marketing and branding to create a regional brand around mung bean. While the district is the 2<sup>nd</sup> largest production hub of mungbeans in the country, the traders shared that produce from the district is not segregated or branded in the marketplace and consumers are not aware of the district's competitive advantage in this crop. With technical assistance from AVC, the SME cluster launched an initiative to create a common brand around all mung bean produced in the Pautakhali district. The Peer-to-Peer Business Firm provided the Pautakhali MSME cluster with branding support from a private sector marketing firms, and supported the cluster to pitch to Partex Agro for additional branding support. To launch the brand, the MSME organized a Mungbean Fair in Pautakhali. The fair attracted 500 stakeholders from across the sector, including 70 MSME traders, 131 farmers, and 11 mill owners, and 5 financial institutions. One of the most significant outcomes of the Patuakhali Mungbean Fair 2017 was Md. Abdur Rashid Khondokar, an SME trader that participated who usually conducts business only with local markets was able to engage in a business linkage meeting with a large processing firm from Khulna that attended the fair. After the B2B meeting, the SME trader agreed to supply 19.1 MT of mungbeans to the Khulna- based processor. Additionally, the payment for the transaction will be made immediately after product delivery through a bank transfer. Local SME traders typically have to sell products on credit and do not receive payment until long after the transaction. This business deal is a huge opportunity for the local trader, as it represents a new client and a direct connection to larger processors who can purchase larger quantities of mungbeans without requiring payment in credit.

## **GROUNDNUT**

The groundnut sector mirrors the pulse sector in many ways. Demand for both fresh and processed groundnuts is on the rise, due to shifts in consumer preferences, driven by a growing middle class. Low costs of production make the sector attractive for poorer smallholder farmers; however, most of these farmers inherited the business from their ancestors and are continuing to use outdated practices and retained seeds. While some commercial farmers are entering the sector, the flow of market information including demand signals and emerging seeds and technologies is limited. As with pulses above, consumer preferences for ready-made snacks are driving growth in the processed groundnut sector and pushing local manufacturers to expand product offerings. The processed sector accounts for approximately 40 percent of the overall market for groundnuts, with a significant portion used in the production of *chanachur*, a highly demand snack of which groundnuts are a key ingredient. In the fresh groundnuts sector, 25 percent of the total groundnut production in Bangladesh is consumed as roasted groundnuts (in shell or shelled) and around 20 percent as raw groundnuts (shelled, unroasted, with or

without skin). An emerging segment is forming around premium-quality loose/packaged groundnuts in both urban and rural markets.

To address inefficiencies in the groundnut sector, AVC pursued the following interventions:

- Strengthen structured input distribution models, especially of high-yield seeds, to reach rural, smallholder farmers;
- Improve capacity of key market actors to design and implement effective marketing and promotion campaigns to target the emerging premium segment; and
- Strengthen the supply chain through structured contract farming schemes, inventory management initiatives, and embedded trainings and services.

AVC's work in the groundnut sector resulted in the training of 14,624 farmers in the application of high yield seeds, introduced a seed production hub to replicate both local and international high yield varieties, and facilitated improved supply chain management mechanisms to ensure consistent supplies of high-quality groundnuts for processing firms.

### INPUT DISTRIBUTION CHANNEL FOR HIGH-YIELD SEEDS

As a direct result of partnership with AVC, Partex, a lead input supplier in the groundnut sector, played an instrumental role in changing the groundnut sector by importing and replicating improved varieties, establishing a formal seed distribution channel, and directly engaging with smallholder farmers to purchase and multiple high-quality seeds. Beginning in Year 3, AVC worked closely with Partex to identify high-yield local seed varieties for replication and distribution to Southern Delta groundnut farmers. Partex was not able to find suitable seeds on the local market, so AVC connected Partex with Chinese seed companies to identify and source high yield seeds for piloting and potential replication in Bangladesh. Partex imported 25 MT of high-quality industrial variety groundnut seeds from Hejia Hitech Seed Company in China, and sourced breeder seeds from BARI and the Bangladesh Institute of Nuclear Agricultural (BINA). Partex created a network of 500 farmers in the Southern Delta and provided them with IMT seeds to multiply them in the 2016-2017 agricultural season. With support from AVC, Partex simultaneously provided these farmers embedded trainings in improved cultivation and post-harvest techniques. Farmers who used Partex's premium seeds increased harvest yields in comparison to the previous harvest by approximately 40 percent. Based on these impressive outcomes, AVC supported Partex to scale up the initiative by connecting Partex to Shofaine, one of the largest agricultural companies in China. Partex imported Beijing-1 and Beijing-2 groundnut seed varieties to Bangladesh. In comparison to the variety seeds developed from BARI, the Chinese seeds led to a 50% increase in crop yields and income per farmer. As a result of the positive outcomes, Partex imported 10 MT of seeds and multiplied them, and plans to market the new seed variety the next

---

Access to new groundnut seed varieties increases yields and income for smallholder farmers.

With AVC support, Partex experimented with high-quality groundnut seeds from China and imported 25 MT of these seeds to Bangladesh. Partex then sold these seeds to contract farmers from the Southern Delta region and trained them on proper cultivation techniques. As a result, farmers on average reported a 35 percent increase in crop yields.

One of the farmers, Rezaul Karim, reported a 25 percent increase in income. He shared that him and his family have done groundnut farming for the last 40 years and that "never did [he] see yields on such grand scale." The increased income has helped expand his land holdings, improve his ability to support his children's school expenses, and increase his overall financial security.

---



season using the improved marketing principles introduced by AVC (see below). Partex committed to ensuring the sustainability of the replication of high-yield seeds by establishing a seed production hub in the Southern Delta, through which Partex is providing ongoing technical support to 64 contract farmers in advanced cultivation practices to produce approximately 25MT of seeds annually, and by establishing a seed processing facility close to the production hub to streamline the process of procuring the replicated groundnut seeds from Southern Delta farmers.

To improve distribution of seeds to rural farmers, Partex established a retailer and dealer network, using the same model used that they used for pulse seeds mentioned above. Partex organized three preferred retailers' consisting of 90 retailers working in the groundnut sector and integrated them into their salesforce through product trainings and Partex branding for their retail outlets. The highest performing retailers were invited to participate in a workshop on groundnuts with industrial buyers about specifications and compliance requirements for industrial seeds for 20 retailers and dealers working in key sales areas. These retailers and dealers are tasked with sharing market information with the farmers' customers.

Most notably, AVC played an instrumental role in connecting two lead firms with aligned interests in the groundnut sector and facilitating a long-term partnership. Through facilitated discussions with AVC, AVC brokered a formal agreement between Bombay Sweets and Partex, whereby Bombay Sweets sources groundnut seeds from Partex's contracted farmers in Bhola. Through this partnership Bombay Sweets formalized sounds of groundnut seeds at a consistent and standardized quality standard. Partex benefits from having a loyal long-term customer, buying in bulk (700kg annually) for a consistent quantity and price. This is a key example of AVC not only providing direct support to individual market actors, but also playing a critical role in strengthening market linkages and cooperation in a sector to scale up inclusive growth.

## IMPROVED MARKETING

Improvements in input distribution in the groundnut sector are closely linked to firms adopting improved marketing and branding strategies to promote high quality seeds among farmers. AVC supported Partex to design and implement promotional campaigns to launch new seed varieties. The marketing strategy was based on findings from a Mental Models research, conducted by AVC in 2016, which analyzed consumer buying habits and purchasing preferences in the inputs sector to improve targeted marketing. Partex formed Partex Loyalty Clubs (PLC) for farmers, which consisted of 30 regional clubs with 874 total farmer members. Through these clubs, farmers have access to promotional discounts, product information, customer service, and training. As in pulses, Partex coordinated Farmer Night Schools to leverage lead farmer testimonies and engage farmers in peer to peer discussions of product implementation challenges. Partex organized 128 Farmer Night School reaching approximately 5,733 farmers. Partex organized a total of 43 regional agro-fairs focused on groundnut products, which included demonstrations on cultivation methods for high-yield groundnuts.

Partex promoted purchases of high yield seeds through bundle packages, which included seeds, other improved inputs, technical assistance, and supervision and monitoring. Partex promoted these bundle packages through demonstrations on 75 learning plots in 15 clusters. The bundle packages were a critical component of Partex's marketing strategy. Since the high-yield seeds were a new product, Partex needed to ensure that farmers using the new seeds had access to additional resources to ensure high output, so farmers would see the value of their investment in higher-quality, premium price inputs. The

bundle packages were supplemented in future years by embedded training programs. AVC co-invested in 340 training sessions, reaching 9,128 groundnut farmers, and 20 learning events, reaching 2,232 farmers. Through its marketing campaign, approximately 4,000 farmers bought these seeds. Partex estimates a cumulative 56 percent increase in groundnut seed sales over the course of their partnership with AVC. This translates to an approximate 35 percent increase in crop yields for farmers using the improved seeds, which resulted in Partex to receiving a higher demand from farmers to buy these seeds and further expand its work in this sector. Partex estimates that groundnut farmers have increased incomes by 30 percent due to increase quality and quantity of yields and strengthened market linkages.

## INVESTMENT IN SUPPLY CHAIN MANAGEMENT

To complement improvements in the input distribution and marketing segments, AVC supported buyers to invest more strategically in supply chain management to ensure more consistent, quality supply of both fresh and processed groundnut. AVC worked with regional processing firms and large traders to message the importance of investing in the cultivation and post-harvest practices of suppliers as a strategy to improve the quality of processing inputs available for purchase. AVC partnered with Bombay Sweets, a regional snack processing firm and a core player in the Southern Delta groundnut sector, to establish a dedicated supply chain system. AVC co-invested in four partner-identification workshops with 69 core traders to negotiate a supplier network linking 175 farmer groups, reaching 2,400 supplier farmers. As a result of these meetings, Bombay Sweets signed memoranda of understanding (MOUs) with five groundnut suppliers for consistent supply of a minimum quality standard industrial groundnut varieties for Bombay Sweets' snacked goods. Additionally, Bombay Sweets conducted embedded trainings with 200 groundnut lead farmers in the network, with the expectation that these lead farmers would train remaining farmers in the network. To address sector transportation obstacles, the company also invested BDT 25 million to purchase cargo ships in order to ensure smooth transport of its products that are produced from Southern Delta. Lastly, with support from AVC, the company has invested another BDT 5.5 million to develop an inventory management system, through which it will support its entire supply and distribution network.

AVC also supported Eastern Trade Company (ETC) in building its own groundnut supply chain in the Southern Delta through a centralized contract farming model. As part of this initiative, ETC provided embedded training on improved production and post-harvest techniques to 1,275 groundnut farmer suppliers in 2018.

AVC supported five organizations – Adorsho Cashi, Bombay Sweets, Rahmat Agro, SDC, and SDS – to develop contract farming structures, providing training in cultivation methods to produce high quality groundnuts to a total of 2,300 farmer. Groundnuts produced by the contracted farmers were channeled to specific larger traders in regional markets. SDC Chaul Kol provided the first ever training on cultivation techniques and post-harvest handling to groundnut farmers in the Faridpur region, resulting in farmers replacing broadcast sowing with line sowing. As a result of improved yields, the gross margin per hectare of groundnut land is reported at 40,854 BDT (\$524), a 5 percent increase over the 2014 baseline. Trained farmers were able to sell 74 percent of groundnut yield at a rate of \$820 per MT. Household income of groundnut farmers increased by \$44 due to AVC interventions, a 101 percent increase over baseline data. Despite the successes above, SDC Chaul Kol faced challenges in processing groundnuts. SDC Chaul Kol installed a groundnut shelling machine, with the intension of selling de-shelled groundnuts to larger chanachur snack processors as a value-added product at a higher price



point. However, the organization was not able to establish a cost-effective shelling process and could not meet their agreements with regional processors.

## SUMMER VEGETABLES

The summer vegetables basket value chain includes five of the highest contributors in horticultural production – bitter melon, cucumber, eggplant, pointed melon, and pumpkin. Bangladeshis consume only 70-75 grams of vegetables versus the 280-gram recommended vegetables intake per day. AVC's work in the summer vegetables value chain was therefore closely linked to crosscutting results in improving nutrition among the rural poor. The summer basket value chain has three primary market channels: vegetables sold in the FTF zone (22 percent of total volume), vegetables sold to mass markets in urban centers and districts outside of the FTF zone (70 percent of total volume), and the export market (8 percent of total volume). As with most AVC-targeted value chains, the rise of middle-class urbanites is increasing domestic demand for vegetables and consumers are beginning to show a preference and willingness to pay a price premium for produce that is considered healthy or safe, with reduced or no agrichemical application or residue. Primary constraints to sector growth include limited understanding of modern cultivation and post-harvest techniques that leave very high agro-chemical residues and lack of access to quality seeds and inputs. Unique to the summer basket value chains is the absence of a quality control system to govern the supply chain in order to meet urban consumers' demands for certified safe vegetable brands.

- AVC interventions prioritize the following objectives:
- Strengthening distribution channels to the rural southern delta for high-quality input products, especially those that allow farmers to grow safer vegetables with less chemical residue;
- Improving marketing and branding strategies for the inputs mentioned above;
- Establishing a domestic standard regime around quality, safe vegetables and supporting firms to upgrade supply chain management practices to comply with more robust quality standards and grades; and
- Supporting retail outlets and other firms to launch branding strategies that promote higher-quality vegetables that comply with the standards and grades mentioned above.

To achieve the intervention goals outlined above, AVC worked with a total of 53,070 summer vegetable farmers in partnership with lead firms, representing over 20 percent of the total summer vegetable farmers in the Southern Delta.

## INPUT AND TECHNOLOGY DISTRIBUTION CHANNEL

In the summer vegetable value chain, AVC focused technical assistance on improving distribution channels for input products that upgrade quality, specifically those that allow for safer

---

### Systemic Changes in the IPM Industry

AVC worked with motivated IPM technology provider firms like Ispahani and built the capacity in appropriate use of IPM technology of 12,000 farmers. AVC also reached out to over 300,000 farmers with awareness development activities in the Southern Delta region of Bangladesh; currently Ispahani is proud to have achieved a 130 percent sales growth, and developed a loyal farmers' base of 35,000, who are repeat customers and self-initiated endorsers of the environment friendly technologies in the Southern Delta of Bangladesh.

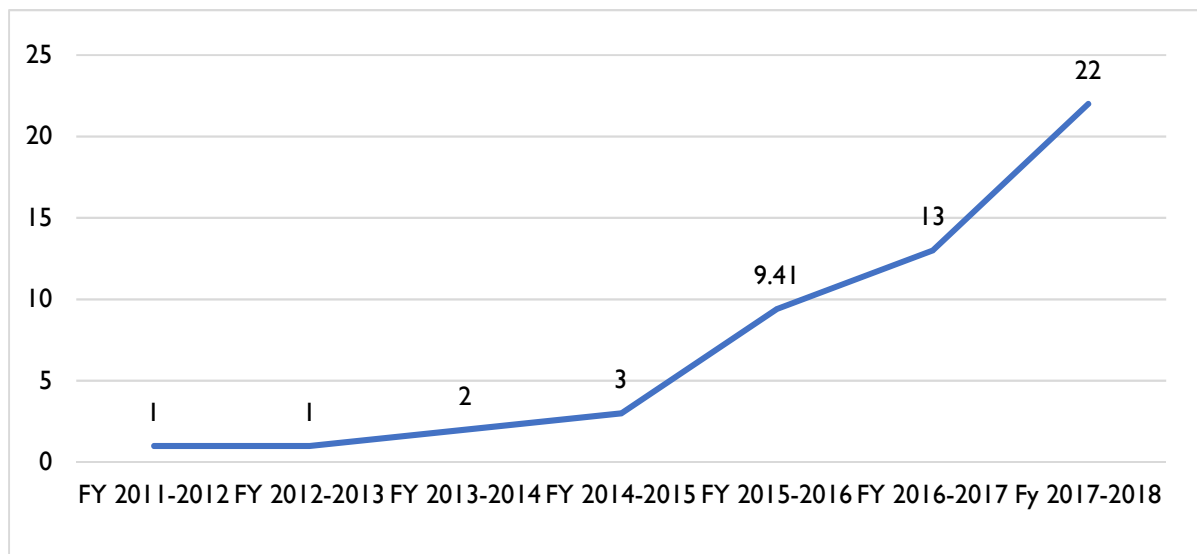
One such gourd farmer, Abu Jafar Talukdar, is enjoying reduced spending on pesticides by an astounding 70 percent (on average), increased earnings from around 25 percent lower crop losses, better soil quality and healthier harvests with little or no chemical residues, all attributing to a single decision of switching from using all chemical pesticides to Integrated Pest Management (IPM) products.

production methods. Integrated Pest Management (IPM) is an ecosystem-based strategy that combines biological and chemical pest control mediums, mainly to reduce the profuse use of chemicals on crops. IPM products are widely popular worldwide due to a range of cost, health, environment, and yield benefits, reducing input costs while also making end products more attractive to health-conscious consumers. Despite the many benefits, agribusinesses in Bangladesh were not able to drive growth in IPM product sales due to a combination of ineffective marketing strategies, limited awareness of the proper usage of IPM products, and poor after sales services. These conditions reduced the first-hand benefits farmers are seeing.

