USAID FROM THE AMERICAN PEOPLE | PRICE POVERTY REDUCTION BY INCREASING THE COMPETITIVENESS OF ENTERPRISES

DRAFT ANNUAL WORK PLAN

October 2011 – February 2013

POVERTY REDUCTION BY INCREASING THE COMPETITIVENESS OF ENTERPRISES (PRICE)

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Contract Number: 388-C-00-08-00021-00

CONTENTS

ACRONYMS

BCLET	Bangladesh College of Leather & Engineering Technology
BDOF	Bangladesh Department of Fisheries
BLSC	Bangladesh Leather Service Center
BSFF	Bangladesh Shrimp and Fish Foundation
BTA	Bangladesh Tanners' Association
BW	Brackish Water
COEL	Center of Excellence for Leather
DILF	Dhaka International Leather Fair
DITF	Dhaka International Trade Fair
DOF	Department of Fisheries
EPB	Export Promotion Bureau
FCR	Feed Conversion Rates
FIQC	Fish Inspection and Quality Control
FW	Fresh Water
GAP	Good Aquaculture Practices
GHERS	Greater Harvest and Economic Return from Shrimp
GOB	Government of Bangladesh
ILO	International Labor Organization
ISC	Industry Skill Council
ITC	International Trade Center
JIFSAN	Joint Institute of Food Safety and Applied Nutrition
LFMEAB	Leather Goods & Footwear Manufacturers & Exporters Association
LSBPC	Leather Sector Business Promotion Council
MOU	Memorandum of Understanding
MSME	Micro, Small, and Medium Enterprises
NGO	Non-governmental organizations
OWSPL	Over-Wintered Screened Post Larvae
PCR	Polymer Chain Reaction
PL	Post-Larvae
PPP	Public Private Partnership
SCA	Seed Certification Agency
SME	Small and Medium Enterprises
SOP	Standard Operating Procedures
SPL	Screened Post Larvae
SW	Salt Water
TA	Technical Assistance
TOT	Training of Trainers
USAID	United States Agency for International Development
VAP	Value Added Products
WFC	WorldFish Centre

INTRODUCTION

Chemonics International is pleased to present the final Poverty Reduction by Increasing the Competitiveness of Enterprises (PRICE) work plan. This work plan covers the period from October 2011 – February 2013 and includes a special section on closeout planning. Due to adjustments in the deliverable deadlines per Modification No. 2, this work plan overlaps for one quarter with the 2011 work plan. Due to the organic nature of work planning, some activities in the overlapping quarter may differ between work plans. In instances where this has occurred, this work plan takes precedence and should be used as the guide. For the project to be successful, it must be flexible and adjustable as the project environment changes and as the project's own interventions identify additional or different activities that should or could be pursued to achieve its objective (see box).

PRICE OBJECTIVE

Reduce poverty sustainably by promoting the broad-based development and competitiveness of the horticulture, aquaculture, and leather products sector in Bangladesh.

A. PRICE Background

PRICE is working to reduce poverty in Bangladesh by promoting the market based development of three sectors selected for their high potential for generating sustainable jobs, sales, and investment: the horticulture, aquaculture, and leather products sectors.

PRICE seeks to promote broad-based and pro-poor growth in these three sectors by implementing interventions that address key constraints to competitiveness, while integrating large numbers of small and medium enterprises (SMEs). This requires an understanding of the value chain – from input suppliers to processors to end-market buyers, of the business environment under which it operates, and of the economic agents that participate in it. Through its interventions, PRICE helps these economic agents understand the benefits of working together to increase the competitiveness of the value chain and, through cost sharing arrangements that reduce risk, helps SMEs improve their processes and products so they have access to more and better markets, both domestic and international.

B. Work Plan Structure and Implementation

This work plan has been produced in consultation with USAID, PRICE's partners in each of the three sectors in which it works, and with the input and guidance from various stakeholders and beneficiaries. Regular consultations will continue throughout the year with our stakeholders to ensured continued work plan relevance.

The causal models, which form the basis for interventions, are shown first. Each sector's causal model shows the primary constraints and interventions planned to address these constraints. The intended outputs, outcomes, and impacts are shown for each constraint. These interventions, based upon the causal model, form the foundation for the Gantt chart and accompanying narrative which provides further background information on the sector, intended activities, and expected results. It is important to remember that the descriptions,

scope, and magnitudes of these activities are subject to change as the work plan is implemented.

Certain activities in the work plan span multiple sectors. For example, strengthening the institutional capacity of enterprises, associations, and cooperatives is a potent and cross-cutting intervention. Support for expanded access to finance by members of each value chain is also seen as cross-cutting. Some of these activities are addressed in their individual sections, but are recognized as project-wide initiatives. Others are included in the chapter on General and Communication activities.

To implement this work plan, PRICE will provide technical assistance, training, and other support which is conducive to value-chain development. This support, through PRICE, will be provided to individuals and groups of farmers and entrepreneurs whose commitment will be verified by their willingness to cost-share in proposed interventions.

To avoid redundancy, facilitate leverage, and amplify impact, PRICE will coordinate with a number of other projects in Bangladesh, both USAID and other donor-funded, as well as with Bangladeshi public and private institutions. The detail of this collaboration can be found in the chapter on Collaboration with other Projects and Institutions.

Because this work plan represents the final work plan for the project, spanning 17 months, we have included a section on closeout. This section details our general closeout approach, timeline, and actions. This will be refined as the project moves closer to beginning closeout.

The work plan also includes chapters on the Performance Monitoring Plan – including annual and quarterly targets -, and the proposed Budget.

C. Methodology

PRICE followed a bottom-up approach to formulate its FY 2011-2013 work plan. A series of workshops and meetings with partners and beneficiaries were held in each of the three sectors. The objectives of these workshops and meetings were to make an efficient, effective, and relevant work plan that incorporates the inputs of the partners across each sector's value chain.

Horticulture and aquaculture workshops were held in areas convenient for our partners and beneficiaries. During these workshops, participants discussed the major constraints and challenges of their sector and suggested interventions to overcome these constraints. Group discussions on the results of the suggested activities were held. The input received from these partners became the foundation for the work plan.

The leather sector team met with experts, value chain actors, academics, service providers, associations, government officials, development partners, and stakeholders (including industry leaders from both large companies and SMEs) from the sector. The purposes of the meetings were to get feedback on the effectiveness and efficiency of the existing interventions, and to get recommendations for the upcoming year's activities. Meetings were held on a small group and individual basis.

D. Equity Integration Activities

PRICE is a pro-poor project, supporting economic development with equity. To do this, PRICE works with and supports key economic agents and has adopted a value chain approach for enhancing the competitiveness of its target sectors. One of the key elements of this approach is to facilitate teamwork among value chain actors to maximize wealth creation across the chain (rather than profit maximization by any individual player). This newly created wealth is then shared among the actors with greater equity, increasing the sustainability of the value chain.

To ensure it is being socially responsible, PRICE takes a multi-layered approach with its partners in each sector. PRICE focuses on institutional strengthening, promoting the development of local skills and services, encouraging adherence to improved labor practices, and promoting responsible agricultural practices. An important focus of PRICE interventions is to render economic benefits and transfer skills among women and young adults.

PRICE has adopted this approach to accomplish broad-based economic development through sector transformation, rather than only achieving its targets for sales, jobs, and investments. In order to ensure the efficient implementation of the PRICE equity approach, the project will undertake the following:

- Incorporate equity and compliance clauses in the memorandums of understanding with development partners (enterprises, associations, cooperatives, etc.).
- Support training on social compliance and equity issues for partners and their employees.
- Organize targeted equity integration training for the entire PRICE staff.
- Adopt policies to ensure that gender is considered prior to the allocation of PRICE resources.

SECTOR CAUSAL MODELS

I. Horticulture

II. Aquaculture

- **a. Fish**
- **b. Shrimp**

III. Leather Products

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Crop: Potato				
Low availability of good quality seeds for table and industrial potato leads to poor yields.	**Assist to improve supply of certified seeds in the country.** a. Provide technical support in efficient operation of tissue culture labs for production of disease-free potato plantlets. b. Build capacity of laboratory technicians engaged in plantlet production in tissue culture labs. c. Train field technicians, workforce, and contract farmers in production of pre-breeder, breeder and foundation seeds of potato seed growing organizations. d. Train of workforce and contract farmers for production of high-quality disease-free certified seeds of 9 enterprises/ companies. e. Provide field-level technical support in production of disease-free certified seeds. f. Work in collaboration with Seed Certification Agency for proper certification of potato seeds produced by the partner organizations. g. Assist RDA to develop a potato manual covering seed production techniques g. Facilitate linking seed producers with cold storage suitable for seed potato.	Capacity of 9 potato seed enterprises increased for producing potato seeds. Efficiency of tissue culture laboratories is enhanced. Knowledge and skills of field personnel engaged in production increased. Disease free seed production initiated. Certification from Seed Certification Agency is provided to the partner companies**.** A potato manual is published Seed producers access to cold storage enhanced.	8 seed potato companies produce tissue culture sourced good quality seeds, and market their products. Sales from certified seed potato -USD 400,000 USD 200,000 worth plantlets, pre-breeder breeder and foundation seed produced and sold**.** 250 full time jobs created**.** Technical information and knowledge on seed production were made available for use Seeds are kept in better storage.	Copy cats emerged Market share for quality seeds increased to more than 10% in the targeted region. Industrial potato seed produced in the country is able to meet 20% the demand of the industry in the project life.

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Small farm holdings operating individually lack economies of scale leading to limited access to inputs, credit and markets.	**Promote contract farming system for seed and table potato farmers.** a. Assist sponsor enterprises in designing an effective contract farming system. b. Assist sponsor entrepreneurs to train relevant staff and farmers on improved farming practices and their respective roles and responsibilities under contract farming systems. c. Link entrepreneurs with reputed suppliers of farm inputs. d. Support four partners to reach 1,500 seed potato contract farmers and assist four partners to establish contract farming with 2,000 farmers and provide technical assistance. e. Support exposure visit to sponsor entrepreneurs and farmers to understand successful contract farming ventures.	1,500 seed potato and 2,500 table potato farmers are brought under outgrowing schemes. Four new outgrowing companies developed and their capacity increased. Contract farmers are trained on approaches, improved practices and roles and responsibilities of each party. 15 entrepreneurs and farmers visit neighboring countries (India, Thailand) to get first-hand knowledge of the system.	Potato farmers have better access to inputs and market linkage. Per unit area production increased by more than 20% in the assisted farms. Sales for the assisted farms increased by USD 1.0 million	Farmer's income and quality of life improved. Copy-cats of potato contract farming system start emerging.
Farmers' inadequate knowledge and skill of modern potato farming leads to yield loss.	**Promote modern potato farming practices.** a. Facilitate training on improved potato production technology for farmers. b. Extend farm-level technical support for crop and disease management. c.Support in collecting soil samples for use of balanced fertilizers	4,000 potato farmers trained on modern farming practices including disease management. Farmers gain more knowledge and skill in potato production and pest management. Potato farmers know the soil nutrient status of their plots and can apply balanced fertilizer and compost.	Farmers put their knowledge and skill into practice. USD 600000 in sales from table and processed potato. 200 full time jobs created.	More and more potato farmers gain skills in modern farming practices.