To introduce the importance of IPM products, AVC organized an exposure visit to India in August 2016 for private sector representatives to gain valuable insight on commercialization strategies for new technologies, particularly bio-pesticide and bio-fertilizers. The visit allowed private sector actors, entering a nascent IPM sector in Bangladesh, to learn from developed, commercially-oriented IPM labs, companies, and research institutes. AVC leveraged the knowledge gained during the exposure visit and partnered with several large firms – Ispahani, NAAFCO, Advanced Chemical Industries (ACI), and others – to develop improved distribution strategies for commercialized IPM inputs. For IPM products to be effective, farmers must know how to properly use the products, many of which are new to the market and require more technical skill to implement than traditional pest control methods. Thus, the establishment of retail networks that provide ongoing farmer training, information, and customer service were integral to an IPM distribution strategy. With the support of AVC, Ispahani identified a need to provide embedded trainings and organize dealers’ conferences for their workforce to improve dealers’ knowledge on how to use IPM products and techniques. AVC assisted Ispahani increased their retailer and dealer workforce by 22 percent to provide services to Southern Delta farmers as part of their sales strategy. Ispahani engaged a total of 200 dealers (110 for improved seeds and 90 for IPM/biotechnology products) and 980 retailers (600 for improved seeds and 380 for IPM/biotechnology products) to actively engage farmers and serve as sales agents and customer service representatives for Ispahani products. Ispahani reported a 70 percent increase in repeat customers, indicating an uptick in farmer adoption. IPM product interventions reduced chemical spray by up to 75 percent among targeted farmers, which have the potential to reduce individual farmer input costs by as much as \$750 per hectare. Similarly, NAAFCO established a preferred retailer’s network of over 200 retailers, in addition to organizing regular meetings to provide information on NAAFCO’s products, marketing practices, and company strategies.

Through private sector partners, AVC introduced dealer incentives to the highest achieving retailers in the form of promotional offers and package deals. These sales-based promotions incentivized brand loyalty and efforts to reach new and repeat customers amongst the dealers. AVC complemented these distribution strategies with marketing campaigns for IPM products (see graph below).

FIGURE 1: HYBRID VEGETABLE SEED CONTRIBUTION (SHARE) OF OVERALL SEED SALES IN PERCENTAGE



### IMPROVED MARKETING AND BRANDING STRATEGIES FOR INPUTS

AVC supported the development of community-based marketing campaigns amongst its private sector partners that reached out directly to their end customer, farmers. Upgraded marketing strategies were promoted among all primary partners, including NAAFCO, Partex, and Ispahani, by implementing farmer learning events, farmer coaching programs, and customer service call centers. Ispahani and NAAFCO, for example, organized large embedded trainings for farmers to learn about new product use. Combined, the two firms trained 31,260 farmers in the use of high-quality summer vegetable seeds and IPM products. The trainings were a critical component within the marketing strategy to ensure farmers maximized product outcomes, thereby generating repeat customers and buyers in the coming seasons. AVC cost-shared these embedded training efforts to demonstrate to both firms how trainings could contribute to increased product adoption and sales. To improve branding, firms redesigned their packaging for seeds and other inputs to better align with farmer preferences. This included incorporating transparent packaging so farmers could see the improved seed varieties first hand. Through a suite of marketing and branding activities, Ispahani estimates that they reached over 1 million farmers during the project period. As a result of these improved marketing tactics, summer vegetable seeds seed sales increased from 1 percent to 22 percent of total Ispahani seed sales during the project's lifespan.



Shafiur Bhandari, a farmer from Jashore district, increases sales by 55% as a result of using Ispahani seeds.

Opportunities exist to create a brand around safe vegetables; however, FTF farmers were not able to leverage these opportunities due to supply chain traceability constraints, overuse of chemicals in production, improper pest management practices, and ineffective branding and marketing. AVC partnered with a local marketing firm to conduct a market assessment to test the theory that consumers are aware of the benefits of purchasing safe vegetables and their readiness to pay a price premium. The test marketing initiative was launched in six urban centers, marketing safe vegetables through produce pamphlets, branded kiosks, and media campaigns. This safe vegetable branding incorporated traceability by providing the consumers with the farmer's name, location, and information about how the vegetables are produced. Among the cities tested, market demand for safe branded vegetables was highest in Dhaka and Sylhet. To understand how consumer preferences for fresh vegetables were different outside of the capital, AVC partnered with Jagorani Chakra Foundation (JCF) to launch a test marketing strategy around vegetables produced using dyke cultivation methods, which naturally requires less pesticides and chemicals. The second initiative ran for two weeks at four sales points in Jashore and found 113 repeat purchasers out of 1,400. Please see the graphic below. Finally, AVC co-invested in four Weekend Farmer Markets in Dhaka in which farmers brought produce directly from the Southern farms to sell to urban consumers. The main purpose of these events was to demonstrate to larger firms that consumers were willing to pay a price premium for food that is fresh and safe when they know more about the source farm's practices. The findings from these three initiatives were used to develop targeted marketing strategies for Ispahani, Agora, and ACI in order to sell price premium safe vegetables.

---

**Supply chain management** Introduction of composting improves soil fertility and farmer productivity as well as brings environmentally friendly practices to the Southern Delta Region.

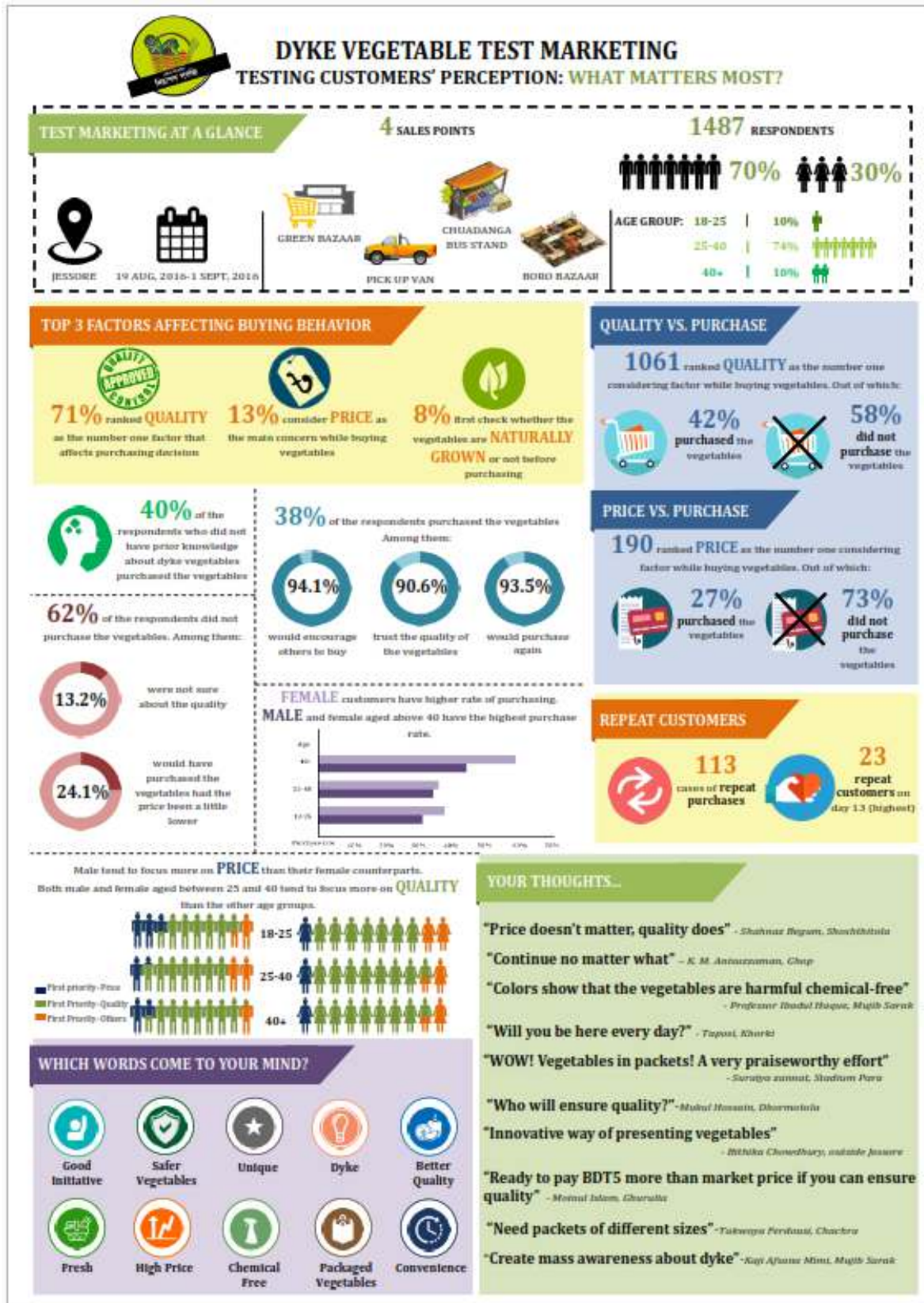
Prior to AVC, only a handful of companies composted and had limited knowledge on effective practices to produce quality soil. AVC engaged Partex to invest in composting methods. Within the first year, Partex increased production to 3,000 MT of organic fertilizer. It then organized awareness campaigns and encouraged farmers to invest in compost as an alternative to buying other soil since it improves soil fertility while also decreasing input costs.

One of the farmers, Md Bajlu Hauladar, reported a 75 percent increase in production after using Partex compost in his pumpkin fields. Throughout the duration of the project, Partex reached 40,000 farmers about the benefits of using organic fertilizer in the form of compost. In total, it sold 400 MT of compost to farmers.

---



FIGURE 2: DYKE VEGETABLE TEST MARKETING



Despite the findings from the test marketing initiative, AVC continued to face challenges in gaining traction with firms around investing in supply chain management. To create a sector-wide pull for improved supply chain management and safe production practices, AVC partnered with the DCCI as they already had strong connections and influence in the agribusiness sector and were well-placed to play an advocacy role for supply chain management. The Chamber engaged leading private sector companies in developing a domestic quality and standard regime for AVC value chains, beginning with summer vegetables. To bring in high-level capacity to establish this local standard regime, AVC identified GlobalG.A.P. as an experienced and tested partner for conducting a scoping mission and holding initial meetings with retailers and firms around how supply chain management and international certification could support businesses and open new markets and opportunities. These initial meetings helped AVC identify firms that were prepared to invest in supply chain management. AVC contracted GlobalG.A.P. to form a partnership with DCCI to increase their access to domestic firms and chamber members, as well as to ensure a sustainable involvement within the Southern Delta market. GlobalG.A.P. conducted a Tour Stop event attended by 116 people to introduce their company to industry actors with stakeholders being made aware of the benefits of adhering to GlobalG.A.P. standards and the prospects of exploring international markets through this certification. Moreover, in collaboration with DCCI, GlobalG.A.P. organized two 5-day workshops, attended by 30 people, that consisted of classroom and on-field sessions. The objective of these workshops was to train agri-firms and industry actors in the compliance practices of GlobalG.A.P. and to equip them on consulting producer groups with how to integrate these agricultural practices into their supply chains. This initiative has led to 17 certified Farm Assurers and three licensed GlobalG.A.P. Farm Assurer practitioners in the Southern Delta. Furthermore, Shwapno, a leading supply chain firm, received the first-ever GlobalG.A.P. membership in Bangladesh. As a benefit of this membership, Shwapno was matched with a GlobalG.A.P. consultant in India who assisted in training 200 contracted farmers in good agricultural practices, including documenting the production cycle to maximize traceability. The consultant aided Shwapno's launch of Bangladesh's first ever certified safe produce brand, Shuddho.

Through its alliance with Global G.A.P. and its subsequent elevation as the company's country representative, DCCI has emerged as a major leader in Bangladesh's safe food movement. AVC worked with DCCI to establish BanglaG.A.P., a local certification standard regime, serving as a stepping stone for industry actors who aim to attain GlobalG.A.P. standard certification. DCCI promoted the local standard by partnering with local chambers to organize workshops and seminars in multiple urban centers reaching approximately 400 stakeholders. Consumer awareness dialogue sessions on Fresh Food Protocols were also conducted, engaging 40 supermarket owners, consumer associations representatives, and agribusiness owners from DCCI's membership. These events reinforced the benefits of supply chain investment for increasing market share and price premiums in the domestic market, and the role of farmer outreach and support in maintaining an efficient supply chain system. To ensure the sustainability of GlobalG.A.P. and DCCI's partnership, DCCI launched the BanglaG.A.P. help desk and call center. In Year 5, DCCI was elevated to serve as the country representative for GlobalG.A.P. in Bangladesh, the only other country representative globally besides Colombia.

## SAFE VEGETABLE BRANDING

In connection to the supply chain management improvements above, AVC worked with leading firms to improve retail branding for safe vegetables. Shwapno's safe vegetable brand, Shuddho (meaning Pure in Bangla) has products currently available in 15 outlets in Dhaka. During the first 5 months of its implementation, Shwapno sold 36MT of Shuddho branded vegetables worth BDT 2.26 million. Additionally, in collaboration with 20 schools, the company launched an awareness campaign around Dhaka to introduce the brand and engage youth in promoting and buying safe foods. Shuddho is continuing to attract approximately 15,000 customers per month. With increasing demand, Shwapno plans to add another 200 farmers, as well as new crops, to their brand for consumers next year. An

additional BDT 3.6 million has been invested into their business from the first three months of Shuddho sales.

Based on the success of Shwapno during their 2-year partnership with AVC and GlobalG.A.P., more firms expressed interest in launching safe food brands, targeting this emerging high-value market segment. Ispahani and NAAFCO both launched safe mango brands, described in detail in the section below, and will incorporate vegetables and other fresh produce into these brands to compete with Shwapno. As more customers are drawn into safe food brands, consumer understanding of the importance of safe foods is consistently rising in Bangladesh, creating a sustainable demand pull for safe production practices among farmers, and contributing to an overall upgrading of Bangladesh production quality. This is most prominent in urban markets presently, but as the brand popularity increases, AVC expects these trends to shift further into rural agricultural markets and production hubs. This demand for quality produce further reinforces AVC efforts to increase demand for the high-quality inputs required to meet these quality and safety standards.

## MANGO

Mango is a billion-dollar industry in Bangladesh and is one of the highest value crops that AVC supports, generating attractive revenues for orchard owners and having the potential for export. Fresh mango represents over 98 percent of the local market, with an increased production from 1 million tons of mangoes in FY 2015 to 2.4 million tons in FY 2018. Country-wide the sector is growing at around four percent per year, but the growth rate is up to four times as high in the Southern Delta region where 40 percent of mangos are harvested. Mango producers in the South enjoy a comparative advantage of being able to grow early varieties and sell them on the market at the time when the price is at its highest. However, producers in the Southern Delta also face numerous systemic challenges. The mango sector faced a serious threat in 2014 when AVC began its work. Producers were unresponsive to market dynamics and consumer preferences due to limited access to market information and a lack of sector-wide coordination. Businesses also lacked confidence in sector investment due to the misconception that formalin was present in mangos, which contrary to popular belief, is not actually used at any stage in the market chain. The sector's growth potential was further undermined by the over spraying of chemical pesticides by two to five times the required amount by untrained farmers, significantly impacting consumer safety.

---

### Promoting Safe Food Practices

Prior to AVC's involvement with Shwapno, Bangladesh had not adhered to food safety practices. Widespread misuse of harmful chemical applications made customers wary of buying fruits and vegetables. As Shwapno gained knowledge of the origins of the produce it purchased, it launched the Shuddo brand line and worked directly with farmers to teach them about safe food production and monitored their production.

As a result of AVC's intervention with Shwapno, one of the farmers named Robiul Islam shared that he now produces higher-value vegetables such as pumpkin, cauliflower, and cabbage. His income has also increased by 25 percent. Today, he advocates for other farmers to contract with Shwapno and conducts farm-level training in improved agricultural practices, including the proper dosage and application of fertilizer and agro-chemicals

---



A mango market in Rajshahi, Bangladesh



To address constraints in the mango sector and bolster sector growth, AVC pursued the following key strategies:

- Strengthen the role of DCCI to improve advocacy around policy-level issues impacting the mango sector;
- Shift input practices away from using pesticides that leave significant amounts of chemical residue on the fruit towards using more environment friendly products;
- Strengthen relationships between producers, agricultural businesses, and farmers to bring high-quality mangoes to the market; and
- Improve marketing strategies to shift consumer preferences toward safe mangos.

Through partnerships with DCCI, agri-firms, and farmer associations, a total of 14,686 farmers was trained in improved mango production practices.

## POLICY AND ADVOCACY

AVC partnered with the DCCI to support the chamber in providing policy and advocacy assistance within the agricultural sector. In 2016, AVC worked with DCCI to organize a national-level seminar regarding the creation of a stronger enabling policy environment for safe mango marketing, the complexities of the current policies and legal practices, and the impact of safe mango production. This national level meeting was followed up by several dialogues and stakeholder meetings conducted by DCCI, DAE, and regional chambers. These stakeholder workshops helped DCCI and regional chambers understand the important role they can play in engaging market actors, law enforcement, media, and others to address future threats to the sector and develop joint responses to threats and challenges.

In Year 4, AVC conducted a study to assess outcomes of the AVC-facilitated mango stakeholder dialogues held from 2015 to 2017 to improve information and reduce misunderstandings in the mango value chain. The study identified that the mango dialogue series brought many positive changes among market actors and caused a crowding in effect among new agro-firms for investing in mango marketing. Customer awareness and consumers' willingness to pay more for high-quality mango are increasing. Additionally, the study found that the media, public administration authorities, and law enforcement agencies have become more responsible and prudent in their roles and practices. For example, DAE district offices are campaigning against bad cultivation practices by creating dramas and local songs. Media and law enforcement agencies are not reporting or taking immediate actions without proper information and guidance from technical authorities.

The dialogues and subsequent study conducted by AVC improved the enabling environment for investment in the mango sector and helped DCCI and local chambers build their capacity to convene stakeholders to address sector challenges moving forward. DCCI continued to organize events to improve the enabling environment and to promote investment throughout project implementation.

## SAFE APPLICATION OF INPUTS

Core consumer and business concerns within safe mango production practices are the application of chemical inputs and resulting chemical residue on final fresh product. AVC supported NAAFCO, a leading private sector input supply firm to transform the model of chemical application within the mango



sector. Prior to AVC, chemical inputs were applied by the farmers themselves, or by unskilled, seasonal workers who only sprayed pesticides. However, the application of chemical inputs requires technical expertise uncommon to the typical farmer or unskilled worker. Furthermore, input suppliers selling the relevant chemical products were not engaged in helping purchasers understand how to use these products.

In 2016, NAAFCO approached AVC with an interest in creating and commercializing a new product: NPKS (a mixture of nitrogen-phosphorus-potassium-sulphate) mixed fertilizers, which are more time and cost effective for smaller farmers. During the co-design process, AVC proposed that NAAFCO launch a new model through which they would contract and train spray-men provider groups. In 2017, formal provider groups were implemented to support mango growers throughout the entire crop cultivation cycle, which included integrated pest management, safe use of fertilizers, and responsible post-harvest methods. Each group of orchard service providers was trained by NAAFCO on appropriate product dosage and improved cultivation practices. Serving also as rural brand ambassadors for NAAFCO's input product line, groups were provided with branding materials, including NAAFCO-branded protective equipment, branded spray machines, company ID cards, and promotions and discounts to begin to launch the service network among orchard customers. In total, NAAFCO trained 257 new service providers to support the mango orchard farmers of the southern region. This new business model generated significant gains for all engaged market actors. Farmers saw their input costs significantly reduced due to reductions in over-spraying; under-employed rural individuals gained access to skilled employment providing a suite of production and post-harvest services to farmers; and consumers had access to mangos produced under safer cultivation practices. These development impacts were sustainable, as they were closely aligned with business returns for NAAFCO. NAAFCO saw significant and immediate upticks in pre-season orders of products from their agri-chemical line, and its pre-season sales of pesticides and fertilizers have become the leading contributor of sales in their overall company portfolio. This creates a strong incentive for the firm to continue providing promotional deals and trainings to their service provider groups and to expand the service provider model in the coming years.

In addition to supporting service provider networks, AVC assisted input supply companies in launching three new innovative mango input products. NAAFCO introduced NPKS fertilizers, marketing this new product through the LSP network, and seeing an 80 percent product sales growth in the 2018 farming season compared to 2017. It also introduced mango-bagging techniques that were positively received by farmers. The company promoted this "Fruit Bag" initiative via seven farmers' learning sessions and field demonstrations in Jashore, Jhenaidah, Narail, Meherpur and Chuadanga, where approximately 100,000 bags were distributed among 2000 farmers in the first year (2017). In 2018, NAAFCO also sold over 50,000 bags to more than 200 mango famers.

The project also supported Ispahani in using naturally occurring substances in the mango production process to maintain pest control. Ispahani marketed two new products in Satkhira, Jhenaidaha and Meherpur: (1) the use of pheromone traps, which is an effective and cheap device that captures insects and monitors pest control; and (2) the application of bio-pesticides called Bactro-D and Bio-derma powder. To commercialize these products, Ispahani employed a range of marketing and input

---

Mohammad Ohab Ali, a member of a Service Provider Group in Jessore:

*"I used to earn BDT 600 for day-long services with two spray machines and an additional laborer. Now with my additional skills in pruning, fertilizing, watering and cleaning, I can earn at least BDT 15,000 per one bigha [33 decimals] mango orchard in a season."*

---

distribution tactics supported by the project. For example, the company provided customer service training to their distribution network to ensure that farmers were advised in the proper use of the products and to support any troubleshooting. Additionally, 90 dealers and 380 retailers were trained to effectively promote and sell biotech inputs relevant to the mango sector. The commercialization of a number of new input products as well as the development of local service provider spray groups was critical to systemically shifting producers' perceptions about the importance of monitoring the quality of production and ensuring safe production practices are followed, leading to a 20 percent growth in agro-inputs in Ispahani from 2017 to 2019. These initiatives led by AVC helped provide producers with the tools to meet consumer and buyer demand for safe mango.

## SUPPLY CHAIN MANAGEMENT

In 2014, Bangladeshi consumers lacked trust in the quality and safe production practices of safe-branded produce, reducing their willingness to pay a price premium. Although consumers demonstrated an interest in having access to safely-cultivated foods, consumers were not confident in how to identify those certified safe foods within the market. To address this, AVC complemented the work in the input supply sector to reduce chemical spraying, with added support to improve supply chain management and traceability in the mango sector. AVC worked with firms to: (1) establish and ensure adherence to quality management standards and to (2) effectively promote safely cultivated mangos to consumers in a way that builds consumer trust.

In Year 3, AVC began its work in supply chain management by supporting five contract farming systems, training 2,750 farmers in safe mango production and marketing and integrating them into the contract farming network within larger agri-firms, including NAAFCO. Throughout the life of the activity, NAAFCO provided updated trainings to its contract farmers on water treatment, proper picking, drying methods, and packaging technologies. It also created a social media group to allow contract farmers to ask questions and troubleshoot problems directly with its technical staff. These strategies improved farmer outcomes and secured a consistent supply of quality, safe mangos for its fresh product lines. The firm is consistently expanding this contract farming network to include new farmer groups and regions.

Additionally, AVC partnered with Just Farming to ensure high quality, safe products within the Southern Delta where Just Farming technical staff managed the production and post-harvest processes. Just Farming procured a total of 310 MT of mangoes from its contracted farmers that were sold in Dhaka, Barisal, Khulna and Chittagong. Furthermore, it acquired a hot-water treatment plant and a washing machine to treat mangoes, which increased overall quality for consumers and shelf-life at the retailer level.

A third contract farming network was managed by Daakbox Limited. Daakbox, with support from AVC, organized workshops in Southern Delta districts to train farmers in pesticide control, proper cultivation techniques, and post-harvesting practices. Through these trainings, it identified 70 farmers for their supply network who demonstrated a commitment to quality production. The supply chain network established and managed by Daakbox supplied more than 53 MT of mangoes to Shwapno for sale on their online platform.

In addition to the contract farming agreements, mangos were integrated into safe-produce brands established by large agri-firms. Such brands are described in detail in the Summer Vegetables value chain

section (see page 40). For example, through Ispahani's Garden Fresh brand, the company marketed chemical-free mangoes. As customer demand grew, Ispahani expanded its work with contract farmers and assisted them in following prudent production processes, resulting in the introduction of two new mango varieties. It sold 24 MT of mangoes in the period and earned sales revenue of BDT 2.6 million. Under NAAFCO's Bangla Fresh brand, the firm procured 7.5 MT of mangoes from its contracted orchards in the South, resulting in an increase of BDT 1.392 million in revenue. Finally, mango is also incorporated under Shwapno's Shuddho brand. Within the first 6-months of launching the brand, Shwapno sold 45 metric tons of mangoes.

## MARKETING STRATEGIES

AVC's efforts to improve consumer and business trust in the mango sector required significant marketing strategy support, both at a sector-wide level and at the firm level. The current wholesale market value of mangoes in the Southern Delta region is \$225 million. From FY 2013 to FY 2018, the mango market has been growing 20 percent annually; thus, AVC found potential business opportunities. At the sector-wide level, AVC partnered with a consulting firm, CDCS, to run a week-long promotional campaign in the Southern Delta. The campaign included two large agri-fairs in Barishal and Jashore, which were hugely popular, attracting over 7,000 visitors, and resulting in large single-day sale volume and attracting remarkable media attention. Covered extensively by over 20 local and national media organizations, these fairs had an enormous impact on how consumers viewed the mango sector, as well as the investors' confidence in the sector's ability to grow and generate returns. From a market systems perspective, one of the most important outcomes was that mango farmers and traders from the Southern Delta understood the significant market opportunity if they upgraded cultivation practices and inputs. For the first time, these actors were able to understand first-hand the preferences and demand of the local market. A smaller campaign was also run in Dhaka which focused on building safe food awareness and creating a platform where value chain actors could communicate with each other.

At the firm level, AVC supported Ispahani and ACI in launching cost-effective digital marketing campaigns to build consumer awareness of the importance of safe mangoes and capture consumer attention. After AVC-led technical assistance, the firms were partnered with outside marketing companies through in-kind grants to improve the firms' strategies to promote mangos to high-value, urban markets. The partner companies provided expert support in product design and branding taglines, marketing through a range of media and customer communication tools. Ispahani and Asiatic co-designed improved lead farmer programs, where high achieving customers were provided with referral cards to conduct secondary outreach to neighbor farmers. Additionally, Asiatic helped Ispahani design a successful social media campaign during peak mango season. In order to promote its 'Bangla fresh' branded mangoes to the market, AVC supported NAAFCO in designing and marketing its new brand through various social media outlets, marketing campaigns, and customer events. AVC also linked NAAFCO with potential key partners who work in the mango business. Through the partnerships, the firms learned to adopt new marketing strategies and the marketing companies gained more experience in the agricultural sector.

AVC also introduced and promoted the need to identify specific market segments and to utilize appropriate marketing campaigns. Applying new marketing strategies, several firms studied and tested the best packaging for mangos, specifically the packing size most preferred by various consumer segments. This initiative was most successful with Ispahani and Daakbox. Daakbox conducted a consumer analysis of its sales records, which indicated that most purchases were made by customers in

the 26-34 age bracket, with 5-kg packaging generating the most sales, and with Langra as the most popular variety. This helped them focus on their most profitable market segments, while also better serving customer needs. Daakbox and Ispahani also set up new promotional sales points to test new market segments, including high-end consumers and corporate offices. Ispahani sold 30 MT (under the brand 'Garden fresh') through six sales points set up in retail outlets in urban centers and launched an online marketplace through a partnership with Chaldal.com, a grocery delivery service. Ispahani reported a 70 percent growth in repeat customers for mango as a result of these new marketing strategies. Daakbox sold 60MT (under the brand 'Daakbox Fresh') of mangoes to its customers through their sales points in corporate office buildings, including the Bengal Foundation. Daakbox also launched an online platform to host a customer competition to incentivize the purchase of mangos that reached 16,000 social media users. The introduction of digital marketing's importance in sales strategies was a significant tool introduced through AVC's interventions.

## **TOMATO**

Domestic consumption and demand for fresh and industrial tomatoes is rising, driving increases in the production and import of tomato varieties. Demand for processed tomato items is also increasing with rises in fast food consumption. As with the other value chains, urban consumers are demanding safe commodities grown with reduced agrichemicals. Many tomato farmers in the FTF target zone use dyke cultivation practices that use less pesticides. This presented an opportunity for AVC to support Southern Delta farmers in becoming more aware of the market opportunity for a new, safe premium market channel. Prior to AVC inception, market analysis found that producers were not investing in new inputs or practices to meet this emerging demand; at the retailer level, marketing and branding strategies did not exist to differentiate dyke tomatoes as a safe option. Based on these constraints, AVC worked with agri-firms and business associations to promote improved seed varieties, cultivation techniques, and integrated pest management solutions. The project also partnered with DCCI and academia to support pre-season dialogues regarding pest management and disease preparedness. Additionally, AVC supported the development of weather-based index insurance and co-invested in the pilot of this program among 2,000 tomato farmers in the most disaster-prone areas of the Southern Delta. Overall, the project trained a total of 16,933 tomato farmers in improved production practices and technologies during the project period.

AVC supported the following broad strategies:

- Popularize the use of bio-pesticides in order to improve sector resilience to pest and disease and improve consumer safety;
- Support the production of tomatoes on dykes between fish ponds to reduce chemical use and increase produce safety;
- Support grocery stores in creating fresh food brand lines that integrate tomatoes, bring awareness to food standard regulations, and improve the quality and traceability of the tomato supply chain;
- Link tomato growers in the south with weather-indexed crop insurance providers in order to reduce the vulnerability of tomato crops to severe weather.

## PEST MANAGEMENT AND SAFE APPLICATION OF INPUTS

Pest and disease threats are significant in the tomato sector, especially from *tuta absoluta*. AVC again engaged DCCI as a source of advocacy and to provide an industry platform to discuss pre-season coordination around threat mitigation. DCCI organized a pre-season dialogue to discuss various business barriers relevant to the production of tomatoes among 50 leading sector stakeholders. AVC also worked with several levels of academia to create awareness about and to find solutions to *tuta absoluta* in the tomato sector. It also organized national-level workshops and regional dialogues to develop medium- and long-term strategies to mitigate the threat of the pest, involving research institutions, extension services, and the private sector. As a result, the government incorporated recommended control measures into their research activities, and the DAE conducted trials in the Southern Delta that hung pheromone traps to track *tuta absoluta* and provided information to farmers. Through these sector-wide dialogue sessions, AVC fostered sustainable partnership between academia and the public and private sectors to track potential pest and disease threats and to promote solutions.

AVC's work with private sector partners to commercialize IPM products had a significant impact on the tomato sector's resilience against threats. The project fostered healthy competition amongst several firms to increase the market share of IPM products, which are particularly beneficial in the tomato sectors. AVC supported firms in improving distribution strategies for IPM products, serving the dual purpose of reducing farmers' susceptibility to pest and disease threats and reducing input costs associated with pesticide application. It also worked with NAAFCO to introduce and commercialize an IPM product known as "Golden Paper," a yellow, sticky paper used to attract and safely capture harmful pests and insects. NAAFCO introduced the product through its strengthened distribution channel of trained retailers and dealers, which they increased by 40 percent between the 2015-16 to 2017-18 seasons with support from AVC. The company also popularized the product using improved farmer-targeted marketing strategies. Integrated into this marketing strategy were embedded trainings for farmers to build capacity and disseminate knowledge in the use of Golden Paper. NAAFCO conducted over 100 demonstrations on farmers' fields to promote this tool and following initial results, it established 70 promotional plots and worked with clusters of tomato farmers to hold farmer learning sessions on Golden Paper and other NAAFCO products, training 1,492 farmers in product use for improved tomato production. Furthermore, through its dedicated call centers, it provided product and application support to its customers, i.e. farmers, regarding use of inputs and proper practices in tomato production. The call centers were utilized to gather and analyze customer data and feedback, building a customer database which provides evidence to inform decisions and support consumer-targeted initiatives.

Similarly, Ispahani set up promotional plots, which were supervised by trained regional agricultural managers, to build awareness and capacity of farmers in the use of IPM products and high-quality seeds. It increased the reach of these trainings by coupling them with digital learning sessions, using promotional videos and social media to create mass awareness of the benefits of IPM products. Through these efforts, Ispahani reached 11,000 farmers. Finally, AVC partnered with GME Agro to popularize newly-developed IPM products, including Trichoderma, a fungus that can protect tomatoes from pests and disease. With the support of AVC, GME Agro adopted improved strategies to market their products directly to rural farmers. The company organized regional awareness meetings, mass marketing campaigns, field tests, promotional plots on pheromone traps, and promotional fairs. Through these activities GME trained 1,511 farmers and engaged 3,112 additional stakeholders. GME initially ran promotional programs through contracted consultants, but based on positive initial results, they



absorbed IPM market promoters into their formal payroll to scale up their marketing efforts and provide ongoing after sales extension services to their IPM customers, thus ensuring access to information on proper usage of lures and Trichoderma.

## TOMATO INCLUDED IN SAFE FOOD BRANDS

As discussed in the Summer Vegetables section on page 29, AVC worked with grocery chain shops and retailers that launched fresh food brand lines in Year 5 – Shwapno, Ispahani, NAAFCO – to integrate tomatoes into promoted safe crop lines. The price premium gained by these fresh produce brands will create a demand pull in the tomato sector to improve adherence to safety standards, quality, and traceability. AVC supported Shwapno in contracting 50 farmers in Jhenaidah who were trained in safe production practices to supply Shwapno with its Shuddho brand tomatoes. The addition of tomatoes to Shuddho's brand added to the safe foods available to the consumer.