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Limited availability of industrial potato leads to slow growth in potato processing industry	**Increase the supply of processing potato.** a. Assist farmers to produce of processing varieties (Courage, and Asterix) of potato through arranging trainings on relevant farming practices and other technical assistance. b. Link potato producer associations and enterprises to input suppliers.	Two enterprises take initiative to produce industrial potato. Backward linkage established for sourcing raw materials.	1000 MT of Industrial potatoes are produced for processing. Supply of industrial potato ensured for a company. Sales: $180,000	The potato sector becomes enriched with the enhanced availability of industrial potato.

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Poor post-harvest handling and absence of value addition causes substantial loss	**Promote standard post-harvest practices and value addition activities.** a. Facilitate training for association for farmers and work force on responsible post harvest practices and simple value addition techniques e.g. haulm pulling, curing, cleaning, grading, and sorting. b. Support establishment of marketing links with potato producing associations, enterprises with processing industries.	Farmers and workforce become knowledgeable about post-harvest practices. Linkage established with one processing industry.	Increased number of farmers and workforce using improved PH practices. Processing farms are linked to out growers schemes and associations. Demand increased and locally produced potato products are available in the market. Sector sales revenue increased. Investments increased, more jobs created. Investment: USD 150,000 Sales : $1 million Jobs: 200	Import of processed potato products are minimized and local products captured the major share. Income enhanced across the value chain.
Crop: Eggplant				
Farmers lack of knowledge and skills leads to low productivity	**Support to improve knowledge and skill of eggplant farmers on modern cultivation techniques.** a. Facilitate Training of the eggplant farmers on production technology. b. Provide technical assistance to the farmers during production period and assist in organizing farmer's field school during critical growth.	2800 eggplant famers are trained on modern production techniques. Farmers become knowledgeable about the use of balanced fertilizer and compost for egg plant cultivation	Increasing number of farmers are following improved cultivation methods. Sales 300, 000 USD. Jobs: 1.200	Productivity of assisted eggplant farmers increased by 20%. Income increased significantly.

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	c. Promote use of balanced fertilizer and compost for sustainable yields			
Use of low quality seeds of local varieties leads to poor harvest.	**Promote access to good seeds of high-yielding varieties for summer and winter** a. Link PRICE assisted farmers with dealers of reputed seed companies and assist to identify locally available good land races b. FSB resistant BT egg plants put on trial demo if released from BARI c. Support one seed enterprise with technical assistance for undertaking selection of high yielding local seeds.	Farmers adopt cultivation of high yielding varieties and local land races and initiate production. Capacity of a seed enterprise increased to produce quality eggplant seeds suitable for summer and winter	Assisted seed companies start producing modern variety seeds and market the same in good packaging. Trained farmers start using improved seeds. Productivity increased by more than 15% among the assisted farms. Sales Increased: USD 400,000 Jobs: 100	Farmers practicing the modern production technology Overall farm level productivity increased by about 15%. Income for the farmers increased by 10%.
High level of pest attack leads to significant crop damage.	**Promote improved pest management for eggplant farmers.** a. Assist egg plant farmers on pest identification and help to adopt rational control measure with IPM technology c. Support organizing IPM field school with egg plant farmers d. Facilitate link with bio-control agent supplier targeting safe eggplant production. **Support improved seedling raising technology** a. Support training to farmers on grafting	2000 eggplant farmers are trained on improved pest management techniques. Farmers are trained on grafting and seedling rising. 1000 eggplant farmers are exposed to the grafting technologies and appreciate its effect.	Less damage to crops and enhanced yield per acre. Increased sales : USD 150,000 Good quality seedlings are raised and transplanted in increased numbers. Plants and fruits are less susceptible to pests. Productivity enhanced	Eggplant farmers' groups are efficiently managing pest control with a mix of control measures resulting minimum crop loss. Income of the eggplant farmers increased. Increasing number of new farmers start using quality seedlings.

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	techniques, sourcing wild eggplant seeds for raising seedlings, etc. b. Establish demonstrations of grafted eggplant with associated technologies.			Crowding-in happens.
Lack of knowledge of farmers about soil nutrient causing low productivity and irrational use of fertilizer	**Support soil nutrient level analysis and optimize fertilizer use.** a. Assist farmers in soil sample collection of egg plant field and get analyzed from SRDI b. Train farmers in use of balanced fertilizers and compost c. Organize demonstration UDP with AAPI project to minimize cost of fertilizer	2500 egg plant farmers become knowledgeable about the fertility level of their soil Farmers started using compost and balanced doses of fertilizers Farmers become aware about UDP technology to minimize the cost of fertilizer	Production cost of production minimized Farmers are able to decide on the level of nutrient application for better crop	Soil fertility level improved for egg plant cultivation. Environmentally sustainable production approach is available.
Excessive application of toxic pesticides poses threat to human health and ecosystem.	**Promote a market for safe eggplant.** a. Link the producers of safe eggplants with exporters, local wholesalers and super-shops. b. Support awareness development campaign on consumption of safe eggplant among the eggplant consumers.	Linkage workshops/meetings between producers of safe plants and downstream actors take place Suppliers take part on the awareness campaign of consuming safely produced eggplant.	Safe eggplant is made available in the market. Consumers understand the benefit of consuming safe eggplant and are ready to pay premium price for the products. Revenue from sales for the safe eggplant producers increased. Sales: $ 100,000	The consumers have the option to buy safe eggplants. The threat to human health and the ecosystem is reduced.

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Crop: Mango				
Farmers inadequate knowledge of and skills on production of mango lead to low productivity	**Enhance farmers' knowledge and skill in mango of production** a. Facilitate improving knowledge and skills of farmers in north and south in better orchard management through training a. Support in providing training to farmers, seasonal lessee, and work force on proper crop protection measures. b. Provide technical support to mango farms in production season.	2,000 mango farmers trained on crop production management.	Mango farmers start to adopt improved crop management practices. USD 600,000 of increased revenue for the assisted mango farms. Jobs: 500	Number of farms adopting improved practices is growing rapidly, resulting in increased yield and enhanced income
Small orchards lead to diseconomies of scale and farmers compel to sell their products at low prices.	**Promote contract farming for mango production.** a. Assist new enterprises in designing a suitable model for contract farming for mango production. b. Support organizing the initiative through capacity building of the sponsor entrepreneurs. c. Establish linkages with quality input suppliers, banks and other service providers.	Identified and assisted enterprises are ready to launch mango outgrowing schemes.	One new contract farming system started operation with 500 mango farmers. USD 100,000 in sales. Jobs: 200	Short and robust value chain starts paying dividend among its actors. Demonstration effect draws more such system into operation. The competitiveness of the whole sector is enhanced significantly.
Poor planting material restricts expansion of good mango orchards	**Assist in producing elite planting materials for mango** a. Train farmers, nurserymen on identification of right type of mother plants	Farmers can now find elite planting material in their area	New orchards and plantations with right type planting material initiated in the mango	Production of good quality mango would eventually increase

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	and skill on grafting b. Create awareness among farmers to use right type planting materials from renowned nurserymen c. Support in establishing new orchards.	Know the skill of grafting. New orchard establishment with right type planting materials are taking place	growing area.	
Poor post-harvest handling practices result in significant quality and quantity loss.	**Assist in responsible post harvest handling for mango farmers and traders.** a. Train farmers on proper mango harvesting methods. b. Facilitate demonstration of proper treatment techniques for different varieties of mango c. Organize demonstrations of proper cleaning, drying, grading and packing for farmers/traders. d. Demonstrate use of proper packaging and containers.	Association farmers are trained on post-harvest handling practices. Farmers are aware of the importance of hot water treatment for longer shelf life; proper ripening technology is known to farmers. Farmers are aware of using proper packaging material and containers.	Mango farmers adopt responsible post-harvest handling and adopt use of hot water treatment plant. Quality of the fruit is enhanced. Revenue from sales increased by USD: 200,000 Jobs: 100 Investment: USD 50,000	Post harvest losses reduced by 5%.

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
Widespread use of carbide (a toxic ripening agent) poses significant threat to human health.	**Promote a market for carbide free mango.** a. Assist associations to market carbide free, properly ripened mango by helping them opening outlets in important locations. b. Support an exposure trip to India for association members to learn about mango post-harvest handling and marketing operations.	Mango farmers associations open new outlets for marketing of carbide free properly ripen mangoes. Farmers and entrepreneurs undertake visit to India to see the mango marketing operation.	Demand for carbide free mango is on rise. Revenue from sales increased by USD 50,000	Carbide free mango becomes available in the market. Consumers' access to quality mango increased.
Cross Cutting Issues				
Promotion of high value crops in the southern region is limiting the farmers in raising income and food security	**Promote a basket of high value crop production in the south west** a. Facilitate training to tomato, cool crops, beans, cucumbers, gourds , onion and turmeric farmers on increasing productivity b. Assists farmers in production of safe vegetables in the dykes	Farmers of the south are having better access to technology and Associated support services. 14000 farmers are trained on production ,pest management and post production PH H	Increasing number farmers in the south is adopting modern technology Their sales increased by USD 150000	Production of high value crops increased with better support services. Farmers income increased substantially
Horticulture farmers lack access to quality compost and other organic fertilizer leads to yield loss (both in terms of quantity and quality)	**Promote production and marketing of quality organic fertilizer.** a. Assist four bio- fertilizer companies improve their technical efficiency in producing good quality bio-fertilizer. b. Support farmers in establishing linkage with bio- fertilizer suppliers.	Farmer's access to organic fertilizer improved. 4,500 farmers trained on use of organic fertilizers.	Increasing number of farmers using organic fertilizers in right quantity. Sales of assisted farms increased by USD 150,000. Jobs: 200	Sustainable productivity is visible and soil health is improved.