Daakbox also engaged 40 contracted farmers to provide high-quality, safe tomatoes to their corporate clients. As with Shwapno, these farmers were trained in safe production practices, including dyke production and the use of IPM. AVC promoted dyke production through farmer trainings throughout project implementation. In Years 4 and 5, AVC worked to connect dyke farmers in the Southern Delta with retail outlets to supply to safe food brands through contract farming. These market linkages helped ensure the sustainability of efforts to popularize dyke farming, as well as IPM tools.



A Shwapno representative teaches a contract farmer how to safely and effectively utilize agricultural inputs.

## FINANCIAL SERVICES

Through AVC backing, in 2017 Green Delta Insurance Company (GDIC) launched Bangladesh's first weather-based crop insurance product, targeted at Southern Delta tomato farmers. Renaissance Enterprise, a local NGO working with farmers, helped GDIC pilot the product with 200 farmers. In the first year, unseasonal rainfall triggered an insurance claim under the policy which was settled through a negotiation chaired by the Station Minister of Finance, GDIC officials, and local administration. Based on initial success, the product was rolled out to 1,000 tomato farmers holding 200 acres of land. The farmers were insured with BDT 4 million. In the second year, GDIC modified some of its insurance products to adjust to updated weather data which hinted at future excessive rainfall. Therefore, GDIC's second phase's policy differs from the first regarding the technical details of covered risks which are, such as greater payout triggers (millimeters of rain) under excessive rainfall events. AVC has advised GDIC, government officials, and USAID, that for this policy to be effective on a larger scale, it will require government involvement and subsidy. This is a key area for future work to establish a sustainable model of agricultural insurance that covers a significant portion of Southern Delta farmers, all of whom are susceptible to inclement weather.

## POTATO

Most potato farmers in the Southern Delta produce table varieties; however, the domestic market for table potatoes is saturated, and production already outpaces demand. As such, AVC focused its efforts on promoting industrial varieties, suitable for processing for potato chips, flakes, french fries, and other products. At project inception, less than 5 percent of Southern Delta farmers grew industrial varieties. There is significant opportunity within the processed sector; numerous large firms have begun investing in the sector, and consumer demand is consistently rising. However, a shift in production to industrial varieties poses a steep challenge for farmers, as industrial varieties require different seeds, production and post-harvest methods, and transportation and storage practices. Due to these challenges, Southern farmers have been unable to provide a stable supply of industrial potatoes to processors, preventing sustainable long-term linkages between farmers and processors. AVC worked at each level of the potato value chain, supporting the introduction of new industrial potato varieties with high dry-matter content, a feature required for processing many potato-based products, as its major contribution. Input firms were engaged to commercialize and market industrial potato varieties. Processors were also supported to establish quality control systems, and to invest in structured supply chain models and contract farming mechanisms to feed into this system. To be able to purchase locally grown potatoes appropriate for processing has been a stimulus to the snack food industry. The South has opened up as a new potato growing area, in part because of AVC involvement and support.

## SUPPLY CHAIN MANAGEMENT

To guide AVC investment in the potato sector, AVC completed an initial market study of the potential of potato chips in Bangladesh. The study assessed current trends in the processed potato industry, end market potato chip brand preferences, industry perception, growth opportunities, etc. The results were then shared with processing firms to promote investment in the sector. It was important that as AVC facilitated investment in the processed potato sector, that the project also ensured investor confidence in sourcing industrial potatoes from the South. To do this, AVC worked with firms to manage their supply chain to ensure stable supplies of potatoes from Southern Delta farmers.

Beginning in Year 3, AVC facilitated a partnership between two agri-firms, Bombay Sweets, a large potato flake processing company, and Eastern Trade Corporation (ETC). ETC approached AVC with interest in growing their business by becoming a supply chain management firm for agri-processing houses. AVC then supported ETC in setting up a contract farming mechanism to establish a stable supply of industrial potatoes for Bombay Sweets, partnering it with Shariatpur Development Society (SDS), a farmers' association in the Southern Delta that had previously partnered with AVC. In the contract farming mechanism, ETC provided contracted farmers with high-quality seeds, pre-season training in cultivation practices, and ongoing technical assistance and supervision, to ensure that farmers had the tools needed to meet quality standards established by ETC. The company also outlined an end of season buy-back contract if the standards were met. SDS provided member farmers with seasonal loans to buy improved inputs and to invest in modern technologies. As a result of the contract farming mechanism, ETC consistently supplied 2,000MT of industrial potatoes to Bombay Sweets in the 2016-17 and 2017-18 agricultural seasons.

The success of their initial investment in sourcing from the Southern Delta led Bombay Sweets to express interest in setting up a manufacturing unit that would source directly from the Southern Delta production hub. AVC supported Bombay Sweets by providing expert international consultants to set up the facility, install equipment, and train Bombay Sweets staff in operating the new manufacturing system.

For this project, Bombay Sweets leveraged BDT 169 million (USD 2.1 million) of their own money to establish the new processing center. This investment demonstrates Bombay Sweet's commitment to establishing a strong potato sector in the South. AVC's co-investment in Bombay Sweet's growth ensured that the company established a supply chain that was inclusive of smallholder farmers from the zone of influence, maximizing benefits to the South. Bombay Sweets has expressed their interest in establishing a potato procurement center in Bhola to source and store Southern potatoes for processing, indicating that efforts to facilitate investment in a Southern-based potato processing industry are sustainable beyond the life of the activity.

Outside of their partnership with Bombay Sweets, ETC began exploring an alternative market to supply quality potatoes to domestic and foreign french fry companies. In Year 4, ETC exported two containers of potatoes to Malaysian french fry companies as a test shipment. Domestically, AVC co-invested in market testing for a french fry product line reaching 50,000 customers. Based on initial positive feedback, ETC invested BDT 8 million (approximately \$100,000) in a french fry processing line and launched a new french fry brand, "Funtoosh." To ensure the new production line provided opportunities to Southern Delta farmers, AVC co-invested in embedded training. The training was run by ETC regional marketing staff to train farmers in the use of appropriate inputs and cultivation techniques to meet the standards required for processing in the new facility. ETC provided hands-on technical supervision and monitoring of input application and cultivation practices to the farmers throughout the season.

Overall, due to AVC support, farmers were able to build a sustainable supply chain network for processed potatoes in the Southern Delta. Systemically, AVC's support generated significant positive trends in the potato sector. ETC emerged as an experienced supply chain management firm, able to credibly offer steady supplies of Southern Delta-produced industrial potatoes to interested processors. Both ETC and Bombay Sweets made significant capital investments in the processed potato sector in the South, demonstrating AVC's impact on investment confidence in the sector. Finally, through AVC support, three new industrial varieties were introduced in the South, and lead firms trained 7,550 Southern Delta farmers in appropriate cultivation techniques.

## FLOWER

The flower market system is vastly different from other AVC market systems, in that the flower sector is a nascent industry in Bangladesh, with a short history of production and consumption. However, despite the newness of the sector, the market for cut flower has enormous untapped potential and is rapidly growing as the urban middle class increasingly uses flowers as a key component of holidays and celebrations. Despite the opportunities, knowledge of improved cultivation practices among producers is weak and limited to several specific geographic clusters. Planting material is also not available in Bangladesh. The capital requirements for several important varieties of flowers, particularly gerbera



AVC helps Hafiza, a nursery owner from the Southern Delta region, expand her flower business



and roses that require perineal planting material or shade protection, is higher than for most food crops. Neither Dhaka nor Godkhali, Jashore – the production hub – has a permanent flower market, and the current wholesale locations offer substandard facilities, making marketing efforts difficult. Additionally, as this is a new sector, there are no floriculture policies from the Government for the operation of the floriculture market.

To support the growth of the flower sector, AVC first focused on promoting the sector to domestic consumers. Secondly, the project focused on bringing in new technology, particularly in terms of inputs, to build the domestic capacity for tissue culture, greenhouses, and seed commercialization. Finally, it worked closely with USAID's Flower Infrastructure Project to establish the legal framework for a permanent flower market in Jashore.

AVC has been able to generate significant buzz around the flower sector, co-investing in large flower festivals at both the national and regional level. As a result of AVC support, the flower sector is emerging as a formalized industry in Bangladesh, and new investors, both domestic and international, have expressed interest. The size of the local flower market reached \$150 million in 2018, and flower exports from Bangladesh are growing by 10 percent per year.

## DOMESTIC MARKETING AND PROMOTING THE FLOWER SECTOR

In 2016, AVC supported a unique joint initiative between the Bangladesh Flower Society and Robi Axiata, a mobile network provider. As part of a Valentine's Day promotion, Robi purchased 40,000 cut flowers from Jashore's flower farmers and distributed them to customers with a promotional discount coupon for mobile phone connections. Each flower also came with a small card containing information about the farmers that grew it. To further market Robi's promotion, the telecom company created a promotional video documenting the initiative highlighting the beauty of Bangladesh's flower sector. The video, which can be viewed [here](#), was widely shared on social media. This effort launched AVC's strategy in creating domestic interest in the flower sector, and to increase consumer demand for flowers, especially for holidays and social events. Several recipients of the flower expressed their surprise that beautiful cut flowers could be found locally in Bangladesh and did not have to be imported from nearby, more developed flower industries in India and Thailand. As part of this event, Robi and BFS continued to find ways to partner. For example, Robi offered phone connections to 150 lead flower farmers and traders to provide improved access to market information through SMS.

AVC's continued promotion of the domestic flower industry, especially to urban consumers, resulted in AVC co-hosting the first ever national Flower Fest in Dhaka to promote the domestic flower industry and to unite actors across the value chain. In 2016, the event was the first of its kind, and attracted over 10,000 visitors with flower booths, art installations, and a fashion show featuring the use of flowers in key holidays. AVC sponsored a second Flower Fest in 2017, which focused on endorsing and recognizing the efforts of women flower farmers and traders,



Promoting local flower growers at the Flower Fest in Dhaka, Bangladesh (2016)

bringing in 50,000 visitors, a significant increase from the year prior. AVC brought 12 female flower farmers/entrepreneurs from Jashore to participate in Flower Fest 2017, and a central pavilion was set up for photos, purchases, and interviews with the businesswomen. The final festival, hosted in 2018, marked Bangladesh's first ever International Flower Festival. The three-day exhibition, hosted by DCCI, gathered flower growers, retailers, dealers, and researchers. Seventy exhibits displayed the most beautiful, colorful flowers, as well as farm inputs, modern agricultural machinery and innovative farming technologies. The International Flower Fest aimed to increase domestic and regional demand for cut flowers, attract private sector investment, and provide networking opportunities for stakeholders. An investment seminar was also held with festival participants highlighting specific investment needs in cold chain, greenhouse technology, and high-quality inputs. Finally, the event included a large parade, attracting additional visitors to the event. Approximately 10,000 visitors per day attended this three-day event.

Based on the excitement created by the national Flower Fest, AVC was encouraged to see regional flower stakeholders organize similar festivals on a smaller scale around holidays and celebrations. The Barishal Flower Merchants Association organized a regional festival in Barishal, attracting 15,000 visitors. In two days, the participant flower traders sold flowers worth over BDT 200,000 (approximately \$2,500) from 14 booths. Female flower entrepreneurs in Jashore and Kaliganj organized mini mobile flower festivals on the first day of Spring and Valentine's Day as well. The women prepared floral arrangements and accessories, to be sold at flower carts and mobile stalls around the region. The entrepreneurs sold over 4,000 flower arrangements in just two days.

## INVESTMENT PROMOTION EFFORTS

In addition to stimulating consumer demand, AVC also saw a clear need to incentivize investment in the flower sector, as there were significant deficiencies in infrastructure (markets, transportation) and technology (tissue culture, greenhouses). To launch AVC-supported investment promotion efforts, AVC commissioned a study in 2016, *Developing a Marketing Strategy for Flower Sector in Bangladesh*, to assess growth opportunities for the flower sector through improved marketing. Results of the study guided marketing efforts, as well as targeting investment promotion efforts.

AVC also supported DCCI in organizing a seminar for flower market actors in order to promote investment opportunities. AVC engaged a Flower Industry expert, Dr. Heidi Wernett, to facilitate this seminar. Currently, agricultural investors and entrepreneurs are unaware of the possibilities within the flower sector, and due to this information gap, these entrepreneurs are missing out on lucrative business opportunities. Dr. Wernett presented global trends, identified investment opportunities, and projected return on invest in specific areas, such as seedling and cut flower, to encourage additional firms and investors to enter the sector and aid Bangladesh in achieving international competitiveness. The seminar was covered extensively in local media, and data was publicized widely to maximize the information reach.

## TISSUE CULTURE AND SEED COMMERCIALIZATION

In 2015, AVC began working with Sher-e-Bangla Agricultural University (SAU) to introduce a new cut flower, *Eustoma*, for commercial production in the Southern Delta. AVC supported SAU in research and development efforts, as well as subsequent training of farmers in cultivation techniques through workshops, technical trainings, field demonstrations, and information dissemination in key districts. SAU established 20 demonstration plots and provided 5,000 seedlings to 100 farmers to initiate production.

In 2016, AVC engaged AgrobacK, which initially begun as a research organization, but expressed interest in pursuing a new business strategy in becoming a commercial tissue culture lab focused on Eustoma and Gerbera. The project saw that SAU was limited in their ability to scale up Eustoma commercialization, given that they are a University. Therefore, AVC partnered with AgrobacK to develop a business strategy around commercializing Eustoma and other new seedling varieties. AVC also linked AgrobacK with nine local nursery owners who became the sales agents for Gerbera and Eustoma plantlets produced in AgrobacK's tissue culture laboratory. AgrobacK provided training to these sales agents in cultivation and plant nurturing techniques so that they were able to provide customers with after sales services. AVC also supported AgrobacK in implementing improved marketing tactics, setting up 17 Gerbera and 11 Eustoma promotional plots to demonstrate the results of the new plantlets and providing trial packs to engage new customers and commercialize the products. The organization proactively engaged potential customers to build its brand, which resulted in increased sales as demand among Southern Delta flower farmers for high quality flower plantlets increased. First year orders for AgrobacK's Eustoma (86,000 pcs), Chrysanthemum (42,000 pcs) and Gerbera (70,000 pcs) plantlets demonstrated a positive change in the market, as these were the first locally tissue cultured flower plantlets to be cultivated by these farmers. The establishment of a domestic seedling sector is important to reduce input costs in the cut flower sector with the price of locally grown Eustoma and Gerbera plantlets being 62 percent cheaper than imported plantlets of the same variety.

AVC also worked with Celli3 and BFS to provide farmer training in the use of high-quality inputs. Bangladesh Flower Society (BFS) trained over 2,622 farmers on improved flower cultivation technology, production, and post-harvest practices. AVC observed that 50 percent of the newly trained farmers already begun flower cultivation using improved techniques on their lands. Cell i3 provided training to 82 smallholder flower farmers on flower cultivation techniques, post-harvest management, business skills, marketing, establishing market linkages, and access to finance. Cell i3 also organized domestic exposure visits for farmers focused on seedling planting techniques. Each participating farmer group was given 10 seedlings to test. Additionally, Celli3 piloted the commercial production of the Marinda Rose variety by planting three promotional trial plots. After initial success, 6,000 seedlings were distributed among the other farmers in the clusters.

In 2017, AVC launched a partnership with Metal PVT to commercialize new seed varieties introduced by the company. This was a significant partnership, as Metal was a large company with the capital to invest heavily in the flower sector and make a significant shift in the domestic industry. As in other value chains, AVC worked with Metal to realize the value in leveraging training and knowledge share as a marketing strategy to commercialize their new products. AVC co-invested in trainings for 81 nursery owners, 96 dealer and retailers, and 120 selected lead farmers on appropriate cultivation techniques for the new varieties. In order to obtain feedback on the new varieties, Metal hosted 5 focus groups with 108 customers, and used the feedback to guide adaptations to their product line.

Based on Metal's expressed interest in establishing international networks for flower inputs, AVC engaged Dr. Heidi Wernett to link Metal with Takii Seed Company, a renowned Japanese seed company. Takii Seed visited Metal's facilities and awarded them sole distributor rights. Takii Seed provided 120 varieties of winter flower seeds to Metal to conduct a trial and determine appropriate varieties for the Bangladeshi climate and model. Metal selected 35 of the 120 varieties for domestic sales and marketing. To further grow their investment in the sector, Dr. Wernett also connected Metal with the Chinese flower market, organizing an exposure visit to the Kunming flower market. Based off these visits, Dr.

Wernett co-designed a two-year investment plan for seedling commercialization and connected the company with resources for designing a greenhouse facility.

With the support of AVC and Dr. Wernett, Metal has emerged as an important investor, driving growth and professionalization in the cut flower sector. Dr. Wernett linked Metal with a local floriculture expert who is continuing to provide Metal with support in accordance with their two-year investment plan. The local consultant assisted Metal in moving forward with investing in a low-cost greenhouse, trays, and refrigeration, as well as trained Metal staff in greenhouse seedling cultivation. With the support of AVC, Metal has developed an entirely new business wing, Metal Biotech, fully dedicated to producing commercial flower seedlings.

AVC's contribution to the emergence of a local tissue culture sector is very significant, as this will reduce input costs, while greatly improving the quality of cut flower produced within Bangladesh. Input investment is an important component of elevating the sector to compete at an international level.

## **MARKET INFRASTRUCTURE IN JESSORE**

To revamp and streamline the supply chain of the floriculture market system in the Southern Delta, AVC is working with various flower market stakeholders, including the Local Government Engineering Department (LGED), BFS, DAE and USAID Infrastructure Project, to establish the Flower Market Structure in Godkhali, Jashore.

In 2016, AVC organized and led an exposure visit to the Netherlands for relevant Government of Bangladesh (GOB) officials and private sector market actors to observe the Flower Auction House facilities and study the logistics and operations aspects of the Dutch floriculture industry. After the visit, the Ministry of Agriculture allocated 1 acre of land for a permanent flower market in Bangladesh. As a next step, AVC worked with flower stakeholders in the region to develop a set of business and management plans for the market center and designed business pathways for when the market is constructed. The construction of the market is now in progress. AVC recruited a local consultant, who oversaw the policy advocacy and lobbying for the market at the ministry level and developed a business plan and operational manual. The consultant produced a policy to govern the flower industry and advise the USAID team overseeing the establishment of the market in required legal frameworks. Acting as the key hub in the Southern Delta, the new flower market will enable more formalized trade among local partners and allow larger traders from Dhaka and other regions to access the local market, thereby increasing the volume of transactions.

## **NATURAL FIBER**

Bangladesh is a leading exporter of jute and jute products in the world; however, in contrast, the domestic market for jute is very small. The subsector engages over five million farmers growing jute on 1.66 million acres of land. This particular sector has evolved to become political, with the government having direct ownership interests in approximately 25 percent jute processing mills in the country. Rooted norms in the sector make it challenging to introduce new practices or technologies.

Coconut coir is an environmentally-friendly natural fiber that is strong, durable, and less expensive than jute. In Bangladesh, the coir industry is valued at USD 9.82 million and employs more than 25,500 workers, the majority of which are women. Forty-two percent of coconut is grown in the Southern region where females have passed-down the art of making rope and coir-related products for

generations. Coir pith is useful for horticultural crops, including floriculture, as it helps maintain moisture and recondition soil. There are some systemic constraints in the sector including inadequate access to information on modern coir-based end products, lack of a skilled workforce, technology, and equipment, and an inefficient raw material procurement and management system. The inefficient system creates a shortage of raw materials resulting in idle capacity within production plants. However, the demand for natural fibers and diversified coir products are increasing internationally. Bangladesh has an ample supply of raw materials, i.e. coconuts, to revitalize the national market and become an international player. For Bangladeshi entrepreneurs, maintaining or increasing market share in the national market is vital for growth, as some companies have already made entries into the competitive global market.

AVC's work primarily focused on improving access to high quality inputs by strengthening distribution networks, supporting improved processing equipment and techniques, and supporting firms seeking export opportunities to develop diversified products. AVC trained 35,939 jute and coir farmers in improved cultivation techniques, supported capital investment in a coir pith block machine, and led market exploration efforts to identify potential diversified products in jute and alternative uses for coir.

### HIGH QUALITY INPUTS

AVC partnered with Konica Seed Company (KSC), a local seed company that demonstrated significant commitment to multiplying and commercializing high-yield jute seeds, thereby competing with seeds imported from India. It helped the firm establish a methodology for multiplying local, improved jute seeds through a contract farming arrangement. With support from AVC, KSC re-branded and packaged the new jute seeds to more effectively target farmer customers and advised KSC in establishing a distribution network of dealers and retailers in the Southern Delta. The project also facilitated the establishment of 20 promotional plots in six districts in the Southern Delta to demonstrate the improved performance of KSC jute seed. Five results demonstration meetings with 252 lead farmers were also conducted. AVC introduced Konika Seed Company to standard mass-market promotional tools like promotional discounts, contests, trial packs, testimonial advertising, referral schemes, and loyal customer clubs to market seeds to demonstrate the value of the seeds to a wider set of smallholder farmers than achievable with traditional demo plot methods.

In 2018, as part of a wider effort to expand commercial jute seed production, AVC co-invested with KSC in establishing a contract farming scheme in the Southern Delta. AVC partnered KSC with the Bangladesh Jute Research Institute to access required breeder seeds to replicate 21 MT of seeds collected from 175 contracted growers. KSC selected and trained 100 retailers to distribute these quality jute seeds. The retailers distributed the seeds to 25,000 farmers, providing direct trainings in their use and application to 131 farmer groups, consisting of 3,200 farmers. KSC developed a database to track performance of jute farmers trained to understand customer outcomes and to guide future product development. By integrating embedded training within their marketing and distribution efforts, KSC is developing a sustainable model to improve inputs and



AVC helped jute farmers from Khulna district improve jute cultivation practices.



cultivation practices of Bangladesh's jute farmers, thus creating an incentive to re-invest in growth strategies around improved quality.

## **PROCESSING FOR AGRICULTURAL AND PAPER PRODUCT INPUTS**

Supported by AVC, DCCI organized a Training of Trainers (TOT) on Designing and Manufacturing of Diversified High-End Jute Products. The TOT aided the participants in designing and facilitating a training program for DCCI Business Institute (DBI) based on modern techniques and methods of producing jute diversified products. DCCI has also conducted a study to explore the investment opportunities within the jute sector. The report generated from the study was presented through workshops to garner interest from potential investors. Additionally, AVC supported DCCI in organizing a seminar on Eco-Friendly Pulp and Paper Processing from jute where the avenues for producing eco-friendly pulp and viscose from jute were explored. DCCI is committed to diversifying the jute products produced in Bangladesh into higher-value products for both domestic and export marketing. The TOT and investment seminars are aimed at reinvigorating the sector and re-engaging the private sector to balance government influence.

AVC also partnered with Natural Fiber to diversify their coir pith products. Coir pith is a coir bio product that has a good commercial demand for floriculture and horticulture uses. With AVC's support, the organization procured a coir pith block machine and improved their marketing strategies. The project also aimed to improve Natural Fiber's organizational capacity to better manage its new product line. The installation of the coir pith block machine has created 35 full time jobs at the factory level, and 35 households are receiving a direct benefit from it. This initiative is the first of its kind in Bangladesh and will create a new business channel in the coir value chain.

## **EXPORT-ORIENTED MARKETING**

AVC supported Bangladesh Jute Diversified Manufacturers and Exporters Association (BJDMEA) in two areas – product development and marketing. AVC also facilitated networking meetings and engagement with associated entrepreneurs to support their product development, marketing, and promotional activities. This initiative helped product producers improve quality and design with consumers and market demand in mind. As a result of this support, one firm was able to market their jute pet toys for export.

## INTERCONNECTED SYSTEMS

### TRANSPORTATION

Transportation is a significant systemic weakness in the Southern Delta. AVC's private sector partners have consistently identified the low quality and high cost of roads, ports, and other transportation infrastructure in the South, as compared to the North, as a major constraint to profitability and expansion. At present, a lack of economies of scale and difficult transportation are disincentives for national and regional buyers to source from the South. Northern producers are being engaged in contract farming more readily, and the South is losing competitiveness. While some of the inefficiencies are due to infrastructure, and therefore outside the purview of AVC, some of the prevailing disadvantages are due to poor quality of transports, as well as poor management of services (a high level of chaotic/ad hoc service delivery). The project's efforts to improve the quality and management of transportation services are described below.

**Transportation Research and Resulting Study.** In Year 3, AVC commissioned an extensive study to improve the understanding of transport-related issues, focusing on market access for Southern agricultural commodities. After completion of the study, AVC organized a meeting with transport service providers and other relevant stakeholders to disseminate the study findings; a taskforce committee was consequently formulated to lead collective action to address challenges and constraints. This committee has decided to launch Android-based apps, SMS alerts, vehicle tracking systems, a web panel and a helpline to cater towards the demand for transport service uses. To enhance the efficiency of the system as a whole, the newly formed steering committee will also conduct a study to develop a seasonal agro commodity map. Sundarban courier services, Pran, and the truck owners association will take part in the initiative by providing vehicles from their transport pools operate under this shared-vehicle scheme. Agora and Bombay Sweets have volunteered to become the pioneer user.

### AGRICULTURAL MECHANIZATION AND TECHNOLOGY COMMERCIALIZATION

Low awareness of modern farming practices, insufficient capital, and limited access to financing prohibit Southern Delta smallholders from purchasing agro-machinery, significantly impacting the quality and quantity of their yields in comparison with large-scale farmers. To increase mechanization and access to new technologies in the Southern Delta, AVC pursued a number of initiatives, as detailed below.

**Local Service Provider Model.** AVC partnered with leading mechanization companies in Bangladesh, including Metal PVT, Alim Industries, and Janata Engineering, whom were interested in increasing their market penetration in the Southern Delta. AVC's technical staff helped each company identify a



Rafiqul Islam, an LSP trained by Metal PVT, Alim Industries, and Janata Engineering, invests in agricultural machinery and renders services to smallholder farmers.

model that would allow them to generate business in the Southern Delta despite farmers' financial limitations. Given that farmers did not have the capital to invest in agro-machinery, each firm developed a Local Service Provider model. Local Service Providers are mostly medium or large-scale farmers who own agriculture machinery. Serving as LSPs allowed the farmers to fully utilize their machines by providing services to farmers who could not afford their own machinery. Metal, Alim Industries, and Janata provided capacity building to LSPs through videos and hands-on demonstrations in the use of the machinery, taught marketing and customer service techniques, and facilitated linkages with community farmers to aid LSPs in identifying their first groups of customers. Together, the three companies trained 544 LSPs in the Southern Delta, as well as 400 local mechanics in how to repair the machines and by providing spare parts. This model has not only helped the companies to reach a wider rural market through their LSP network but has also reduced overhead costs associated with sending headquarters-based staff to repair machinery. Alim Industries, which was a completely Sylhet-based company, has now extended their distribution network into the Southern Delta with the support of the AVC project.

This initiative has given AVC's partner companies an opportunity to introduce their products into a rural market previously dominated by Chinese machineries. LSPs not only provide service for hire, but also act as a referral point for the farmers while making decisions to purchase agro-machineries. To keep pace with the increasing demand for agro-machineries in more remote areas, the LSPs act as sales agents demonstrating and displaying the machinery in areas unserved by company showrooms. Alim and Metal have not only trained LSPs and mechanics in the Southern Delta FTF zone but have also organized rigorous training and learning sessions for farmers as part of an embedded training marketing strategy. They trained 3,410 farmers in the use of machineries and how mechanization can increase yield, reduce costs, and make production more efficient. Promotion of the companies' products, such as the power thresher, power tiller, power reaper, axial flow pump, bed planter, power tiller operated seed planter, etc., increased their sales volume substantially, with sales increasing by 53 percent and 34 percent, respectively, in the 2017-18 season versus the 2016-17 agricultural season. The two companies sold over 530 machines in the 2017-18 year. The most popular machines were Alim's power thresher, as farmers learned about reductions in seed breakage and physical labor, and Metal's power tiller operated seed planter, which reduces land preparation costs by 50 percent. Based on the program's success, Alim invested BDT 24 million, (approximately \$290,000) in Fall 2018 to expand its business. This amount included an investment of BDT 13 million (approximately \$155,000) in additional machinery.

Specific Technologies supported by AVC:

- **Mango Storage Technology:** DCCI is supporting investment opportunities in commercial mango ripening chamber technology by engaging investors and delegates in the technical and commercial feasibility of the technology within the Bangladeshi context. In 2016, AVC organized an exposure visit for 11 interested mango entrepreneurs and traders from the Southern Delta to observe mango storing technology in Rajshahi at Akafuji Agro-technologies. The objective of the visit was to observe and identify the possibilities of replicating and commercializing this technology in the Southern Delta. The technology reduces the rate of decomposition to 3-8 percent from the usual 75-80 percent during one month of storage, therefore promising an additional gross margin of 100 percent.
- **Drying Beads:** AVC and Centor Group in Thailand have launched a campaign that includes training, learning, and promotional events to commercialize the drying beads technology, which consists of



modified ceramic materials (aluminum silicates or “zeolites”) that specifically absorb and hold water molecules effectively in their microscopic pores.

## ACCESS TO FINANCE

AVC worked with a range of financial service providers such as banks, insurance companies, and private firms providing value chain finance to better support the design, pilot and scale of products and models targeted to rural and other agricultural clients.

**Financial Flows Study (2016).** This study identified the relationships between different types of actors within the agricultural ecosystem and also gained an understanding about their cash-flow patterns and their savings, expenditure and investment behavior. All the information was derived from a questionnaire survey (with farmers as the respondents) and in-depth interviews with market actors associated with the selected value chains and geographic boundaries. This study helped inform and ground AVC’s pilot interventions and provided background for subsequent interventions around access to finance. This study was conducted in partnership with Consiglieri Private Limited.

**Bank Asia and NAAFCO Linkage.** AVC built on and further facilitated the creation of linkages between Bank Asia and NAAFCO. Bank Asia attended NAAFCO’s dealer and retailer sessions and pitched the idea of the A-card, a specialty tool for input financing. In addition, Bank Asia engaged Daakbox as an agent and has successfully inaugurated 3 agent points in Chuadanga (Sorojgang Bazar), Jhinaidah (Holidhani Bazar) and Meherpur (Bamonpara Bazar).

**Bank Asia.** Bank Asia worked with AVC to strengthen its own distribution channels and expanded its outreach to rural, underserved populations for promotion of more sustainable financial inclusion. Bank Asia increased its distribution network in the Southern Delta by establishing four agent points in the Barishal and Faridpur Regions. Each of these agent points is an individual entrepreneur who is socially well-accepted in the local community and who trains other agents further expanding Bank Asia rural reach. However, banking is a new activity for these agents and for most of their customers. Bank Asia designed capacity building initiatives to strengthen agent understanding of the financial services to be offered to potential customers. Bank Asia trained banking agents on agent operations and rural financing and also developed and distributed “Agent Handbooks.” Through these new outlets, Bank Asia was able to increase the number of bank accounts opened and operating in rural areas. Bank Asia not only worked on improving their distribution network, but they developed new financial products which are compatible with the demands of the agriculture sector. The renewed involvement of Bank Asia in the agricultural financial services sector has created a paradigm shift from a “push strategy” to a “pull strategy.” Bank Asia realized that for the growth of sustainable financial services businesses in agriculture, it has to offer custom financial products and services tailored to agricultural firms needs rather than generic financial products. With facilitation from AVC, Bank Asia conducted a feasibility study on new agro-technologies in the Southern Delta and identified six technologies for focus: floating agriculture, vertical/layer farming, sorghum technologies, hydroponics, aquaponics and roof top gardening (for semi-urban area) which it would promote for safe food production through maximum utilization of resources.

AVC partnered with the GDIC to help establish and expand Weather Index insurance (WII) throughout the southern delta of Bangladesh. It linked GDIC with tomato, cucumber and bitter melon farmers who invested in the insurance policy. Unfortunately, these farmers were struck by bad weather during the

insured period and eventually GDIC paid claims amounting to BDT 1,173,000. The weather triggered payment helped improve trust in GDIC and its insurance product and also received national press attention which helped GDIC expand its brand nationally. During the expansion of its WII product, GDIC generated revenue of BDT 2.5 million in its agriculture insurance portfolio, a growth rate of 3.4 percent compared to previous FY.

## EDUCATIONAL/RESEARCH INSTITUTES

In order to improve the inclusiveness of the market system and to increase sustainability, AVC linked private sector firms with research institutes. This relationship was mutually beneficial. The agricultural private sector firms were able to receive cutting edge technologies and inputs from the research institutions and the research institutions were able to better understand the national agricultural needs. Improving this feedback loop between these two sectors was crucial to AVC's success.

**IPM Exposure Visit to India Opens New Avenues:** In August 2016, AVC sponsored and led a team of five private sector representatives and technical experts to participate in an IPM exposure visit to India aiming to strengthening the capacity of IPM professionals from Ispahani Biotech, GME Agro, NAAFCO, and ACI Bio pesticide. The group visited Tamil Nadu Agricultural University (TNAU), Bio Control Research Laboratory, Tropical Bio Science Lab, Southern Petrochemical Industries Corporation, and the University of Agricultural Science, Bangalore along with 6 other agricultural institutions to gain valuable insight on commercialization strategies for new technology, particularly bio pesticides and bio fertilizer. The participants also visited nurseries and understood their role in supplying quality seedling for bio technology. Participants established business to business linkages, and two of the participants, ACI and GME agreed to cooperate with TNAU to explore Trichoderma in ACI's lab. This visit allowed the private sector actors who are just entering Bangladesh's nascent IPM sector to observe more developed, commercially-oriented IPM labs and research institutions, helping them to better understand process for introducing bio pesticide businesses in Bangladesh.