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	c. Organize training for farmers, dealers, and retailers on the importance of environment friendly bio-fertilizer and its effects on yield and profitability. d. Assist in establishment of demonstration with organic fertilizers to promote the use and proper application method. e. Assist enterprises in the introduction of soil nutrition information, fertilizer and pesticide use cards among farmers.			
Inadequate availability of good quality vegetables seeds for intercropping and year round vegetable cultivation leads to unrealized production potential of horticulture crops production.	**Facilitate production of good quality, high yielding varieties of vegetable seeds.** a. Provide technical training to seed growing farmers through seed producing enterprises. b. Facilitate in ensuring seed quality during production, post production and processing through technical support. c. Strengthen and establish a strong market network. d. Assist in dealers' training, yard meetings, demonstrations and field days.	Seed growing farmers are better informed and skilled in seed production technology. Seed producing enterprises are getting better seeds and adopting better processing. Marketing systems developed by individual companies. Seed dealers are aware of good seeds.	Supported seed companies started producing good quality seeds of high yielding varieties and market in good packaging following seed law. Trained farmers start using improved seeds. Demonstration effect draws more farmers into similar practices (as the trained farmers). Sales from seeds USD 50,000. Job : 40	Quality seed supply enhanced by 5% in the project area. Vegetable production increased by 20% of the project farmers, resulting better income.
Poor access to post-harvest handling leads to substantial crop damage	**Establish field pack station for proper post-harvest handling of vegetables.** a. Assist an enterprise in designing and	Establishment of a pilot field pack station for better post harvest handling.	Horticulture farmers start using the center; become aware of post-harvest handling and simple value addition	Copy cats of facilities emerge. Farmers use it as a standard practice; quality of horticulture products

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	operating a standard field pack station.		techniques and their benefit.	enhances, post-harvest losses reduced.
Poor knowledge in selection, use, and application of pesticide and other compliance requirements.	**Promote safe horticultural produce at the field** a. Facilitate farmers' training to promote good practices, IPM, and biological post management. b. Assist in organizing campaigns on the consumption of safe vegetables. c. Facilitate a campaign on safe use of pesticide and plant protection measure in collaboration with input selling companies, superstores, exporters and NGOs. e. Support training of work force on food quality and safety,	1,000 trained farmers that are aware of the good practices, traceability, IPM and the benefits of using these. 1000 workforce, learned about proper handling operation and PHH	Trained horticulture farmers start using good practices, IPM techniques, keeping records and reap the benefits. Traceability in safe vegetable production system introduced. USD 300,000 from safe vegetables.	Demonstration effect draws new farmers to good cultivation practices, IPM and records. Product quality improved. Farmers receive better prices.
Inadequate access to market information to distant farmers leads poor income and losses	**Establish market information system in the south.** a. Assist in establishing two market information centre at Khulna on pilot basis	Dyke farmers would get better access to market price and technical knowledge through the information centers	Access to vital market information on daily price of the regional market would be easier USD 100,000 from marketing the product to the distant market Jobs: 20	Farmers in the distant isolated palace will get to know information regarding product demand and price which will eventually lead to take informed decision on sales and production.
Limited access to finance	**Facilitate increased access to finance.**	Financial institutions start	Increased numbers of farmers are having access to finance.	Access to finance to project targeted farmers is ensured

Causal Model – Horticulture

Horticulture Constraints	Interventions	Outputs	Outcomes	Impacts
	a. Organize workshops with partner enterprises and financial institutions. . c. Engage with microfinance organizations to develop horticulture sector-specific loan product.	offering loans to enterprises and farmers. Four microfinance organizations develop horticultural crop based loan products.	Investment increased: USD 100,000 Increased in sales revenue: USD 200,000	and many other agricultural activity supported financing agencies are offering new product for horticultural farmers.
Weak associations Institutions are unable to deliver required services to the enterprises leads to inefficient and often unsustainable supply chain	**Strengthen organizational capacity of horticultural crop based associations.** a. Facilitate training on organizational management and obligations as per law to the executive committee members and staff. b. Support training to association members on their responsibility, organizational discipline and system.	The management committees of three associations are aware of the rules and regulations and services to be provided to the members. Four associations are better equipped with rendering required services to its member enterprises	The horticulture based enterprises are better served with business development services. The enterprises become more competitive in serving their customers. Productivity, production and revenue are increased. Sales: USD 600,000 Investment : USD 100,000	The horticulture sector becomes more competitive.

Causal Model – Aquaculture – Fish

Fish Constraints	Interventions	Outputs	Outcomes	Impacts
Widespread use of genetically degenerated fish seeds (because of inbreeding), leads to low farm yields.	**Increasing farmers Access to inbreed free seeds** a. Link hatcheries to inbreed free brood sources b. Assist production and inbreed-free fish seeds c. Assist linking fish-seed traders' to the hatcheries producing inbreed free seeds d. Promote perennial use of fry and fingerlings for year round production	PRICE supported fish hatcheries get access to inbreed free broods, better brood management, and feedback from associated farmers using seeds from hatcheries. Fish farmers (members of PRICE partner associations) become aware of the benefits of using quality grade seeds	Supply of inbreed free fries and fingerlings increased. Nursery owners procure quality spawn and nurse those to quality fingerlings. More farmers start stocking quality seeds.	Productivity increased by 10-15% based on state of hatcheries Production and revenue from sales enhanced resulting new jobs and increased income for the hatcheries and nurseries Sales: $1 million Jobs : 575 Full Time Equivalent (FTE)
Farmers inadequate access to quality inputs leads to sub optimize productivity in fish farming.	**Facilitating farmers' enhanced access to quality inputs and pertinent management information.** a. Assist holding workshop for input sellers and farming groups b. Support the training to association members on joint procurement of feeds and other inputs c. Assist training for input seller and help in sensitizing them to render required embedded services	Feed millers get easy access to quality feed ingredients and formula for cost effective feed production Farming groups collectively and cost-effectively procure quality feeds and other farming inputs.	Production, supply and uses of quality inputs increased.	Productivity increased by around 15% for the assisted farms resulting enhanced revenue and increased income for the farmers. More farmers are aware of and use quality seeds resulting production increase. Sales: $1 million Jobs :500 FTE

Causal Model – Aquaculture – Fish

Fish Constraints	Interventions	Outputs	Outcomes	Impacts
Insufficient farming IKS leads traditional low yield farming.	**Promoting Good Aquaculture Practices (GAqP)**: a. Support farmers' trainings on optimum stocking, high density farming and other productivity related issues b. Arrange in-country study trips to lead farmers/ association /cooperatives leaders to relatively better productive areas. c. Assist in exposure trips of highly productive farmers and other value chain members to foreign trips for hands on experiences (Thailand/& Vietnam/& India).	5,000 traditional farmers are trained on GAqP and improved/ high density /semi-intensive aqua farming techniques. 15-20 lead farmers acquired first- hand experience on intensive farming environments and practices.	Farmers put their knowledge into practice and productivity increases by 15-20% for the trained farmers of partner associations. .	Income for the aqua farmers increased significantly (10-15%). Family based intake of farmed fish increased by 20-30%. Sales: $ 1.5. m Jobs : 1200 FTE
Lack of farming integration under diverse agro-ecological conditions for round the year cropping leads to sub optimal farm yield.	**Promote integrated farming for year round crop production** a. Assist training on integrated aqua-farming and Symbiotic farming b. Support crop-rotational fish culture and horticultural crop farming on pond embankments. c. Support training on efficient use of organic debris by embankment cropping	Association members are trained on techniques for optimal use of seasonal water body and embankments for increased productivity year round.	Incubate efficient and effective utilization of water bodies, embankments for diverse crop production round the year.	Production increased by 20-25%. Income for the community based farmer's enhanced, sustainable feed security ensured to family based farmers. Sales: USD 1 million Jobs: 700 FTE

Causal Model – Aquaculture – Fish

Fish Constraints	Interventions	Outputs	Outcomes	Impacts
Poor perception of unconventional /alternative aquaculture resulting missed opportunities in producing and marketing of high value fish species using huge unutilized and underutilized resources.	**Promote fish farming in floating cages in open waters.** a. Organize training for farmers and fisherman on floating cage based aquaculture in rivers and hoar areas. b. Facilitate exposure visit for the potential entrepreneurs to the modern cage farming practicing areas. c. Promote farming of air breathing species and mono-sex Telapia, especially in SW Bangladesh	Farmers become aware of the economic potential of floating cage farming. 1000 farmers will receive training on cage farming techniques. Farmers become aware of (and acquire knowledge) potentials of high value commercial species	500-600 new cage farming units will be in operation producing premium grade and high price stuffs for local consumptions and export Farming of new commercial species gets momentum 5-6 new culture species introduced Investment : $ 150,000 Sales: $2.5 million	This alternate aquaculture generates new jobs, draws new investments and creates new wealth. Jobs: 300 FTE
Inadequate access to quality inputs as well as limited marketing opportunities for smallholder farmers leads to low profitability and resultant loss of momentum in fish farming	**Facilitate integrating smallholder farmers' into group procurement and group marketing** a. Support improvement of farmers' backward linkage. b. Facilitate integrating smallholder farmers' into growing market of aqua farm products.	Partner association members become aware of the benefit of group procurement. 2000 smallholder fish farmers are trained on group marketing in the 2010-11 FY 10 linkage workshops held (for linking the association based small holder farmers with the wholesalers)	Group procurement creates access to quality inputs for micro and small enterprises in cost effective manner. 5% lower cost-effective prices of inputs for farmers Increased options and economies of scale enhances their bargaining power. 15-20% partner members practicing group marketing	Productivity enhanced, and investment increased for the smallholder farmers; new jobs created. Investment : USD 25,000 Sales USD: 500,000 Jobs: 500 3-4% better prices for farmers for group marketing

Causal Model – Aquaculture – Fish

Fish Constraints	Interventions	Outputs	Outcomes	Impacts
Weak association, poor member services threaten sustainability	**Strengthen the institutional capacity of associations/ cooperatives** a. Help association to develop a basic information management system. b. Assist associations to identify services required by members c. Support them in formulating and rendering the services, efficiently, effectively and sustainably.	4-6 associations/cooperatives receive institutional development support.	Performances of the associations improve. Members of the associations receives required services cost effectively.	Productivity and revenue from sales increased by 15%; farmers invest additional amount to their business. Sales: $1 million Investment: $100,000
Knowledge gap on hygienic dry fish production and marketing leads to wide scale prevalence of poor quality , unhygienic and adulterated dry fish in market	**Promote a market for hygienic dry fish**. a. Support training for the members of partner associations on HACCP, food safety, packaging, storage techniques and group marketing. b. Organize linkage workshops between association members and wholesalers/exporters.	200 smallholder dry fish traders are trained in hygienic dry fish productions, packaging and marketing. 600 workforce developed on handling and manufacturing of hygienic dry fish production. 1 linkage workshops held (for linking the association based smallholders with the wholesalers).	Dry fish producers are aware of the benefits of hygienic dry fish production. Dry fish producers are better linked with the forward market.	7-10% increased production of hygienic dry fish Sales/export revenue increased by around 10%. Sales: $ 1 million
Few value added products leads to insignificant export quantity	**Support fish processors for value added product development.** a. Linkage workshop with producers and processors for	Processing staff are trained and equipped with the knowledge and skill for VAP development. Producer and buyers' linkage	VAP export increased significantly. Two processing plants buying fish from farmers for export.	Investment, sales and income of farmers, processors and exporters increased.