**BARI and BINA Linkages.** AVC's partner, Partex, worked with research institutes such as BARI and BINA to collect breeder seeds that were multiplied by the contracted seed growers from the Southern Delta. Partex supplied one ton of groundnut seeds to 500 farmers in Jeshore and Barishal. Farmers who used Partex's premium seeds increased harvest yields in comparison to the previous harvest by approximately 40 percent. Traditionally, farmers applied the broadcasting planting method, which is inefficient and leads to considerable damage of produce during harvest and clogged draining of rain water. Instead, farmers were trained to use line-sowing and bed-raising cultivation techniques leading to improved seed productivity. The combination of improved seeds and embedded training contributed to improved gross margin results for groundnut farmers.

Additionally, Partex signed an MOU with the Asia Vegetable Research and Development organization (AVRDC or World Vegetable Center). Through this agreement, Partex employees received training from AVRDC at the BARI facilities. Previously, Partex employees had to travel to Thailand to receive this training. Holding the training locally significantly lowers the operating costs for Partex and allows for more Partex employees to receive the training.

**Bangladesh Jute Research Institute (BJRI) Linkage.** KSC, a local seed producing entity, has worked on building a robust seed distribution network for improved jute crops. As part of a wider effort to expand commercial jute seed production, KSC has invested in establishing a contract farming scheme in

the Southern Delta. KSC produced 15 tons of jute seeds by engaging 150 contract growers covering 50 acres of land. BJRI provided KSC the required breeder seeds and the required technical support regarding planting and cultivation for this initiative. Approximately, 18,000 farmers received these quality jute seeds. Through this improved seed variety, KSC was able to establish themselves as a quality Jute seed brand in Bangladesh.



## KEY SUCCESSES IN CROSSCUTTING AREAS

### GENDER

In Year 3, AVC conducted an assessment, using participatory stakeholder engagement methods, to identify opportunities and challenges for female engagement – focusing on flowers, natural fiber, mangoes, and vegetables. From these stakeholder meetings, AVC gained extensive insight into the commercial opportunities to engage women in various sectors as the project team was better prepared to pitch these opportunities to private sector firms. Based on these findings, AVC targeted the flower and summer vegetables value chains for pursuing greater gender inclusion. Throughout the life of the activity, AVC provided technical assistance to local women-led organizations to support efforts to pursue economic opportunities. Selected lead firms were also engaged to increase female participation in their distribution networks while also pursuing opportunities to target women as specific customer segments or to better integrate women into their customer base.

### FLOWER

The flower sector provided an excellent opportunity to increase the roles and visibility of women within the agriculture market. AVC was able to leverage their existing roles as traders and entrepreneurs in this growing sector, and thus increase women's visibility and position within the value chain as a whole. Methods employed to increase visibility included consumer fairs and the incorporation of the peer-to-peer business model which linked female entrepreneurs and SMEs. The approach allowed for a gradual recognition and promotion of women within the value chain, without an abrupt disruption to female cultural norms.

Local festivals were the primary method employed to promote women's status and to encourage market investment. Festivals included the Mini Mobile Flower Festival, conducted in three areas by AVC's partners – the Joytee Society, Welfare Effort (WE) and Sabujer Ovijan. Initially taking place only during the Spring Equinox and Valentine's Day, the festival has been replicated for other major holidays. The Jhenaidah group in turn has recently trained a team of women on flower designs and bouquet techniques, in preparation of festivals taking place between February and April 2019. Other notable festivals include Flower Fests 2017 and 2018, both held in the capital city of Dhaka.

In addition to providing platforms and market linkages, AVC increased the sustainability of its efforts by providing festival participants' business, branding and marketing, and flower design training. In 2018, AVC supported the training of a group of 14 women in Barguna, delivered by Cell-i3, covering marigold production. Additional trainings were held on practical cultivation, input management, and harvesting techniques.

### VEGETABLES

Similar gender strategies were utilized for women farmers and traders within the vegetable sector. In 2017 and 2018, AVC selected two areas where women were active as vegetable farmers/traders – Barguna Sadar and Babuganj Upazila in Barisal. Consistent with the gender strategy employed for the flower sector, AVC targeted areas that had existing female momentum. Together with Jagonari, a local woman-led organization, regular discussions were held with women vegetable growers regarding the

cultivation of safe homestead vegetables both for sale and subsistence. As a result, women's vegetable haats (farmers' market) were created. The Barguna Sadar Market has been operating since December 2017, and hosts 5 to 6 women traders six days a week. To overcome financial challenges, AVC partnered with two public banks – Bangladesh Krishi Bank and Sonali bank to finance loans with a total value of 250,000 BDT. A similar market was also launched in Paira Chottor by women vegetable growers' groups to commemorate International Women's Day 2018. More than 1,000 customers purchased vegetables directly from women farmers and traders.

Trainings were instrumental in achieving sustainability and quality outputs for female vegetable growers. Between July 2017 and December 2018, 1176 female growers were given 3-hour long trainings in cooperation with Joyoti Society. From these trainings, about 550 trainees adopted homestead gardening, 200 sold their harvests, and the remaining trainees used their produce for household consumption. The Joyoti Society also organized a two-day Safe Vegetable Market on January 2018 where 46-member farmers sold 22 vegetable varieties. The organization scheduled another vegetable market for January-February 2019.

Overall, these markets have connected farmers to new customers, equipped them with new business skills, and encouraged them to build full-fledged agribusinesses.

## **HOMESTEAD GARDENING**

Over fifty percent of Bangladesh's 100 million rural inhabitants have available land for homestead crop production. Currently, this market opportunity is not being maximized by agricultural input companies. Increasing the number of homestead crops represents a way for lead firms to expand their business by targeting women as customers. AVC identified lead firms that were interested in investing in female farmers as a specific customer segment, largely through homestead gardening product lines.

AVC's partner, NAAFCO, introduced eggplant and sweet corn input products to female farmers through embedded training programs in Spring 2018. The company also established promotion plots and provided trainings for over 150 female farmers. Similarly, Bangladesh Rural Advancement Committee (BRAC) Seeds engaged 30 female sales agents to sell promotional input packs for homestead gardening. These agents used their homes to store seeds and became the primary local sales point for BRAC Seed and Agro Enterprise (BRAC Seeds) in some of the most remote areas in the FTF zone. This initiative reached 3,000 female homestead gardeners. To retain these new customers, BRAC deployed three female call center agents to offer after-sales support to farmers regarding best agronomic practice and pest management. Facing early challenges in making the case to input firms for investing in female farmers as a customer base, the two initiatives above however demonstrated initial successes in female-focused business initiatives and product lines. Additional work in this area is recommended for future projects to scale up this initiative of pursuing a private-sector driven approach to engaging females as important consumers.

## **NUTRITION**

AVC took a two-pronged approach to nutrition activities. First, AVC pursued more traditional activities with BRAC by sponsoring trainings and a behavior change communications campaign around nutrition. AVC integrated commercial efforts into these trainings and campaigns, partnering with BRAC Seeds to integrate "nutrition packs" into their seed product line targeting the homestead gardening market. In

addition to the more traditional nutrition activities, AVC also catalyzed improved commercial marketing efforts for 'safe' vegetables in regional markets, which will have a positive impact on nutrition. Additional details on these initiatives are provided below.

AVC worked primarily with the BRAC to promote dietary diversity and address under-nutrition and malnutrition in the Southern Delta. AVC first contracted BRAC to conduct a behavior change communications (BCC) campaign around nutrition. As part of this campaign, BRAC conducted 20 knowledge dissemination sessions with 50 participants per event reaching 1000 women. The events used various BCC tools like leaflets, flipcharts, drama shows and food cards to maximize the absorption of key messages of nutrition for the improvement of dietary practice in daily food consumption at the community level. After the completion of each session, the participants were given a mini-pack containing 7 types of nutritious vegetable seeds to encourage the participants to plant homestead gardens. The campaign's primary goal was to increase the demand of nutritional crops among households, supporting the cultivation of nutritional crops at their homestead to improve dietary diversity. BRAC also organized three nutritious food competitions in Dhaka, Jeshore and Barishal and conducted four private sector meetings on linking nutrition messages with branding of products for customers.

BRAC Seeds also created a video documentary about basic nutrition and nutritious food consumption. This video was played in 20 different communities among rural farmers. They also organized 20 nutrition shows where there were 150 participants in each event. The shows contained a documentary showing and a speech by a public doctor about basic nutrition and nutritious food consumption. Through these events, BRAC Seeds distributed 2,245 nutrition packs of homestead gardening seeds. These packs were integrated into the company's product line, linking nutritional outcomes to a sustainable business model.

Further, BRAC Seeds worked to develop demand in the market for their homestead garden nutrition packs by training new homestead gardeners in appropriate production technology and developing 100 model homestead gardens. With support from AVC, BRAC Seeds hired 30 women sales agents on a commission basis to market BRAC's efforts to the gardeners. These women agents were also tasked with monitoring farm activities with the support of BRAC field offices. Through this marketing effort, BRAC converted homemakers into entrepreneurs. Improving the access of easily grown vegetable seeds to homestead gardeners not only allowed for a healthier diet by the consumer, but also helped lower the cost of purchasing nutritious vegetables by individual families.

Additionally, AVC focused on supporting safe vegetable brands and marketing campaigns. These safe vegetable efforts initially targeted the urban middle class as a way to align consumer demand and value chain incentives to ensure the on-going production of safer and more nutritious crops. However, as retail outlets learn compelling messaging and marketing tactics from the urban intervention, AVC expects that the brands will feed relevant lessons into regional pilot efforts. By empowering consumers to demand safer foods and by facilitating the emergence of a market for safe vegetables brands, AVC expects that access to safe foods will improve for all consumers across the Southern Delta, limiting exposure to harmful chemicals and diseases and increasing consumption of essential micro-nutrients that are required in a well-rounded diet.

## ENVIRONMENT

A significant systemic weakness in the Southern Delta was that many traditional farming and agribusiness practices, employed by most producers and businesses, were mis-aligned with what was needed to mitigate environmental impact. To address this, AVC facilitated alignment between climate smart agricultural practices and commercialization investments. By associating improved chemical handling and management with increased margins from ‘safe’ brands, improved land management and crop rotation with increased productivity, and improved seed and crop selection with increased returns on investment, AVC supported increasing interest and investment from market actors, including farmers, input suppliers, and retailers in urban centers in pursuing environmentally-friendly practices. The most significant climate smart agriculture techniques introduced and supported by AVC were:

- **Support for specific agricultural products:** AVC supported the introduction and commercialization of specific products to reduce the environmental impact of farming.
  - **Integrated Pest Management:** AVC identified several lead firms that had introduced integrated pest management and bio-pesticide products to their product lines and helped them to market these products, to strengthen their distribution channel into the Southern Delta, and to train farmers in proper use of the products. Farmers are now widely demanding these products, as they reduce chemical spray by up to 75 percent, not only improving food safety but also cutting the seasonal input costs of farmers by as much as \$750 per hectare. The commercialization of these products has significantly reduced over-spraying of crops, shifting farming practices and generating huge environmental mitigation impacts.
  - **Compost:** AVC improved methods of composting organic waste in Bangladesh. Prior to AVC, there were only a handful of companies that tapped into the compost market with limited knowledge of how to properly compost. Since composting improves land management, soil fertility, and breaks down contaminants, AVC decided to work with influential market actors to teach them about the benefits of how to compost properly and how to market these to smallholder farmers.
  - **Coir Pith:** For many years, coir pith was considered a waste product of coconut fiber and was dumped outside of coir fiber mills or sometimes thrown into the river, generating large environmental pollution issues. However, Natural Fiber (a coir processor company) saw an opportunity to use this disposed by-product and established a coir pith block factory to transform this waste into a valuable product that could be exported as well as marketed nationally, especially in horticulture and floriculture sectors. AVC supported Natural Fiber to procure the necessary equipment, to receive training, and to install the factory. Natural Fiber is now filling both local and international orders for coir pith blocks. Furthermore, due to concerns raised at relevant GOB levels by industry stakeholders, the GOB has now announced that coconut coir-based product manufacturing is a priority sector.
  - **High-yield Seeds:** AVC’s support for the introduction and commercialization of high-yield seeds in a number of value chain through lead input firms has environmental benefits, as high-yield seeds contribute to improved land management practices. The embedded training used by lead firms to market high yield seeds included capacity building in environmentally sustainable practices including land management and crop rotation.



- **Safe Food Brands:** Related to the introduction of environment-smart agricultural products above, AVC leverages safe food brands to create a demand pull in the market for safely-produced foods. These safe food brands, established by key retail outlets, establishes a price premium market for foods produced safely, which indicates the use of production practices with limited environmental impacts. AVC expects that as these brands gain traction, this will increase consumer awareness of environmentally-safe production practices. This doubles potential benefits of shifting to environmentally safe practices, as farmers can not only cut input costs but also benefit from increased buying costs if they can comply with safe food brand standards.
- **Policy Dialogues on Environmental Mitigation:** To minimize knowledge gaps and to help stakeholders understand the issues related to environmental mitigation in agriculture, AVC worked with DCCI to hold five national- and regional-level policy dialogues on efforts to mitigate the environmental impact of farming in various sectors. The following events were held:
  - A National Seminar on Enabling Policy Environment for Safe Mango Marketing, aiming to minimize knowledge gaps and to help stakeholders understand the issues related to the appropriate use of preservatives and ripening agents in mango production;
  - A National Seminar on Eco-Friendly Pulp and Paper Processing from Jute, exploring avenues for producing eco-friendly pulp and viscose from Jute;
  - A Tomato Pre-season Dialogue to address the need for environmentally friendly storage solutions to preserve harvested tomatoes and the environmental effects of using plant growth promoters (PGRs) on tomatoes and vegetables to stimulate growth; and
  - Two regional-level technology exploration workshops to share findings and prospects with chambers, local industrialists, and large commercial farmers; about 20 new farm mechanization and farming efficiency enhancing technologies that can mitigate environmental impacts from farming.
- Crop-specific trainings in environmentally sustainable production practices:
  - Focusing on the non-food sector, especially jute, AVC facilitated and monitored trainings introducing environmentally friendly cultivation and pest management techniques. Each training module has a clearly defined section that details environmentally sustainable practices and highlights their usefulness and importance. AVC has also facilitated 85 demonstrations on improved jute retting technology (ribboning) where over 10,000 jute farmers participated.

AVC supported capacity building training for approximately 15,000 farmers of six value chains (jute, flower, potatoes, mangoes, groundnuts and summer basket) in the appropriate use of pesticides based on the AVC Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP). This capacity building training included technical information and skills to ensure compliance with the Pesticides Safe Usage Guidelines.



## LESSONS LEARNED

Throughout the implementation of AVC, the Market Systems, Knowledge Management, and Grants teams were committed to identifying lessons learned from successes and challenges associated with AVC implementation. Below, we highlight key lessons learned.

### TECHNICAL IMPLEMENTATION THROUGH A MARKET SYSTEMS APPROACH

***Continue work to resolve contradictions between a target-driven approach versus a market systems approach.*** AVC's contract specifically cites that the contractor will use a market systems approach. Yet despite many discussions and seminars on the topic, there is still a general lack of understanding within the industry, from both donors and practitioners alike, as to what that actually means and, specifically, how systemic change should be evaluated. Market systems approaches as understood by AVC do not easily dovetail with the target-driven and directive nature of FTF projects. Being target-driven means downplaying adaptability and change, an essential aspect of interventions within complex systems. There is a serious disconnect between the image of development put forth by FTF, which is highly linear and mechanistic, and the more fluid approach of systems thinking, which relies on engagement, learning, and adaptation. The contradiction creates stress for the implementer, trying to intervene in ways that change the market dynamics, incentives, and direction of change versus churning out deliverables to meet targets. AVC has produced a number of papers, training materials, and case studies that could form the basis of an emerging consensus within USAID and the practitioner community about market systems approaches and how practitioners should not just measure effects, but also evaluate qualitative systemic change. Until we resolve this underlying contradiction between the FTF model of "targets first" with the market systems model, which relies more on experimentation, adaptation, and amplification of what works, the development models will not reach their full potential. The way forward in response to this problem is to have more dialogue with stakeholders so we can more clearly understand the internal contradictions inherent in our development thinking and move toward better practices that will deliver, in AVC's view, better and long-lasting results, that is, systemic change.

***Engage sources of sector-wide leadership and advocacy.*** One of the key lessons learned from AVC, was the important role that the DCCI and regional affiliated chambers of commerce came to play in serving as champions for sector growth and agricultural development. In partnership with AVC, DCCI convened a significant number of pre-season dialogues, stakeholder workshops, investment forums, agricultural fairs, and other events that played an enormous role in improving market linkages among market system actors and facilitating joint responses to threats and challenges. Importantly, because these events were organized by DCCI, although often co-invested by AVC, DCCI's emerging role as a key industry player is largely sustainable. Through partnership with AVC, the organization has undergone a significant phase of capacity building and transformation and has emerged as a resource for private sector firms working to improve resilience in the market system.

***Identify ways to address transactions that are untouched by lead firms.*** AVC launched complementary approaches to driving 1) supply chain management and 2) input marketing and promotional capacity interventions with lead firms. However, in the Bangladesh agriculture market, 95 percent of all produce flows through open spot market transactions, governed by traders. Therefore,

a third path was needed to address underlying systemic issues of poor value chain governance in spot markets. AVC sought to address this by working with traders following a peer-to-peer cluster model, a pilot approach that AVC ran for one year. While AVC saw considerable initial results after one year of peer-to-peer implementation, these results did not generate as many sustainable outcomes as intended. This is due, in part, to the short period of time dedicated to the program and the decision to prematurely close the initiative, which reduced the prospects for meaningful impact. An assessment of this pilot uncovered additional challenges and recommendations for improved impact, including:

- 1) selecting consulting firms that are better able to connect with agro-MSMEs to improve sustainability;
- 2) improve the selection process for participating agro-MSMEs to increase investment interest;
- 3) engage larger private sector firms from the outset and support/ incentivize promising pilots of firm-MSME partnerships/initiatives; and 4) move up the timeline for establishing a sustainable fee-based or self-financed support model within the facilitation firms.

***Integrate gender into project outcomes.*** While gender was a crosscutting initiative of the AVC, the activity faced challenges in integrating gender into its market systems strategy. Additional training or support was required for Deputy Team Leads to understand tools and strategies for making the business case for gender integration. A key lesson learned for AVC was to look for opportunities to support gender in value chains that do not already have rooted norms and gender roles. AVC was remiss in not working with the Deputy Team Leads earlier to ensure that they were developing business models with firms that were gender-inclusive. In later stages of the project, AVC piloted with BRAC Seeds and NAAFCO two commercial opportunities to target women as a customer segment. While these initiatives saw success, AVC was not able to leverage them to scale in the project implementation period.

## **OPERATIONS AND ADAPTIVE MANAGEMENT**

In addition to realizing technical lessons learned, AVC also continuously adapted its staff structure and operational strategy to ensure it aligned with the project's technical approach. Through the adaptations below, AVC created a culture of learning and collaboration, which the project found to be essential to successful implementation. The initiatives below ensured the team shared insights, successes, and failures with one another regularly, while also ensuring the provision of tools and training for staff to consistently increase their knowledge to better support partner private sector firms.

***Instill a culture of learning.*** Implementing a project through a market systems approach required training AVC staff, who were immensely qualified technically but did not have experience with this new practice area. Especially since AVC Deputy Team Leads' responsibilities shifted from focusing on a specific value chain to working with a portfolio of private sector companies, AVC senior management needed to ensure that the staff was prepared to provide credible business guidance to these firms to pursue inclusive growth strategies. Additionally, AVC's success relied heavily on staff sharing learning with one another to spark innovation. AVC integrated regular learning events, training sessions, and practical courses into the work plan and budget each year including Quarterly Portfolio Reviews, Learning Lunches, System Talks, and AMAA reflection meetings. AVC offered professional development and skills training as part of the annual performance review system for high-achieving team members. Through the training and learning events, AVC technical staff gained a strong understanding of market systems implementation in practice, and contributed to numerous events, thought pieces, and training to

share their knowledge. The culture of learning created under AVC was a critical component of the project's success.

**Prioritize firms' perspectives.** AVC's market systems approach required that the project identify and work with lead firms that have both the commitment and leverage to influence the market system to become more inclusive. But partnering with the private sector is tricky for a number of reasons. First, AVC had to be careful when approaching private sector firms to think outside of a donor-focused perspective. If scopes of work for partnerships or grants are project-driven and project-designed, the project can end up shifting the incentives of the business away from their natural economic and growth goals. Additionally, AVC focused on designing activities with the private sector that were aligned with their business interests because approaching partners from the project's perspective significantly limited AVC's ability to connect and form partnerships with the strategic contacts at each firm who lead business strategy and drive growth. Finally, AVC had to be careful that any funding provided was strategic, targeted, matched with buy in and investment from the business, and coupled with a clear plan for withdrawal of funds to ensure activity sustainability.

**Use co-creation and flexible grant mechanisms.** One of the most critical lessons AVC learned is the importance of creating partnership agreements that are both co-designed and adaptive. AVC allowed firms to submit a Business Canvas, rather than a traditional grant expression of interest. The Business Canvas Model ensures that the interventions that AVC and its partners pursue are designed around the business goal's and not overly focused on and driven by the project's results targets. Second, AVC used an AMAA, a multiyear nonbinding MOU. This AMAA laid out a co-designed partnership strategy, but still allowed AVC and the partner to easily pivot from strategies that proved to be less effective toward those that were generating results. Recognizing that not everything that the project and partner tries will be successful is an important message: less successful approaches should not be seen as failures; instead, they can be seen as opportunities to reflect and pivot to a stronger, more effective growth strategy. The use of co-creation and flexible grants mechanisms allowed AVC to shift from donor-driven partnerships with small NGOs with limited scope to affect the market system and limited interest in business growth, to more than 40 AMAAs with large and influential agribusinesses and service firms. These durable partnerships were based on trust and a mutual interest in improving economic outcomes in the Southern Delta.





## RECOMMENDATIONS FOR FUTURE PROGRAMMING

**Align selected indicators with systemic change goals.** USAID and implementers will need to work together to understand how to effectively measure systemic change. Currently, the indicators in the FTF handbook often come into conflict with a market systems strategy, creating dual incentive structures for implementers and USAID Missions. Specifically, the definition of training required lengthy classroom-based trainings, which AVC found were not the most effective for transferring knowledge to farmers.

**Ensure the M&E team encapsulates the full breadth of knowledge management.** Future programming must refine its monitoring and evaluation to include more qualitative, supplemental, and systemic information. Adapting the future programming's monitoring and evaluation system to be more flexible and aligned with the new market systems approach will allow the future activity to more effectively learn from and report out about the outputs, outcomes, and impacts of interventions. Incorporating this new learning established by the M&E team will play a significant role in a future program's ability to Collaborate, Learn and Adapt to inevitable shifts in the needs of the market system by providing real time feedback to technical implementers.

**Develop a learning agenda.** Future programs should design and implement a project learning agenda from the start of implementation, to outline specific strategies for how both internal learning and external knowledge share will be achieved. Internal learning should focus on building the capacity of project employees to better serve the needs of its private sector partners and work within USAID operational frameworks. The learning agenda should also address all relevant stakeholders including USAID in an iterative knowledge sharing processes. The agenda should incorporate a combination of dynamic and static knowledge sharing techniques like dynamic learning events utilizing participatory engagement strategies and static websites filling information gaps in market systems.

**Identify and leverage market drivers for gender inclusivity.** To integrate gender cohesively into the market systems approach, future programs should identify and leverage areas where women can be included as customers or market actors. The future program will catalyze private sector firms to work in sectors where women are present at multiple levels in the value chain. These firms will also learn to leverage women as a market segment to support firms to developed women-focused products and marketing strategies. Permeating this behavior change further across the private sector will help shift the larger market system toward viewing women as a customer base which can be marketed towards to increase profits.

**Leverage global partners and international standards to drive overall market upgrading.** The partnership with GlobalG.A.P. was one of the most productive and successful AVC interventions. AVC initially struggled to get traction in supply chain management. By engaging GlobalG.A.P., the organization brought the required experience to identify those partners that were ready to lead change in the sector. Targeting a niche market for high-quality, certified safe foods to drive overall market upgrades. AVC matched GlobalG.A.P. with DCCI, who had established connections and pull in the market to bring legitimacy to GlobalG.A.P.'s suggestions. Further promulgating the emphasis of supply chain management to private sector lead firms will be a key intervention for future programming.

**Engage the “hidden middle” to address systemic weaknesses outside of the influence of lead firms.** Identify high-achieving or forward looking MSMEs and entrepreneurs in the trading, aggregating,

and logistics sectors to adopt investment and results focused business practices that can serve as a bridge and drive growth in areas where lead firms have limited influence. Where larger firms are more risk adverse in these areas, MSMEs can help fill the gap and take advantage of the opportunity in the market system. Once identified, the future program can foster the development of effective business strategies and assist in scaling up successful ventures. The future program can leverage these early movers to create pressure on other MSMEs and entrepreneurs to move away from extractive business practices and ineffective hierarchical management approaches.

***Pilot initiatives to improve the knowledge and business practices of traders.*** Traders and spot markets see over 95 percent of fresh produce sales in Bangladesh. Future projects that avoid working with traders in Bangladesh will significantly limit their results. However, engaging traders to improve rooted business practices to be more transparent and enforce quality and standards is a significant challenge. Future programs should pilot a number of interventions, through an iterative intervention design process to identify how to best support the trading function and shift incentives to improve spot market transactions.

***Ensure the partnership engagement strategy aligns with a private sector driven approach.*** In collaboration with USAID/Bangladesh, future programming should leverage flexible grant and procurement mechanisms which lower the barrier of entry for new partners to collaborate with USAID programs and reduce unnecessary administrative burden on program staff. These mechanisms will also provide a long term transparent mutual understanding between the private sector partner and the future program. These mechanisms should have an iterative design holding partners accountable for producing desired results and ensuring quality is upheld. The future program should also engage in the co-design process with potential future partners which should be led by inclusive business growth strategies.

***Scale up farmers covered by Weather Index Based Insurance by working with the GOB to design a government cost share mechanism.*** With the support of AVC, GDIC launched the first Weather Index Based Insurance in Bangladesh. Given the significant risk of climate change and inclement weather in Bangladesh, weather insurance has the potential to play a huge role in improving the resilience of Southern Delta farmers. However, AVC has advised GDIC, government officials, and USAID, that for this policy to be effective on a larger scale, it will require government involvement and subsidy. This is a key area for future implementation to work with the GOB to develop a sustainable subsidy model, to scale up agricultural weather insurance across the Southern Delta.

## ANNEX I: SUCCESS STORIES

### INTRODUCTION OF COMPOSTING IMPROVES SOIL FERTILITY, INCREASES FARM PRODUCTIVITY AND BENEFITS THE ENVIRONMENT IN THE SOUTHERN DELTA REGION OF BANGLADESH

#### ACCESS TO NEW GROUNDNUT SEED VARIETIES INCREASES INCOME FOR SMALLHOLDER FARMERS

Approximately 42% of Bangladesh's arable land lacks desired amounts of organic matter. Healthy soil contains 5% organic matter but Bangladesh soil has only around 0.05%. This leads farmers to rely on chemical fertilizers to offset the imbalance, which diminishes soil quality and leads to poor productivity. Composted solid waste has a higher percentage of organic matter, helps to restore soil fertility and acts as a soil conditioner. The practice of composting also breaks down contaminants, reducing the need for fertilizers and pesticides.

The USAID AVC promotes sustainable agricultural practices, including composting, in Bangladesh. AVC engaged a leading agro-input company, Partex, to invest in composting and supply organic compost to farmers in the underdeveloped Southern Delta region.

Prior to AVC, few companies engaged in composting. As decomposing waste is relatively new in Bangladesh, companies had little knowledge about the most compatible compost methods for Bangladesh's tropical climate, or even how to compost at all. The design of a composting facility is a complex undertaking given the need to consider such factors as the appropriate facility size, equipment needs and operational costs. AVC thus encouraged Partex to start small by using the compost box method.

The compost box method is suitable to the country's weather conditions and is both time and cost-efficient. In the past, Partex used the pile method to compost, which involved gathering waste in bulk and placing it in an open area for nine to twelve months to decompose. This method is problematic due to the long timeframe involved, exacerbating negative effects on the decomposition process caused by Bangladesh's high humidity. Compost boxing requires only two months to decompose organic matter and takes up a smaller land area. Since the box method takes place in enclosed areas, it is not affected by



Rezaul Karim from the Southern Delta region of Bangladesh experienced a 50% increase in groundnut yields and increased income through support from USAID's AVC Activity.

"We have done groundnut farming in my family for the past 40 years and never did I, nor my father or grandfather, see yields on such grand scale or quality."

—Rezaul Karim, groundnut farmer

Bangladesh's heavy rainfall. It also saves space by producing three times the amount of organic fertilizer in the same amount of land as the pile method. In addition, it is easier to balance the various types of waste to improve carbon-to-nitrogen ratios to ensure adequate aeration of maturing compost.

Partex initially established five compost boxes on a pilot basis. After the pilot effort produced higher-quality compost in a shorter period of time, Partex increased the number of compost boxes to twenty-eight. It now produces 280 MT of organic fertilizer every two months, compared to 900 MT in the same timeframe under the pile method. Scaling up production using the new compost box method, Partex expects to increase production to 3,000 MT of organic fertilizer within the next twelve months.

AVC also supported Partex to expand its market in the Southern Delta region. In the districts and subdistricts comprising the Southern Delta, most smallholder farmers have little knowledge about the benefits of using compost. The few who were aware did not compost properly. For example, the only organic material used by some farmers was cow dung, which they would leave piled unattended on their land for extended periods. AVC helped Partex to organize awareness campaigns and demonstrations to teach farmers about both the benefits of using compost and how to make it. After discovering that compost improves soil fertility and increases productivity while reducing input costs, they increasingly purchased compost from Partex. Within the first three months of the program, Partex sold 400 MT of compost to farmers in the Southern Delta, with sales expected to increase five-fold in the coming year.

As a result of this initiative, Partex has helped farmers to better understand the benefits of using organic fertilizer, contributing to more sustainable agricultural practices in the Southern Delta. Farmers have also improved soil fertility and reduced costs related to fertilizers and pesticides, resulting in higher yields and bigger crop size. One farmer-customer of Partex, Md Bajlu Hauladar, reported a 75% increase in production and 70% increase in income after using Partex compost in his pumpkin fields. To date, Partex has reached 40,000 farmers with messaging about the benefits of using organic fertilizer in the form of compost.

Strengthening composting practices has not only helped farmers, it has also increased the customer base of agribusinesses serving the Southern Delta. In FY 2017-2018, Partex generated gross revenue of 5 million BDT entirely from the sale of compost, of which net profit was about 1.5 million BDT. While describing the impact of AVC's collaboration with Partex, Mostafizur Rahman, the Assistant General Manager of Partex explained, "Within a short span of time, AVC helped us to gain a great exposure through this initiative. Based on our learnings in the South, we are now expanding our compost projects to North Bengal."

The AVC initiative to strengthen composting practices has reduced waste and methane emissions. As 50% of Bangladesh's waste goes uncollected and results in waterborne contamination and greenhouse gas emissions, AVC's efforts to promote the use of organic fertilizers through composting has environmental benefits. These efforts have encouraged other companies to engage in composting and promote organic fertilizers more widely in Bangladesh for farming and home gardens.

## LOCAL SERVICE PROVIDERS HELP SMALLHOLDER FARMERS BOOST PRODUCTIVITY IN RURAL BANGLADESH

A rice farmer from Majhiara village in Khulna district does not know how to fix his broken power-tiller, nor even how to operate it to properly plant his seeds. A storm menacingly gathers nearby. Rafiqul Islam and several other LSPs—networks of rural entrepreneurs who own agricultural machinery and render services to smallholder farmers—arrive just before it starts pouring. Mr. Islam helps to repair the power tiller and provides the farmer with technical advice on tilling and planting. A task that previously would have taken the farmer an entire day to complete is done in an hour.

In the past, Mr. Islam had received no training as an LSP in machine maintenance and repair. He would refer to photographs in manuals for guidance on how to fix and operate machinery. USAID's AVC activity supported leading agricultural machinery manufacturers such as Alim, Metal, and ACI Machinery to informally train Mr. Islam and other LSPs in the Southern Delta region on how to properly maintain and operate machinery and to share that knowledge with farmers on a fee basis. The training gave Mr. Islam more knowledge regarding how manufacturing companies could help him provide better services to farmers in the operation, maintenance and repair of agricultural machinery.

As a result, farmers began to trust and increasingly consult him for advice, extending his reach and improving the quality of service he provides to farmers. Mr. Islam commented:

“When I first started serving farmers as an LSP, many farmers lacked knowledge about machine operation and asked if I could help them. After I received training from experts in the industry, other farmers started showing interest in hiring me to advise them on applying good agricultural practices and experiencing the benefits of new technologies.”

Mr. Islam has started his own business, purchasing different types of machinery. He serves as a role model in his district and has trained 50 amateur mechanics on how to properly repair and maintain equipment. Overall, equipment manufacturers sponsored by AVC have trained a total of 429 mechanics as LSPs to properly repair and maintain agricultural machinery. They regularly organize group meetings with farmers to introduce them to efficient equipment management practices and overall farm cost efficiencies. This expanding network of mechanics is now better able to provide



USAID'S Agricultural Value Chains (AVC) Activity Connects Agricultural Machinery Manufacturers in the southern delta region of Bangladesh with local service providers (LSPs). These LSPs are trained in proper maintenance techniques and machinery operation, and how best to provide direct services to farmers to increase yields and productivity.