Fish Constraints	Interventions	Outputs	Outcomes	Impacts
	supply of raw materials b. Explore value addition products of fish for export c. Promote processed fish products in the ethnic market abroad.	established. Managerial staff in processing industry are trained.		Investment: $50,000 Sales: $ 1.5 million Jobs: 200 FTE
Inadequate access to finance limits growth	**Support access to finance initiatives** a. Assist farmers/enterprises to prepare business plans. b. Link farmers/enterprises with bank/micro-finance sources through meetings etc. d. Strengthen value chain financing options through arranging fares/workshops for value chain actors.	5-7 fish associations / cooperatives enterprises receive assistance to in preparing business plan. Better linkage with the Banks/ FIs. Value chain financing takes more effective shape	More farmers get access to bank loans and other sources of finance.	Investment for aqua farmers enhanced. Productivity and sales increased. New jobs are created. All this means more income for the farmers. Investment: USD 200,000 Jobs: 400 FTE Sales: USD 1 million

Causal Model – Aquaculture – Shrimp

Shrimp Constraints	Interventions	Outputs	Outcomes	Impacts
Farmers' inadequate access to screened Bagda Post Larvae (PL) leads to high incidence of virus (white spot syndrome virus) outbreak.	**Promote a market for virus free screened PL** a. Assist PCR lab in developing capacity to ensure timely delivery of PCR tested PL b. Follow up training for PCR Lab staff c. popularize the use of screened PL (SPL)through yard meeting, contract farming etc. d. Facilitate linkage development between hatcheries and PCR Labs	Capacity of the PCR lab enhanced. Farmers become aware of the benefit of using screened PL.	More farmers using screened PL. Increased use of screened PL leads to increased productivity. Use of Screened PL reduce occurrence of disease outbreaks. Further scale up of SPL uses.	A sustainable and growing market for screened PL leads to increased production, revenue and investment in the sector Production, sales increased by 15% and investment increased by 5% for the assisted farms. Sales: $ 1.25 million Investment: $ 50,000 Jobs: 300 FTE
Farmers lack knowledge and technique to conduct shrimp farming across the season often leads to single cropping.	**Promote over-wintering of screened bagda PL.** a. Support farmers training on overwintering (OWPL) and benefits. b. Popularize OWPL through workshops, leaflets posters etc.	Farmers become aware of OWPL. Farmers are trained on over wintering tech-know-how.	Increased uses of OWPL	Two cropping and perennial shrimp farming emerges resulting 50% increased income for the firms adopting the technology. Sales: $ 1 million Jobs: 500 FTE
Farmers' Inadequate access to premium golda HPL for integrated farming leads to inefficient use of the water bodies.	**Promoting the use of quality Golda HPL for bagda farmers:** a. Link the Bagda farmers with golda hatcheries producing quality HPL.	Integrated bagda farmers' have increased access to quality golda HPL as well	More farmers have access to quality golda HPL. Integrated, crop-rotational farming bagda/golda/fish increased. Investment : 75,000	Vertical increases in diverse biomass production for export and domestic consumption leads to increased income for the aqua farmers. Sales: $ 400,000 Jobs : 200 FTE

Causal Model – Aquaculture – Shrimp

Shrimp Constraints	Interventions	Outputs	Outcomes	Impacts
Farmers' poor perception about feed quality coupled with their inadequate access to quality feeds for shrimp farming leads to slow growth of the animals resulting poor harvest.	**Promote a market for premium quality feed for the shrimp farmers.** a. Strengthen the capacity of the feed mills to produce premium feeds. b. Train farmers on feed quality and the importance of using high grade feed in shrimp farming. c. Organize linkage building workshops for feed mills, farmers' associations and outgrowing depots.	Farmers aware of using quality feeds Farmers' access to premium quality feeds enhanced.	20% farmers are using quality grade feeds	20% increase in yield for the farmers using premium feeds Sales: $ 1million Jobs : 200 FTE
Farmers Lack of knowledge and skill for adopting improved farming practices leads to low yield.	**Promoting Good Aquaculture Practices (GAqP):** a. Farmers follow up training on : - Improved farming techniques - Responsible farm management - High density, intensive/semi intensive shrimp farming b. Scaling up improved farming through - Exposure trip of lead farmers to farms using high density semi intensive shrimp farming. -Exposure trips of farmers to high density intensive shrimp farming facilities in Vietnam and/or India	About 5000 farmers receives follow up training on GAqP and improved shrimp farming techniques. 10-20 lead farmers acquired first- hand experience on intensive farming environments and practices.	Farmers put their acquired knowledge into practices. Productivity increased.	New sales and jobs created. Sales: $ 1.5 million Jobs : 500 FTE
Disorganized miniature farms lacks scale and access necessary to adopt improved farming practices.	**Promote contract farming system.** a. Design outgrowing schems b. Assist sponsor entrepreneurs in developing pragmatic Business Plan c. Support training to execute	Efficient out growers' scheme evolves in shrimp sector. Farmer's become knowledgeable about their	7, 000-8000 shrimp farmers are brought under out growing schemes. Productivity of contract farmers increased by	Copy cats emerge. Sector competitiveness increased. Revenue from sales enhanced by at least 20% for the farmers adopting the

Shrimp Constraints	Interventions	Outputs	Outcomes	Impacts
	outgrowing and VC financing	roles, responsibilities and benefits in contract farming schemes.	20%, The schemes serve as the building blocks of an efficient traceability system Farmers knowledge base is enhanced	scheme. Sales: $ 2 million Jobs: 800 FTE
Lack of traceability coupled with Buyers negative perception of shrimp quality due to some practice of adulteration (artificially increasing weight by Injecting liquid tapioca) may lead to an export slump of the product	**Promote traceability and fair practices across the supply chain.** a. Assist training the entrep. Depots and staff on traceability. b. Create awareness on using traceable inputs c. Assist BFFEA in its campaign for fair practices for ensuring high quality of the product	Farmers' awareness on using traceable inputs increased. Supply chain actors know about the detrimental effect of unfair practices.	Traceability in supply chain strengthened. Farmers' suppliers become more vigilant and take proactive roles for ensuring the quality of the end products Contamination sources identified and corrective measures ensured.	Export of traceable stuffs increased. Rejection by buyer decreased by more than 50%.
Lack of farming integration leads to underutilization of resources.	**Promote crop rotational golda and bagda farming on seasonal basis.** a. Support training on integrated golda/bagda farming with fish and vegetables. b. Assist establishing demonstration on the benefits of crop-rotational farming	Farmers are trained on farming integration by diverse crop production.	Diverse crop production institutionalized. Effective utilization of resources leads to more production of shrimp, fish and vegetables.	Sales and family consumption increased. Sales: $ 1 million Jobs: 300 FTE
Negative perception of buyers on labor practices in srimp processing industry threatens GSP cancellation as well as	**Promote compliance of Labor Law for the shrimp processing plants.** a. Assist training on local labor law among the workers and managers of	Value chain actors become more educated on labor law provisions and rights.	Processing plants and the whole value chain are more compliant. USTR and buyers'	Access to international buyers enhanced. Processors, depot owners and farmers get better prices

Shrimp Constraints	Interventions	Outputs	Outcomes	Impacts
import ban from USG.	shrimp processing plants b. Facilitate visits of USTR and key buyers to shrimp processing plants.	Buyers are aware of latest status of labor practices.	perception of labor practices is based on realistic ground.	for their produce. Sales: $ 500,000
Inadequate biosecurity and HACCP compliance in processing plants lead to rejection of consignments, mostly from EU market.	**Promote hygiene and standard bio-security in shrimp supply chain.** a. Facilitate training on bio-security and HACCP depots & processing workers and managers.	All associated with processing and handling of raw materials are aware of biosecurity and HACCP.	Processing plants and exporters are more compliant on biosecurity and HACCP.	Rejection reduced significantly. Export enhanced. Sales: $500,000
Lack of adequate Value Added Products (VAP) in shrimp results low volume of exports from the sector.	**Promote development of value added products for export markets.** a. Exposure visits: Processors to Gulf food fair/Brussels or Boston food fair b. Training: development of value added product	Awareness on diverse VAP development created	Effort to penetration in new markets with new products enhanced. Access to new markets abroad enhanced.	Export revenue from shrimp products increased. Sales: $ 1 million

Causal Model – Leather Products

Leather Products Constraints	Interventions	Outputs	Outcomes	Impacts
Inadequate availability of semi-skilled and skilled workforce (workers and supervisors). This is causing the players in the leather sector to limit their plans for additional production and sales. This constraint also challenges potential new investors to create factories, resulting in the loss of employment creation and investment.	**Develop and enhance skills of workforce (workers and supervisors) by providing technical "on the job" training in the footwear and goods sub sectors.** Support the sector in developing semi/skilled workers through COEL training. Assist the sector in developing skilled floor supervisors through COEL training. Partner with LFMEAB and its member organizations to train additional new workers in parallel with COEL program. Help LTSE members train their new recruits for expanded factory. Collaborate with partners in making two publications on training models.	4,300 new workers and supervisors will be trained in the techniques of footwear and goods manufacturing. Two joint publications are available on training modules.	1,250 trained people (including 30 supervisors) will get full time jobs in the footwear and goods sub sectors. Sector players will use these modules for future reference.	Income generation for newly employed workforce. Sector will increase sales through additional production by 1,250 trained workers this year worth about US$31 million.
Lack of competitiveness of SMEs. Inefficiency at all levels is a common phenomenon of SME business. Limited access to business information, lack of financial skills and knowledge, lack of appropriate machines and atmosphere of productions, and poor practices in management and compliance are the primary obstacles to	**Assist SMEs to realize and leverage their potential strength by providing technical assistance in building new market linkages, accessing market information, maximizing the use of technology, and obtaining bank loans.** Assist SMEs in obtaining bank loans. Help SMEs in building linkages with lead enterprises and corporate businesses through workshops, buyer/seller meetings, and other mechanisms.	350 SMEs will participate in the following: - 10 in linkage program - 25 in exposure visits - 35 in trade fairs -20 in access to finance workshops/seminars -135 in management skill enhancement training -100 in knowledge sharing -100 employees will	5 SMEs will build business linkages with other players 40 SMEs will implement better business practices. 8 SMEs will obtain loans from banks. 100 workers will be trained. 40 new jobs will be	Sales increases by US$75,000. Income generation for new workforce. USD$70,000 in bank loans will be disbursed.

Causal Model – Leather Products

Leather Products Constraints	Interventions	Outputs	Outcomes	Impacts
competitiveness.	Support SMEs in expanding linkages and sales through participation in trade fairs. Facilitate skill enhancement program for Aarong's small subcontractors. Assist SMEs in learning better business practices by arranging visits to large industries. Help SME worker/supervisors in gaining access to better health services in collaboration with the BSSF program. Support LTSE group in establishing their own brand by engaging branding and promotional experts. Disseminate information and share knowledge with SMEs regarding improved and cost efficient production.	receive health services from LTSE group. -	created.	
Lack of dedicated service providers. Absence of services related to workforce skill development, project development, product development, property testing of raw and finished materials, etc., is forcing the sector to be dependent on outsourcing, thus making the sector less competitive.	**Strengthen the capacity of existing SPs and help improve their services by engaging local and international experts, and facilitating increased cooperation between SPs.** Strengthen capacity of COEL by providing technical assistance in TOT and product development. Facilitate linkages with BLSC/BCLET for joint collaboration in conducting materials testing. Bring experts to assist LMFEAB to develop a knowledge center to serve as a hub of	COEL will receive support from BCLET/BLSC, PRICE, FDDI, etc., in the area of testing, capacity building of its own trainers/resources in developing business plans, etc. COEL met BLSC/BCLET through two linkage building	Institutional capacity of COEL will be strengthened. Relationship between COEL and BLSC will be improved. Interested sector players will use the center to stay updated on market, production, technology, and other information.	Sector gains improved services in terms of supply of skilled workforce. Improved access to information.

Causal Model – Leather Products

Leather Products Constraints	Interventions	Outputs	Outcomes	Impacts
	information for the sector.	meeting. LFMEAB information center will be operational.		
Unskilled seasonal flaying workers inflict defects in crust/finished leather. Due to a lack of awareness of proper flaying and preservation techniques, significant damage occurs on hides/skins during every Qurbani. This leads to poor quality of finished leather and extra consumption of leather to avoid defects.	**Reduce manmade defects of hides/skins by facilitating flaying campaigns prior to Qurbani (2011 and 2012).** Assist BTA and BFLLFEA in organizing campaigns in collaboration with LSBPC.	50,000 leaflets/posters will be distributed. 150 immams will participate in an orientation and training program.	200,000 people will learn about the importance of flaying/preservation and appropriate techniques.	General quality of hide/skins in terms of cleanliness and flay cut, will improve by 5-10%.