Local Service Provider Rafiqul Islam demonstrates how to plough land using modern agro machinery.

advice and guidance to farmers regarding which machines would be best for them to invest in, and how best to utilize and maintain them to maximize their benefits.

The AVC effort to grow this LSP network has helped manufacturing companies extend their reach into rural communities which they previously were unable to serve. For example, prior to AVC, Alim in the past year realized a 36% increase in sales by expanding to the Southern Delta region and extending its outreach to farmers through its dedicated LSP network.



## INTRODUCTION OF COMPOSTING IMPROVES SOIL FERTILITY, INCREASES FARM PRODUCTIVITY AND BENEFITS THE ENVIRONMENT IN THE SOUTHERN DELTA REGION OF BANGLADESH

The USAID Agricultural Value Chains Activity (AVC) encouraged Partex, a prominent agro-input company in Bangladesh, to use the compost box method to produce high quality organic fertilizers, helping smallholder farmers to improve soil fertility.

Approximately 42% of Bangladesh's arable land lacks desired amounts of organic matter. Healthy soil contains 5% organic matter but Bangladesh soil has only around 0.05%. This leads farmers to rely on chemical fertilizers to offset the imbalance, which diminishes soil quality and leads to poor productivity. Composted solid waste has a higher percentage of organic matter, helps to restore soil fertility and acts as a soil conditioner. The practice of composting also breaks down contaminants, reducing the need for fertilizers and pesticides.

The USAID AVC promotes sustainable agricultural practices, including composting, in Bangladesh. AVC engaged a leading agro-input company, Partex, to invest in composting and supply organic compost to farmers in the underdeveloped Southern Delta region.

Prior to AVC, few companies engaged in composting. As decomposing waste is relatively new in Bangladesh, companies had little knowledge about the most compatible compost methods for Bangladesh's tropical climate, or even how to compost at all. The design of a composting facility is a complex undertaking given the need to consider such factors as the appropriate facility size, equipment needs and operational costs. AVC thus encouraged Partex to start small by using the compost box method.

The compost box method is suitable to the country's weather conditions and is both time and cost-efficient. In the past, Partex used the pile method to compost, which involved gathering waste in bulk and placing it in an open area for nine to twelve months to decompose. This method is problematic due to the long timeframe involved, exacerbating negative effects on the decomposition process caused by Bangladesh's high humidity. Compost boxing requires only two months to decompose organic matter and



Creating compost using the box method in the Partex factory in Cumilla, Bangladesh.

takes up a smaller land area. Since the box method takes place in enclosed areas, it is not affected by Bangladesh's heavy rainfall. It also saves space by producing three times the amount of organic fertilizer in the same amount of land as the pile method. In addition, it is easier to balance the various types of waste to improve carbon-to-nitrogen ratios to ensure adequate aeration of maturing compost.

Partex initially established five compost boxes on a pilot basis. After the pilot effort produced higher-quality compost in a shorter period of time, Partex increased the number of compost boxes to twenty-eight. It now produces 280 MT of organic fertilizer every two months, compared to 900 MT in the same timeframe under the pile method. Scaling up production using the new compost box method, Partex expects to increase production to 3,000 MT of organic fertilizer within the next twelve months.

AVC also supported Partex to expand its market in the Southern Delta region. In the districts and subdistricts comprising the Southern Delta, most smallholder farmers have little knowledge about the benefits of using compost. The few who were aware did not compost properly. For example, the only organic material used by some farmers was cow dung, which they would leave piled unattended on their land for extended periods. AVC helped Partex to organize awareness campaigns and demonstrations to teach farmers about both the benefits of using compost and how to make it. After discovering that compost improves soil fertility and increases productivity while reducing input costs, they increasingly purchased compost from Partex. Within the first three months of the program, Partex sold 400 MT of compost to farmers in the Southern Delta, with sales expected to increase five-fold in the coming year.

As a result of this initiative, Partex has helped farmers to better understand the benefits of using organic fertilizer, contributing to more sustainable agricultural practices in the Southern Delta. Farmers have also improved soil fertility and reduced costs related to fertilizers and pesticides, resulting in higher yields and bigger crop size. One farmer-customer of Partex, Md Bajlu Hauladar, reported a 75% increase in production and 70% increase in income after using Partex compost in his pumpkin fields. To date, Partex has reached 40,000 farmers with messaging about the benefits of using organic fertilizer in the form of compost.

Strengthening composting practices has not only helped farmers, it has also increased the customer base of agribusinesses serving the Southern Delta. In FY 2017-2018, Partex generated gross revenue of 5 million BDT entirely from the sale of compost, of which net profit was about 1.5 million BDT. While describing the impact of AVC's collaboration with Partex, Mostafizur Rahman, the Assistant General Manager of Partex explained, "Within a short span of time, AVC helped us to gain a great exposure through this initiative. Based on our learnings in the South, we are now expanding our compost projects to North Bengal."

The AVC initiative to strengthen composting practices has reduced waste and methane emissions. As 50% of Bangladesh's waste goes uncollected and results in waterborne contamination and greenhouse gas emissions, AVC's efforts to promote the use of organic fertilizers through composting has environmental benefits. These efforts have encouraged other companies to engage in composting and promote organic fertilizers more widely in Bangladesh for farming and home gardens.

## FOSTERING A MARKET FOR SAFE FOOD: BUILDING RELATIONSHIPS OF TRUST BETWEEN CONSUMER, AGRI-BUSINESSES AND PRODUCERS

Shwapno, a leading chain store in Bangladesh, brought 220 farmers under Good Agricultural Practices, and introduced a safe food brand called Shuddho that sold over 118 tons of vegetables, and fruits worth over 1,20,000 USD in 3 months.

When it comes to the fresh food market, a pressing challenge for the growing economy of Bangladesh is the dwindling trust between consumer, agri-business and producer. Consumers lack trust in agri-businesses and are disinterested to pay a higher price for better quality agri-products. Agri-businesses are then disincentivized to make investments into improving farming practices of the producers.

Supporting effective and efficient supply chain management is critical for developing the market for safe fresh goods and ensuring higher and fair returns for farmers. Customer confidence and willingness to pay more for quality is key, which translates into better price signals up and down the chain and provides incentives to agri-businesses for upgrading. USAID's AVC activity has been working to address these challenges with several key leaders in the horticultural industry. To catalyze the development of a safe food market, a strategic partnership had been built over the last 3 years between the AVC activity, DCCI, GlobalG.A.P. and a number of leading agri-businesses.

In addressing consumer confidence and promoting a safe and traceable supply chain management process, the AVC activity identified GlobalG.A.P., an internationally accredited agency for fresh food certification, as a key leverage point. Beginning in 2016, AVC helped GlobalG.A.P. build a strategic partnership with the DCCI, a private sector business associate, as a local hub and representative of GlobalG.A.P. and localg.a.p. (localg.a.p. is a concern of GlobalG.A.P. designed for smallholder firms who cannot immediately get GlobalG.A.P. certification). DCCI, as a local representative of GlobalG.A.P., makes it possible for private sector supply chain management firms to become members, and eventually have the opportunity to come under certification.

In 2016, AVC supported GlobalG.A.P. and DCCI to organize the first sets of awareness raising events, along with Farm Assurer and Quality Management System Workshops. The Farm Assurer trainings were provided by expert trainers in the trade from GlobalG.A.P. to agri-businesses in Bangladesh. The events reached



Photo: Ashique Rushdi, USAID Bangladesh

Support from USAID/AVC project in Bangladesh made it possible for Shwapno to launch its new brand initiative and help farmers from the Southern Delta region.

“Now that we practice GAP (Good Agricultural Practices) and also work actively to introduce GAP to our fellow farmers, the people of our village treat us with a lot of respect and express their gratitude to us for being change makers of the community.” Shares Mohammad Kamruzzaman, one of the farmers supplying to Shuddho brand from Shahbazzpur, Jessore, Bangladesh.

out to 70 key stakeholders including private sector firms, retailers, NGOs and representatives of the Government of Bangladesh. The trainings resulted in 3 GlobalG.A.P. Licensed Farm Assurers in Bangladesh with first-hand knowledge about the GlobalG.A.P. compliance standards and the latest industry developments, and can provide consultancy to producer groups. AVC also supported facilitation of training programs for 12,000+ mango farmers and 50,000+ vegetable farmers to build their capacity for safer and improved farming practices.

Following the workshop and trainings, AVC facilitated further collaborations between experts and the interested agri-businesses to improve production and supply chain management practices in Bangladesh. For instance, a leading agri-input firm in Bangladesh called NAAFCO was provided extensive training on mango orchard management by an international expert. This helped NAAFCO to develop service provider groups (SPG) who are equipped to maintain a mango orchard year-round. NAAFCO sold around 20 tons of mangoes on a test basis that were produced by contract farmers who were supported by the SPGs to adhere to Good Agricultural Practices (GAP). Having gained confidence in its production process and generating significant demand from buyers at home and abroad, NAAFCO is now preparing for export in the coming season. Besides NAAFCO, ACI Logistics, Ispahani Agro Ltd., and Daakbox also adopted GAP for producing fruits and vegetables and already marketed their produce in 2018, generating consumer interest in traceable and high quality agri-products.

These firms have not only invested in their production and supply chain management process, but also worked on marketing their products to customers ensuring their traceability, high quality and safety standards with the support of USAID's AVC activity. Striving to set up a quality regime in the supply end, these firms are improving their farm level practices and consistently holding events, social media marketing campaigns, word of mouth advertising to raise customer awareness, trust and interest in paying the required price to foster and sustain a safe food market. In the current year, another very notable achievement was that Shwapno of ACI Logistics, one of the largest chain stores in Bangladesh, became a member of GlobalG.A.P. in 2017, and successfully launched Bangladesh's first safe food brand, Shuddho (meaning pure), in April 2018. Since their launching, Shuddho has sold an astounding 118 MT of Shuddho branded vegetables, and fruits worth over 1,20,000 USD through their 15 outlets in only around 3 months. "An estimated 45,000 plus unique customers have purchased our Shuddho branded products since its beginning 3 months back, and among them almost 14,000 or 30% are loyal or repeat customers. We consider this to be a significant achievement and a strong signal that our customers trust in our brand", shares Shuddho's brand manager Mahadi Faisal of Dhaka, Bangladesh.

These initiatives are successfully building relationships of transparency and reliability between consumers, agri-businesses and producers. Hundreds of farmers in the Southern Delta of Bangladesh are getting benefitted by learning and adopting safer farming practices, that is helping them to increase their income varying from 15% to 60%. Farmers are benefitted by using technologies such as bio-pesticides, bio-fertilizers, appropriate application of otherwise hazardous chemical agri-inputs, improved farming techniques and innovative new technologies that are also helping them to produce higher yield per hectare and better quality agri-products - all at a lower cost from reduced wastage and reduced spending from using efficient farming techniques. "Now that we practice GAP (Good Agricultural Practices) and also work actively to introduce G.A.P. to our fellow farmers, the people of our village treat us with a lot of respect and express their gratitude to us for being change makers of the community." Shares Mohammad Kamruzzaman, one of the farmers supplying to Shuddho brand from

Shahbazpur, Jeshore, Bangladesh. On the demand side, the consumers are getting safer agri-products that are produced in environment and health friendly practices.

AVC is continuing to work closely with the key stakeholders to ensure that these efforts are self-sustained beyond project life and trying to support easy entry for firms to the safe food market. After the launching of Shuddho earlier this year, Shwapno has also taken a lead role in advancing public and industry awareness through dialogues and workshops for safe food production process. Shwapno has held round table discussions with leading media houses primarily to establish and promote its brand, create a demand for safe food from consumer end, and facilitate a crowd in of other retail businesses in the market for its long-term sustainability.

GlobalG.A.P. is working directly with large food retailers, such as Shwapno, giving them access to international supply chain consultants, trainings, and new resources that can help such firms to establish critical control standards with their suppliers.

AVC is working with DCCI who are serving as a long-term country partner for GlobalG.A.P., specifically supporting the establishment of a localg.a.p. program to enroll private firms and retailers in the GlobalG.A.P. database. DCCI has launched an Agro Service Help Desk to provide information and other supports to farmers and firms on localg.a.p. standards and practices. DCCI is regularly organizing industry events that communicate the critical importance of establishing quality standards and practices within agricultural supply chains. These events, widely publicized on local media, are generating a wave of public awareness and building a fast-growing demand for certified-safe food products in Bangladesh.





## ANNEX 2: AVC CASE STUDIES AND BLOGS

AVC prioritized learning and knowledge sharing both within the team, and externally to promote learning in marketing systems in practice. AVC technical staff has deepened its understanding of market systems both in theory and practice. In turn, they have shared their knowledge in numerous events, blogs, and training courses. The AVC market systems team has written articles and blogs explicating key systems thinking strategies, applying learning from AVC, which have been published on the AVC website as well as in other learning platforms including the BEAM Exchange, an international online community for knowledge-sharing on market systems development and Microlinks, USAID's online community of practice for private sector development. AVC staffs also participated in a number of conferences and webinar. A full list of case studies, blogs, webinars, conference, and other knowledge management contributions by AVC including links where possible is provided below:

### CASE STUDIES

Brand, Margie. "Adaptive Management to Support Market Systems Development." Case Study. August 2017. Web.

<http://www.msdsdhub.org/uploads/1/6/3/9/16395976/adaptivemanagementcasestudy090617low.pdf>

Bundick, Paul and Zaki Raheem. "Case Study: Feed the Future Bangladesh Agricultural Value Chains Project." Case Study. 2018. Web. <https://www.marketlinks.org/post/case-study-feed-future-bangladesh-agricultural-value-chains-project>

### BLOGS

Cooley, Kat, and Sarah Wall. "Market Systems in Practice: Field Notes from Bangladesh AVC." BEAM Exchange, 21 Jan. 2016, <https://beamexchange.org/community/blogs/2016/1/21/team-dynamic/>

Wall, Sarah, and Kat Cooley. "From principles to technical strategy: a model for building a new technical approach." BEAM Exchange, 18 Apr. 2016, <https://beamexchange.org/community/blogs/2016/4/18/technical-strategy/>

Wall, Sarah, and Kat Cooley. "Integrating adaptive management: field notes from Bangladesh AVC." BEAM Exchange, 4 May 2016, <https://beamexchange.org/community/blogs/2016/5/4/adapt-avc/>

Wall, Sarah. "Using a systemic lens to address gender inequality in the agricultural sector." BEAM Exchange, 31 July 2017, <https://beamexchange.org/community/blogs/2017/7/31/systemic-lens-gender-inequality-agriculture/>

Wall, Sarah. "The 'hidden middle': catalysing transformation and growth in the agricultural mid-stream sector." BEAM Exchange, 28 Sept. 2017, <https://beamexchange.org/community/blogs/2017/9/28/hidden-middle-catalysing-transformation/>

Tweed, Gwendolyn. "How to! Develop adaptive partnerships with private sector firms without breaking the rules of compliance." BEAM Exchange, 2017, <https://beamexchange.org/resources/958/>

Haque, Sabrina, and Fahd Georgy. “Market systems approaches and informal norms in the context of Bangladesh.” BEAM Exchange, 26 May 2017, <https://beamexchange.org/community/blogs/2017/5/26/market-systems-approaches-and-informal-norms-context-bangladesh/>

Microlinks Team. “Market Systems Approaches and Informal Norms in the Context of Bangladesh.” Marketlinks, 22 Aug. 2017, <https://www.marketlinks.org/blog/market-systems-approaches-and-informal-norms-context-bangladesh>

Bundick, Paul, and Zaki Raheem. “Capturing systemic change in Bangladesh.” BEAM Exchange, 13 Nov. 2018, <https://beamexchange.org/community/blogs/2018/11/13/systemic-change-bangladesh/>  
Bundick, Paul, and Zaki Raheem. “Capturing Systemic Change in Bangladesh” Marketlinks, 10 Sept., 2018, <https://www.marketlinks.org/post/capturing-systemic-change-bangladesh>

## CONFERENCES

U.S. Agency for International Development Bureau of Food Security (USAID BFS). “Market Systems Global Learning and Evidence Exchange (GLEE).” Bangkok, Thailand, March 21, 2017 to March 24, 2017, <https://www.agrilinks.org/events/market-systems-global-learning-and-evidence-exchange-glee-bangkok-thailand>

## WEBINARS

Jenal, Marcus, Erin Markel, Fahd Georgy, and Sabrina Haque. Beyond Gendered Norms. Beam Exchange, 2017, <https://beamexchange.org/community/webinar/beyond-gendered-social-norms/>. Webinar.  
Brand, Margie, and Michael Field. Adaptive Management in Practice: A Market Systems Application in Bangladesh. Marketlinks, 6 September 2017 <https://www.marketlinks.org/events/mpep-seminars/adaptive-management-practice-market-systems-application-bangladesh>. Webinar.