HORTICULTURE

A. Overview and Constraints to Growth

The horticulture sector grew approximately five percent during 2011 due to increased areas under cultivation and higher yields of winter vegetables. Domestic demand for horticultural crops is quite high, which increases local prices and reduces the incentive to export, despite a 20% cash incentive from the government. Exports are also constrained by poor post harvest practices, high packaging costs, and expensive air freight. Despite these limitations, fruit exports doubled last year to $37 million, and vegetable exports grew by more than 50%, to $72 million (Export Promotion Bureau).

After rice, potato is the second most important food crop in Bangladesh. Potato has also shown remarkable growth during the last two years. Potato production was expected to decrease this year in comparison to the previous year's bumper crop, but it remained at around eight million metric tons. Because of the bumper harvest, the price of potato dropped to BDT 4-5 per kilogram immediately after harvest, and eventually increased to BDT 8-10 per kilogram.

Farmers do not have adequate cold storage facilities to preserve their potatoes and the charges for storing potatoes are higher than those from the previous year. Despite these challenges, Bangladeshi potato was exported in significant quantities to other countries, especially, Malaysia, Singapore and Sri Lanka.

Some farmers are still getting very low yields of 4-5 MT of potato per hectare, mainly due to poor quality seeds, poor inputs and bad management practices. PRICE and its partners have shown that in low production areas, productivity can be easily doubled through better management, use of quality first generation seed, better pest management techniques, and proper use of organic compost and balanced fertilizers. Therefore, there is ample opportunity for both vertical and horizontal expansion of this vital crop.

Processed fruits and vegetables currently constitute less than one percent of the total horticultural produce, but there is good potential for the growth of potato-based processing industry. Four new processing varieties of potato were recently released by the government and will help develop the industry.

Although eggplant is an important cash crop for small holders, farmers started abandoning it due to high cost and serious pest infestations resulting from indiscriminate use of pesticides and poor yield. The crop grows both in summer and winter depending on the topography and the variety. As a result of high rainfall this year, which limits pollination and causes crop damage, the total yield of eggplant was especially low. This year, PRICE farmers made large profits, particularly those that followed good farming practices, with prices reaching as much as BDT 80-120/kg. It is clear, through PRICE's monitoring efforts, that by reducing dependency on pesticides and chemical fertilizers, following regular vigilance against FSB, removing the infected shoots by

hand, and using compost and pheromone traps, any good farmer can make a profit. Productivity also can be increased by following simple but sustainable practices, followed by crop rotation.

The overall production of mango was not significantly low but is estimated at about ten percent less than the previous year. In the Chapainwanganj area, production was fairly good, especially the Fazli variety, a late variety, which had the highest yield. Production was low in Satkhira and Chuadanga, due to heavy rainfall during the harvest. Fruit cracking caused about 20% crop loss. The climate influenced the fruit setting, although flowering was fairly good and bumper production was predicted during that time. The price of mango was quite high, especially the late variety, which partly compensated for the low production. Mango was not also imported as usual in large volumes from India, mainly due to low production of mango in India as well.

Areas devoted to the production of mango continue to increase due to increasing demand. However, this crop continues to be challenged by pest control problems, achieving regular orchard floor management with proper care, irrigation and fertilization, early harvesting before maturity, the use of carbide for ripening, high rainfall during harvest, and poor post-harvest handling, particularly cleaning, sorting, grading and packing.

The major constraints to growth in the horticulture sector are the following:

- Lack of good quality seeds, planting materials, fertilizers, and other inputs.
- Lack of high yielding and suitable industrial varieties of different crops appropriate for further value addition.
- Poor soil due to low organic matter content.
- Use of traditional farming practices due to poor knowledge and skills of the farming community.
- Unsafe application of and frequent use of chemicals due to lack of knowledge, absence of good agricultural practices, and poor phytosanitary service.
- High post-harvest losses due to the nature of crop and farmer’s poor knowledge.
- Absence of field pack stations, standard assembling points, cold storage, and cool chain facility, proper packaging, and transportation facility.
- Weak supply chain and lack of market information system.
- Limited land or no land available for expansion of horticultural crop cultivation.
- Limited access to credit.
- Poor institutional support and lack of technical manpower.

B. Progress to Date

To expand the production of potato, which is prevalent in the north, PRICE took the initiative to expand potato production to the south, which has a more limited area for potato production. PRICE trained 2,272 table potato farmers in the north and 540 in the south to on production and post-production, including field curing, haulm pulling, harvesting, sorting, cleaning, grading, and storage. Similarly, 740 seed potato farmers in the north and 120 farmers in the south were trained on technical issues related to the production of disease-free seeds, from plantlets to tuberlets.

Supervisory and technical service support was provided to farmers during the production season to help them in sowing, determining fertilizer doses, intercultural operations, irrigation, drainage, and dealing with unfavorable situations such as pest infestation against early and late blights disease. PRICE also facilitated access to good quality seeds through linkages with potato seed partners. This support has led to increased production of potato mostly in the south and additional increased production in the north. In the south, farmers used to get 2.5 MT to 7 MT of potato from an acre of land, which has now increased to 7.5 to 13MT per acre. This increased production enables the farmers to obtain cash quickly after the harvest and helps them to increase consumption, which has boosted their willingness to increase production in coming years by adopting modern technology and better seeds.

PRICE focused on improving and increasing capacity for tissue culture based seed production, access to good quality certified seeds, and post-harvest handling. PRICE's partners in the south produced about 5,800 MT of table potato and 1,075 MT of seed potato. In the north, nine partners who worked with seed and table potato had a production of 30,000MT of table potato and 1,700 MT of seed covering a total area of 1,877 hectares of land, creating 550 full-time incremental jobs. These partners were engaged in the production of table and seed potato mainly through contract farming. PRICE helped train 3,037 potato farmers on different production technologies, pest management, and post-harvest handling.

PRICE also supported tissue culture labs with technical manpower to improve their capacity in producing tissue cultured plantlets. Forty (40) participants from different potato seed producing companies attended two training programs on lab and field techniques of tissue culture technology for potato production. This will strengthen the capacity of tissue culture labs engaged in the production of disease-free potato seeds. PRICE partners successfully produce 710,000 disease-free potato plantlets, part of which were used by the enterprises for further multiplications; the other part was sold to other seed producers.

PRICE was able to take the tissue culture seeds from north to south for production of commercial seeds by establishing linkages, as no potato seed producers in the south had been exposed to the technology. Through linkages established by PRICE, the first ever net house for the production of disease-free breeder seeds was established in the south of the country. The company produced 3.31 MT of breeder seeds, which will eventually be utilized for further production of foundation and certified seeds.

Other important PRICE interventions included training females responsible for the harvesting and post-harvest handling of potato, which if done improperly, is a main cause of storage loss. A large quantity of potato comes into the market early in the season without skin and in very bad shape, causing loss and wastage. PRICE organized a hands-on training for 600 women in the north, and 146 women and 284 males in the south on table and seed potato harvesting, curing, sorting, grading and packing, which greatly improved the quality of potato. Potato farmers were also given hands-on training through field consultants on field curing, haulm pulling, skin finish, and harvesting techniques. In addition, 60 cold storage workers were also trained on storage

operation in order to improve storage condition of potatoes so that storage losses could be minimized.

PRICE facilitated the export of table potato to Tesco-Malaysia and two other Malaysian buyers. This was the first attempt to export Bangladeshi potato to an international chain outlet. Golden Harvest exported 267.17 MT of granola potato to Tesco-Malyasia. Ferdous Biotech, another PRICE-supported enterprise, also exported 107 MT of granola potato to a Malaysian exporter (Gateway China BHD). The enterprise also exported 67 MT of granola potato to Vietnam (Power Dynamic Limited) through Malaysia, a new destination for Bangladeshi potato. PRICE supported Ferdous Biotech with proper grading, sorting, cleaning, and bagging in 5 kg and 10 kg nylon meshed bags. Ferdous Biotech exported table potato was worth USD $43,095.

Expansion of potato from the north to the south helped diversify crops for the farmers. Many farmers of the south who got good seeds, attended field schools, and were regularly supported by technical staff were amazed to achieve such good yields for the first time. A group of 90 farmers of Gourighona under Kesobpur Upazilla who once cultivated potato but abandoned it due poor yield and pest infestation was encouraged to cultivate potato again. With training and advice from PRICE consultants, the farmers increased their per acre production of potato from 2.6 MT to 7.8 MT, making them excited to adopt this crop for cultivation. Many farmers added potato into their everyday diet, consuming about 10-15% of the total production, thereby reducing the amount of rice they consume.

The consumption of French fries and potato snacks, which use a processing type of potato, is rapidly growing in Bangladesh. To meet this growing demand, PRICE introduced processing type of potatoes – such as Asterix – to farmer groups and partners and linked these groups with processing companies. With PRICE assistance, results have been positive, with an average yield of around 11 MT per acre, with some farmers achieving up to 14.4 MT of potato. Most of the farmers kept potatoes in cold storage as seed, while some of them sold to buyers for a premium price of BDT 1,000 for a 40 Kg bag.

Although mango is one of the most popular fruits in Bangladesh, and produces some of the finest quality of mangoes, this crop requires additional attention. There are some improvements, but the knowledge and skills of the farmers in growing and marketing the best quality mango remains low. Therefore, PRICE has been working with four partner organizations in the north and south to train about 3,260 mango farmers on production technology, pest management and post-harvest handling. Trainings were focused on alternate approaches to ripening such as using cold and hot water treatments rather than carbide, which is used to ripen immature fruit. The trainings were followed by technical supervision and hands-on training focusing on cleaning, sorting, grading, and marketing of mangoes. Carbide-free mango was sold at the mango fair in Dhaka and through different retail outlets. Through market outlets, PRICE supported three enterprises that sold about 110 MT of fresh mango, earned a total sale of BDT 8,941,235, and created 408 full-time jobs during the season.

PRICE gave special attention to eggplant, a major cash crop for most vegetable farmers, to address the major constraints. During 2011, 890 eggplant farmers were trained on several key

issues, such as seedling raising techniques, planting, pest infestation, use of biological control measures, and targeted application of pesticides.

PRICE supported several organizations who work with eggplant farmers to improve production, adopt safe and clean practices in pest management, and establish market linkages. PRICE, in collaboration with local partners, provided support to 500 eggplant farmers in the Jessore region to minimize the use of pesticides, adopt integrated pest management practices, and increase productivity through environmentally friendly measures during last winter and summer season. Farmers went under a two-day technical training followed by technical supervision and field schools to understand successful commercial production so that eggplant farming would be profitable. This training and technical support helped them increase their yield by 70% - 80% over the previous period, and the cost of pesticide was reduced by 25%. Before these trainings, pesticides were used every other day, but after the training the pesticide spraying interval was reduced from 3-5 sprays in a week to once in a 10-12 day interval, depending on pest prevalence.

PRICE supported local partners to improve the best performing varieties through mass selection production and to introduce new varieties. These two interventions helped farmers to increase their yields.

Another important initiative was eggplant grafting for root rot-resistance. In Jhikorgacha, Jessore PRICE trained farmers on grafting and supply planting materials. To introduce the technology, 50 gms of wild root rot-resistant eggplant seeds were collected by PRIDE Agro- Enterprise and during the next season, grafting of seedlings will be demonstrated to further expand this methodology.

Rejuvenation of eggplant extends the crop cycle, helping farmers produce additional yields by extending the fruiting season to one month. Farmers were trained on the techniques and from mid-June, many got a second crop from the existing field. Through this effort, farmers increased their profit by an average of BDT 70,000-85,000 per half acre.

Soil organic matter content is vital for successful crop production over a long period of time and in many areas where intensive cropping is practiced the organic matter content is extremely low. PRICE is working with two organic fertilizers and composting companies to promote the use of compost and other bio-fertilizers among the vegetable farmers for sustainable crop yield. PRICE trained 1,980 farmers on the use and application method of vermin and tricho compost for different types of vegetables in combination with chemical fertilizers. GKSSE established 77 demonstrations plots and expanded its marketing network in eight districts of north. Sub-Assistant Agriculture Officers of the Government Extension Department (147 total) were trained on soil health and on the use, importance, and application of organic fertilizer and compost for different vegetables. Demonstrations, trainings, and market linkages helped one partner increase production from 39 MT annually to 321 MT and 6800 liters of tricho liquid fertilizer. The revenue increased from BDT 273,000 to BDT 2,489,000.

C. Strategic Focus

PRICE will continue its work to strengthen the horticulture value chain, focusing more on the southwest, particularly in the Jessore and Khulna regions, and expanding the crop base from potato, eggplant, and mango to other high value horticulture crops, possibly including beans, cabbage, cauliflower, tomato, chili, onion, gourds, and taro, depending on what is most suitable and adaptable to the region. Strengthening these value chains will have a positive impact on the livelihoods of many poor farmers of the region. PRICE will continue working with the existing partners in the north as well.

Through its interventions, PRICE will continue to provide technical support to farmers to minimize post-harvest losses, rationalize the use of chemicals, adopt more sustainable production techniques, and facilitate access to better inputs, finance, and markets through NGOs, associations, enterprises, and companies. The main thrust of its interventions will be increasing production of high quality, safe produce following good agricultural practices. By doing so, not only will sales and income increase, but jobs and food security for families will also improve.

Along with deciding to continue working with the three previously selected crops and other suitable and highly adaptable crops, considerations for geographical advantages and opportunities for future growth of these crops in the south and southwest would be the prime focus. In more ecologically constrained areas, where flood-free high land suitable for horticultural crops is not available, the focus will be on dyke-based farming where relay and intercropping will be introduced with safe production of vegetables methods. These interventions will incorporate fish and rice so that small farmers can harvest year round benefits from all the components by adopting a holistic approach instead of a single component approach. PRICE will also incorporate the embankment of GHERS under a suitable horticulture production plan so that along with additional income from the production of safe vegetables, access to more balanced food and nutrition increases and land is utilized in a sustainable way.

In addition to PRICE's efforts on crops, PRICE will focus on several cross-cutting issues which have a profound effect on sustainable future growth of the horticulture sector. Access to good quality seeds and planting materials will be the major thrust since this will boost productivity. This will be achieved by working with the reputed seed companies and putting extra efforts in the south, where PRICE will work to strengthen the value chain of preferential crops in the areas.

PRICE's interventions in the horticulture sector will address several issues that include: use of balanced doses of fertilizers; replenishment of soil organic matter content for sustainable production through increased use of organic compost and use of super granules in selected crops to minimize cost of production; adoption of safe production and post-production processes; following good agricultural practices; access to finance; and, market linkages.

Along with deciding to continue working with the same crops, considerations for geographical advantages and opportunities for future growth of these crops delineate PRICE's focus to the west and southwest part of the country.

PRICE will also support the evolution of new business enterprises linked with captive financing and will encourage the development of informal groups into formal groups, associations and companies. By doing so, PRICE expects to reach more than 15,000 horticulture farmers. While increased sales, jobs, and investments are target areas of PRICE activities, the focus will also be on adoption of technology, return from unit land, and the number of households benefitting from the interventions - which ultimately ensure food security at the family level of farmers.

D. Interventions

Potato

Support disease-free quality potato seed production from tissue cultured source, better storage, and access to potato farmers. Despite recent efforts by the private sector and the Government, the annual seed replacement rate of potato is still less than ten percent, and the demand for good quality tissue cultured seeds is increasing. PRICE will continue to work to improve the situation, which will have profound positive effect on the sector.

During the last season, potato production was around 8.1 million metric tons, a little less than last year. PRICE will continue to support nine of its existing seed producing enterprises to increase availability and access to disease-free quality potato seed, while consolidating gains achieved through the interventions.

PRICE will focus specifically in the south where there is potential to grow potato. Interventions will include establishing linkages with potato producers who have good potato seed sources and supporting existing potato seed partners to increase their capacity to produce breeder seeds from the pre-breeder seed and plantlets.

Production of good quality and disease-free planting materials is the key to the success of the industry. To promote this, PRICE will support five partner laboratories with technical expertise so that good quality and disease-free plantlets , tuberlets, breeders, and foundation seeds are produced. Technical assistance to produce breeder, foundation, and certified seeds will be provided to five seed producers' associations reaching approximately 1,500 seed producing farmers.

Another constraint to quality seed potato production is a dearth of skilled manpower, from lab technicians to field level workers. PRICE will continue its assistance in organizing training programs to train 60 tissue culture lab and field personnel of different seed enterprises and associations at all levels so that a critical mass of human resources is available to promote quality seed production.

Biotechnology labs that are engaged in producing in-vitro disease-free plantlets, pre-breeder, breeder, and foundation seeds sometimes miss the vital linkage of seed producing farmers and companies who usually produce certified or truthfully labeled seeds, and are a main source of

good quality seeds. PRICE will continue to strengthen this vital linkage between farmers, seed producing entities, and labs.

Technical assistance will be provided in the production of pre-breeder, breeder, foundation, and certified seed production in the field to the seed potato partners so that proper quality can be maintained to produce the best quality seed potato.

Access to Seed Certification is crucial for proper quality assurance, but such a certification system is not mandatory and proper classification as per the international system is lacking in Bangladesh. In order to streamline the certification process of potato seeds and establish linkages with all the TC labs and seed producers, a PRICE facilitated access to seed certification workshop will be held with the participation of SCA (Seed Certification Agency), seed companies, and associations including farmers.

To build stakeholder consensus on a national level, PRICE will organize a national seminar on the TC based seed potato system in Bangladesh in order to promote disease-free seed potato production and certification. A potato manual will also be developed in collaboration with RDA for the use of the stakeholders in future.

PRICE will also work with new enterprises and farmers' associations to establish marketing linkages to enable them to access good quality seeds more easily.

Support to establish contract farming. Contract farming systems are not new to the agriculture sector, but they are not well-rooted and in some products, such as potato, they are almost entirely absent. Many enterprises and industries are aware of the advantages of the system, but do not follow a well designed approach that benefits both parties (i.e., farmers and enterprises), and are not interested in establishing a long term relationship. Both parties look for a quick benefit for themselves which creates distrust.

PRICE will facilitate contract farming by the enterprises that will target the domestic market, as well as exports and the production of seed potato. Contract farming elements introduced earlier with some PRICE partners, such as supply of good seeds, credit, technical assistance, and buy-back of produce, will be strengthened and expanded upon during this year. PRICE will work with both sides of the contract farming system to improve their mutual understanding. Through these initiatives, PRICE will reach 500 seed potato contract farmers of three seed companies, 2,000 table potato farmers, and four entrepreneurs. PRICE may undertake some exposure visits to neighboring countries where a similar system is effectively working.

Enhancing the productivity of table potato. The average productivity per hectare for PRICE farmers increased substantially in the north (from 10 metric tons to 20 metric tons per hectare) which can be enhanced through improved management practices.

Increased yields were a result of access to better seeds, applying modern skills and knowledge of production technology, adoption of better management practices, use of required inputs,

favorable weather, and continued technical advice during the growing season. These interventions will be continued during this year to support farmers of new enterprises, especially in the south where potato production is still low and ample opportunity exits to improve productivity.

PRICE will educate 2,779 potato farmers in the north and 2,600 in the south on the importance of knowledgeable use of soil nutrients through soil sample analysis of individual grower's plots. Soil samples from the farmers will be collected and tested to determine the soil nutrient levels. Based on the findings, a soil health card will be issued for individual fields which help in determining the level of nutrient use. This will be followed by establishing linkages between the enterprises and potato grower association members who use good and registered organic compost and fertilizer sources, which leads to a balance used of nutrients.

PRICE will also organize a training and field school for identification of pest and diseases and adopt prophylactic and control measures with rational and minimum use of pesticides. Hands-on training and technical advice during production and demonstrations will continue to helps farmers to follow and adopt appropriate measures in pest control.

Assist in adopting appropriate post-harvest handling measures including better storage. Calculating the proper time of harvesting crops so they can attain appropriate maturity, dry matter and starch content, reducing sugar levels, and adequate post-harvest handling is critical to maintain proper quality of table and industrial potato.

Industry people, seed companies, farmers, and even sometimes agriculturists are not aware of all these required attributes. Early harvesting reduces dry matter content and results in potatoes that are not of the correct size, making it difficult for processing and storage. Fixing the right parameters for harvesting and establishing a strong post-harvest handling system is critical after all the efforts given to seed collection and planting, taking agronomical measures, and the associated time and expenses. In Bangladesh farmers are not aware of these parameters and do not have skills in harvesting and post-harvest handling techniques. As a result, many farmers harvest early when potatoes are not mature or they do not adopt proper harvesting techniques which result in rapid deterioration of quality. PRICE will help farmers to understand the harvesting parameters along with pre-harvesting techniques, especially in the southern region, where new emphasis will be given to boost up production and food security.

PRICE will facilitate hands on training for about 4,200 workers, especially women, who usually do the harvesting and post-harvest handling operations. Awareness will also be developed among the potato grower and seed enterprises and contractors to follow proper harvesting and post-harvest techniques so their products meet the quality standards for local and export industry.

Access to markets for seeds and table potato. Access to markets has been always a problem for growers, which is addressed partially through establishing contract farming systems as well as linking wholesalers and dealers who are engaged in seed selling. Cold storage owners, exporters, and processing industries are bulk buyers of potato. PRICE will facilitate product based linkages

with the suitable end market. Effort will be given to improve the quality of export potato and to help link the big producers to the importers.

Eggplant

Increase productivity by adopting appropriate cultural practices. Although eggplant is one of the most common vegetables, the productivity of this crop is not as good as expected for both winter and summer crops. One limiting factor of growing successful eggplant is a lack of understanding on seedling raising techniques, improper fertilizer application, and non use of compost, unclean cultivation practices, irrigation management during winter, and poor drainage during high rainfall. PRICE will support training for eggplant farmers to adopt better cultivation procedure sand clean cultivation techniques.

Promote access to good seeds of better yielding eggplant varieties for summer and winter. Eggplant is a high value crop for most farmers, and there is diversity in land races but a dearth of good variety. This, coupled with farmers' strong opposition to unknown varieties, makes it difficult to introduce new varieties, although the yield of many local varieties is low and the incidence of pest infestation is high. PRICE will establish linkages between seed companies, institutes, and projects that have high-yielding eggplant varieties, with disease resistant attributes and are suitable for a variety of locations. Demonstration plots will be established with new varieties. At the same time, support will be provided to improve the existing lines which have deteriorated their yield. FSB resistant BT eggplant, if released, will also be shown to farmers.

Facilitate grafting techniques and integrate biological control measures with other pest management practices. Practical demonstrations, followed by supplying grafted plants and the establishment of demonstration plots, will make farmers aware of the importance of grafting to keep their eggplant safe from bacterial wilt. Solarization of seed beds, use of tricho-derma, and other means of soil treatments of seed beds will be used to start with better seedlings for transplantations in order to minimize diseases. Regular vigilance and hand removal of infested plant shoots will be popularized.

PRICE will also build farmers' awareness and adoption of clean production management, growth of natural predators by limiting the use of toxic pesticides in favor of bio-pesticides, and promote integrated pest management practices. This will be done through demonstrations and a farmer's field school.

Support to know farmers own soil. Eggplant grows in various types of soil and is a moderately nutrient-exhausting crop. Regular cultivation in the same plots and improper replenishment with imbalanced fertilizer makes the land unsuitable for sustainable good yields. Regular soil health checks helps in adopting better fertilizer management. PRICE will test the soil of 2,000 eggplant farmers in the north through testing institutes and will provide soil cards to the farmers with appropriate fertilizer recommendations for eggplant.

Increased use of various types of compost including tricho-compost and tricho-extract in eggplant will be promoted, including inter-cropping, crop rotations, and the repeated plantations of eggplant in the same land will be discouraged.

Mango

Assist in increasing productivity of mango. PRICE provide training to 2,350 mango farmers in the north and 2,500 farmers in the south on orchard floor management, irrigation schedules and techniques, and fertilizer management to improve regular production of mango. Technical guidance will be provided at all stages, from blooming to fruit setting, so that farmers can get support during critical periods of fruiting. Flip charts and flyers with important notes will be given to farmers.

Promote mango contract farming involving small holders. Satkhira and Chudanga of the south have become two new production areas of mango from where both the earliest and latest mango comes to the Dhaka markets. The orchards in the area are relatively small in comparison to the northwest of Bangladesh, but the farmers can make good money if proper care and support is provided to the farmers. Considering the small farm size, some kind of contract farming system would help the farmers to get technical support, access to credit, and also help marketing. PRICE will encourage enterprises and NGO's to take up the project through which they can extend support to small holders. PRICE will support three enterprises to develop a contract farming system that involves new orchards covering small holders' mango farmers to ensure they receive access to technology, credit, and the market.

Access to elite planting materials of commercial varieties. Unlike other seeds, quality planting material for mango is critical due to the fact that mango is a long standing crop which can give commercial yield up to 40 years, if not more. There are plenty of nurseries in Bangladesh, but getting the right type of plants is still a big problem. PRICE will train the mango farmers, workforce, and nursery owners to establish mother orchards, and will identify best varieties and techniques of grafting to expand orchards.

PRICE will also provide training to the nurseries through the nursery association on how to produce the right type of planting materials required for new orchards. The nurseries will provide embedded services to the farmers during the establishment of new orchards. PRICE will support farmers to expand their orchard with the right kind of planting materials, help in proper lay out design, etc.

Assist in proper harvesting and post-harvest handling. The time of harvest is critical for attaining proper taste, consistency of flesh, sweetness and increased shelf life. In the south, farmers are always tempted to harvest early when they can still keep their fruit on the trees for two more weeks. When the fruit cannot develop properly, it never accumulates proper micronutrients, vitamins, and other essential phyto-chemicals as good nutrition. Instead, these mangoes end up with carbide treatment to get color, and artificial ripening, causing immense harm to children and their mothers. Unscrupulous middlemen buyers usually lure the small

farmers to harvest early. PRICE will work with three enterprises totaling about 2,300 mango farmers in the south so that proper marketing is undertaken by the enterprises and the mangoes are harvested after reaching full maturity. Farmers will be made aware about the harmful aftereffect of early harvesting. Similarly, training on proper harvesting techniques will be provided to all the farmers in the south and northern areas so that quality does not deteriorate during harvesting.

Post-harvest handling of mature fruit is another important area where proper attention will be given so that mango remains good until it reaches the consumers. Proper cleaning, treatment to stop rotting, sorting, grading, and packing in plastic crates with proper wrapping is vital to maintain better quality. PRICE will support the farmers and train 1,000 workers associated with harvesting and post-harvest handling so that they can handle the crops in a better way.

Promote marketing of safe mango. PRICE will work with the associations and enterprises to create awareness and train farmers on the use of biological agents, mechanical methods, and use of less toxic pesticides to control pests during production. PRICE will also continue work to build awareness of the negative effects of carbide, targeting traders and retailers through workshops and meetings, and support partner associations and enterprises in opening and operating market outlets in Dhaka and other important outlets that sell carbide-free mango to the public. PRICE will attempt to organize a mango fair with chemical-free mango of different varieties.

Other Issues

Encouraging farmers in the south to grow a basket of high value horticultural crops. The south of Bangladesh has both problems and opportunities for further growth in the horticultural sector, but has not gotten proper attention for years, mainly due adverse natural situations and poor communications, despite supplying year-round vegetables to feed the country. PRICE will shift its focus in the south during the remaining period to promote a basket of additional high value vegetables like, tomato, cool crops, beans, cucumber, gourds, onions, and turmeric. The major constraints will be identified, which are expected to be similar to other vegetables and interventions to improve productivity, pest management, access to seeds and inputs, and post-harvest handling and marketing will occur. PRICE will work with 12 new associations and NGOs, through which about 14,000 new farmers will be helped.

Promote access to best quality vegetable and spices seeds of high value crops. Access to good quality seeds of major horticultural crops still remains a major stumbling block to improve the sector. Farmers' own seeds, or seeds from the neighbors or village markets remain the major sources of seeds for the majority of the farmers, except a few who have access to good quality seeds but may also be victims of cheating due to adulterations by the seed sellers.

PRICE will work with seed companies to focus in the southwest region so that seed dealers are trained and farmers are informed about good varieties and see relevant demonstrations. They will encourage them to attend rallies and field days to assess the quality and report back to the

company of the performances of the seeds. Through the dealers, these seed companies and enterprises will provide embedded services to the farmer's communities about the seeds and ensure access to good quality seeds. PRICE will train dealers, support hands-on training, field days, and field schools so that good quality seeds can reach thousands of farmers.

Support dyke-based horticulture farming in geographically constrained areas of south. The south has limited land for horticultural crop cultivation which is an important source of micronutrients for the human body. In these areas, the main cropping pattern is single crop Aman rice followed by mainly zero tillage oil seeds, pulses, and some late vegetables. Recently, farmers introduced cultivation of fish during the rainy season, which had good dividends. They have built dykes for the protection of their fish, which could be used commercially for year round vegetable cultivation, if all nearby farmers joined together for vegetable farming, eventually making it an economically viable option. PRICE started working with two partners in Khulna on dyke-based farming which is almost pesticide-free. PRICE will continue to work with the partners and scale up its activities in the area by involving about 3,000 farmers. Training, technical support, access to good seeds and other inputs, and marketing will help to ensure better economic returns and nutrition to the family. Attempts would be made to include more enterprises to support dyke-based farming.

Introduction of field pack station, good practices, and an information center. PRICE will establish one field pack station on a pilot basis in partnership with EFDAF in the south. This will help increase the quality of the products that are going directly from the dykes to the market. PRICE will also support farmers, specifically dyke farmers, so they may undertake good agricultural practices such as clean cultivation, biological control measures, and the use of good seeds, and will help enterprises to adopt traceability. PRICE will also assist EFADF Agro Enterprise to establish two farmers' information centers in Khulna for dissemination of technical knowledge as well as market information

Encourage use, production and marketing of organic fertilizer. PRICE will continue to support two existing enterprises in the north and two new enterprises in the south to increase their efficiency in producing vermi and tricho composts and train farmers on use, doses, and application methods of different types biological nutrients for different high value crops. Support will be provided to market the products so that farmers can easily gain access to the compost and grow better quality crops.

Support access to finance. Access to finance is fundamental for all to run their business, and is particularly crucial for farmers who need timely funds to buy inputs and employ labor for field-based work. PRICE will primarily work with micro-finance organizations to design products suitable for the PRICE farmers and to help access to crop or season-based microfinance become easy. Many of PRICE's partners are not aware of the products or services offered by banks or financial institutions. PRICE will organize workshops and meetings so that the banks, financial institutions, and clients develop linkages between lending institutions and partners.

GANTT Chart for Horticulture Activities 2011-2013

No.	Description of activities						Partners/ Responsibility	Location
1.	Potato	Q1	Q2	Q3	Q4	Q5		
1.1. Support production of disease free seeds production from tissue cultured source and easy access to farmers								
	a. Facilitate in providing technical support in strengthening operation of 5 tissue culture labs for production of disease free potato plantlets.						F Bio Tech, RDA, TFRD, Seed Potato Association, Ankur.	Bogra and Nilphamari
	b. Support RDA to organize training to 20 management staffs on tissue culture based seed potato.						RDA, ANKUR and others	Bogra and Nilphamari
	c. Assist in capacity building of 20 laboratory technicians engaged in plantlet production in different Tissue Culture laboratory.						RDA, TFRD, Seed Potato Association, Ankur and others.	Bogra and Nilphamari
	d. Support training to the 20 field technicians in production of tuber lets, breeders and foundation seeds growing organizations and storage.						Konica, Seed potato association, RDA, TFRD, F. Bio-tech, Dynamics, and others.	Bogra and Nilphamari, Chuadanga
	e. Organize a national seminar on tissue culture based seed potato development system in Bangladesh						PRICE and RDA	Bogra
	f. Publish a manual on potato seed , cultivation practices , post harvest handling operation and processing						PRICE and RDA	Bogra
	g. Facilitate training of 1500 contract farmers for production of high quality disease free , breeder, foundation and certified seeds of 7 enterprises / companies from tuber lets.						Konica seeds,RDA, TFRD, Fbio tech. Ankur, TFRD, Unique seed and others.	Bogra and Nilphamari, Chuadanga

	h. Provide field level technical support in production of disease free certified seeds.						All potato seed growing partners.	Bogra and Nilphamari, Chuadanga
	i. Support hands on training to 1400 workforce on harvesting and post harvest handling to all association and enterprises associated with seed potato						All potato partners	Bogra and Nilphamari, Chuadanga, Jessore
	j. Support in organizing workshop for access to certification in collaboration with Seed Certification Agency and seed partners						With all seed potato partners and Seed certification agency	Bogra and Nilphamari, Chuadanga, Jessore
1.2. Facilitate access to better storage for potato seeds by linking with standard cold storages suitable for seed storage.							All seed potato farmers, enterprises.	Bogra and Nilphamari, Chuadanga, Jessore
1.3. Assist in marketing of potato seeds of different partner enterprises							Konica, Seed potato association TFRD, MRDMCSL, GUKED, F. biotech, and others.	Bogra and Nilphamari, Chuadanga, Jessore
1.4.Support to establish contract farming system								
	a. Strengthen existing contract farming system by providing technical support to sponsor entrepreneurs in gradual adoption of contract farming system.						All sponsor partners.	Bogra and Nilphamari, Chuadanga, Jessore
	b. Assist 6 partners to reach 1400 seed potato contract farmers and 8 partners to establish contract farming involving 4000 farmers and provide technical assistance.						Konica, PRIDE , GUKED, KBK, MAE, MRDCSL, UNIQUE ,	Bogra and Nilphamari, Chuadanga, Jessore
	d. Support exposure visit to India / other country for sponsor entrepreneurs and farmers to get understanding of successful contract farming ventures.						Sponsors entrepreneurs and farmers.	

1.5. Promote in enhancing productivity of potato								
	a. Facilitate in increasing productivity of table potato by educating 5000 farmers through training on modern production technologies specially in the south.						MRDMCSL, USS, UNIQUE, MUKTIR ALO, PRIDE and other association.	Jessore , Bogra
	b. Extend farm level technical support for crop and disease management.						USS, MUKTIR ALO, PRIDE, MRDMCSL and others	Jessore and Bogra
	c. Facilitate in collection soil sample of more than 5000 farmers plots, test through SRDI laboratories, introduction of soil health card and assist in using balanced fertilizers.						SRDI, Farmers, MAE, PRIDE, MRDMCSL and other associations, NGO's	Jessore and Bogra
	d. Promote use of organic fertilizer in potato fields through technical assistance.						All potato growing farmers of partner organization	Bogra
	e. Assist in establishing linkage with organic compost and quality fertilizer manufacturers/ dealers with farmers, associations and enterprises.						Organic compost and fertilizer companies and potato farmers.	Bogra ,Jessore
	f. Help in organizing field schools, hands on training on pest identification, pesticide selection and adopt rational control measures.						Potato farmers of partner's organizations.	Bogra and Nilphamari, Chuadanga, Jessore
1.6. Facilitate increased supply of processing types of potato								
	a. Assist one association and one enterprise to initiate organized production of processing variety of potato(Lady Rosetta, courage, Asterix and others)						GUKED, and other partners	Bogra
	b. Support to establish linkage with the industry and potato producing enterprise / association to ensure smooth supply of raw materials as per requirement of industry exporters.						Blue moon , Murail, GUKED etc.	Bogra

1.7. Promote standard post harvest practices and value addition activities								
	a. Support to organize hands on training for about 3000 farmers, work force on harvesting technique (field curing, haulm pulling, curing etc) , post harvest handling (sorting grading, cleaning, packing etc)						Association and enterprise farmers and work force	Bogra and Nilphamari, Chuadanga, Jessore
	b. Facilitate access to better storage of potato by linking with cold storages.						Producing enterprises and processing companies. Murail, Unique , GUKED, Dynamic	
1.8. Support establishment of marketing linkage with potato farmers, association for seed potato and exporters, cold storage owners, processors for processing and table potato.							BFVEA Exporters, Processors, storages owners	Bogra and Nilphamari, Chuadanga, Jessore
2.Egg plant								
2.1.Support in increasing productivity by adopting modern cultivation practices								
	a. Facilitate training for 2800 egg plant farmers and hep in establishing demonstrations in improving seedling raising technology, hands on training (grafting) and clean cultivation practices , adoption of irrigation and drainage management and other cultural practices.						PRIDE, EFADF, Shushilon, RRF, Muktir Alo, USS and others.	Jessore, Khulna
	b. Provide technical assistance during the production period and assist to organize farmer's field school on critical growth period.						PRIDE, EFADF, Shushilon, RRF, Muktir Alo, USS and others.	Jessore, Khulna
2.2. Promote access to good seeds of high yielding variety (both local and introduced) for summer and winter							BARI, USS PRIDE , MUKTIR ALO, EFADF , Organix,	Jessore, Khulna

	a. Assist egg plant farmers to get access to good quality seeds through reputed seed companies and also help to identify locally available good land races. FSB resistant BT egg plants would be put on demo trial if seeds are released.						Lalteer seeds, Selected farmers of Mukitir Alo, USS, PRIDE, Organix,	Jessore, Khulna
2.3 Facilitate grafting techniques, and biological control measures integrated with other pest management approaches								Jessore, Khulna
	a. Support enterprises in establishing seed bed, organize grafting demo, and establish demo plots to show affectivity of grafted plants against bacterial wilt.						USS, PRIDE, Organix, EFAFF, AAS, Vakubs, GUKED, EFADF and others	
	a. Assist egg plant farmers on pest identification and adopt rational control measures with IPM control approach							Jessore, Khulna
	d. Assist farmers to adopt alternative biological control measure through training and demonstrations and facilitate linkage with farmers and bio-control agent suppliers targeting safe egg plant production.						GKSSE, Ryia and other partners, EFADF, USS, PRIDE, Muktir Alo and others.	Jessore, Khulna. Bogra
2.4. Assist farmers to know their soils and act accordingly for optimum use of resources and best output								
	a. Assist farmers associations, enterprises in soil sample collection of egg plant fields, get analyzed through linkages with SRDI, inform farmers about their soil health.						Egg plant farmers of all partners associations and enterprises	
	b. Support farmers in getting to know fertilizer requirement for sustainable production.						MAE, PRIDE, KBK,PJKE, RRF, PP, Shushlion	Jessore, Khulna. Bogra
	c. Promote access to organic and inorganic good quality balanced fertilizer, encourage use for sustainable production of good egg plant.						MAE, PRIDE, KBK,PJKE, RRF, PP, Shushlion	Jessore, Khulna. Bogra

	D.Organize demonstrations with AAPI project to show the effectively of UDP techniques for minimizing cost and improving productivity.						MAE, PRIDE, KBK,PJKE, RRF, PP, Shushlion	Jessore, Khulna. Bogra
2.5. Promoting a market for safe egg plant							Muktir Alo, EFADF, ORGANIX, PRIDE,	
	a. Assist in establishing linkage with producers of safe vegetables with exporters, local wholesaler and super shops.						KBK,PJKE, RRF , Egg plant farmers associations, enterprises, Exporters	Jessore, Khulna. Bogra
	b. Support awareness development campaign on consumption of safe egg plant among the egg plant consumers.						Organix. , EFADF, Super shops, consumers	Jessore, Khulna.
3.Mango								
3.1. Assist Mango farmers association and enterprises to introduce improved farming technique for increasing productivity.								
	a. Facilitate improving knowledge and skills of over 4500 farmers of north and south in orchard management, production technology, and adoption of proper crop protection measures through organizing training.						Adarsha, Uttaran, Banalata , DAFF , KMFCSL and other farmers	Chapainwabganj, Jessore, Meherpur Chudanga
	b.. Support in providing technical support to farmers during production period.						Aknur, Uttaran, Banalata , DAFF,Kansat Cooperative ,	Chapainwabganj, Jessore, Chudanga
	d. Facilitate practical training for farmers, work force and seasonal lessee on pest identification, appropriate pesticides and proper application method and interval.						Mango farmers of Adarsha, Uttaran, Banalata , DAFF , KMFCSL and others	Chapainwabganj, Jessore, Meherpur Chudanga
3.2. Promote contract farming for mango production.								
	a. Support NGO's and enterprises in designing a suitable model for organizing contract farming in order to improve						Uttaran, Ankur and others	Chapainwabganj, Jessore, Meherpur

	access to inputs, finance and market.							Chudanga
3.3. Support access to elite planting materials of location specific commercial mango varieties								
	a. Assists in providing hands on training to the farmers, nurserymen on identification of mother plants as a source of scion and skill on grafting.						Nurserymen, Farmers associations, service provider	
	b. Create awareness among the farmers to use right type of planting material.						Uttatran, Chesta, Adarsha, Nurserymen, Farmers associations, service provider	Chapainwabganj, Jessore, Meherpur Chudanga
	c. Extend technical support in establishing new orchards.							
3.5. Facilitate in adopting proper pre and post harvest handling, use of proper packaging and containers by the mango farmers and traders.							Farmers, enterprises, associations and middlemen, Aratdars.	Chapainwabganj, Jessore, Meherpur Chudanga
	a. Support three enterprises in training 2500 farmers on harvesting index, harvesting and farm level post harvest handling						KMFCSL, DAFF, Bonolota Uttatran, Chesta, Adarsha and other farmers.	Chapainwabganj, Jessore, Meherpur Chudanga
	b. Facilitate demonstration on cold / hot water treatment by using appropriate technology for better ripening and longer shelf life.						Farmers and 1000 work force of KMFCSL, DAFF, Bonolota Uttatran, Chesta, Adarsha	Chapainwabganj, Jessore, Meherpur Chudanga
	c. Support in organizing method demonstration training to 1000 workforce on proper cleaning, drying, grading and packing practices.						Farmers and 1000 work force of KMFCSL, DAFF, Bonolota Uttatran, Chesta, Adarsha	Chapainwabganj, Jessore, Meherpur Chudanga

3.6. Promote a market for carbide and other harmful chemical free mango							Kansat	Chapainwabganj,
	a. Assist in market network development and promotion of good quality carbide free mango through opening outlets at important cities and organizing mango fairs.						Ankur, Uttaran, Kansat, Banalata, DAFF and others.	Chapainwabganj, Jessore, Meherpur Chudanga
	b. Support associations, enterprise members for exposure visit to India / Thailand/ Philippines to learn about organized mango production, post harvest management and marketing operation.						Association members, enterprise and lead farmers.	Chapainwabganj, Jessore, Meherpur Chudanga
3.7Publish a manual on Mango Production and post harvest technology							PRICE and BARI	
4.Others								
4.1. Promote to grow high value horticultural crops in the south with appropriate technology								
	a. Support 14000 farmers in addressing their constraints in production , post production , and marketing in growing HV crops like tomato, Cool crops, beans, cucumber, gourds, onion and turmeric etc.						12 new associations, NGO's working in the south west and central south.	Jessore, Meherpur Chudanga, Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira
	b. Assists 4500 farmers in providing training and technical assistance the south in dyke based vegetable cultivation in south.						EFADF , Organix, Suhshilon and others	Jessore, Meherpur Chudanga, Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira
4.2. Facilitate in production of good quality high yielding variety								

of vegetable seeds.								
	a. Assist in providing technical training to 600 seed growing contract farmers through seed producing enterprise in the south						Padma Seed Company, Syngenta and others	Jessore, Meherpur Chudanga, Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira
	b. Facilitate in ensuring seed quality during production, post production and processing through technical support.						Padma Seed Company and others	
	c. Support in strengthening and establishment a strong marketing network by giving training to 660 seed dealers / retailers of south for better access to good quality seed to the farmers.						Lateer Seeds limited, Syngenta and others	Jessore, Meherpur Chudanga, Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira
	d. Assist in yard meeting, establishment of demonstrations, field days.							
4.3. Encourage use , production and marketing or organic compost and bio fertilizer								
	a. Assist 3 bio-fertilizer manufacturing companies in improving their technical efficiency in producing good quality vermi, tricho and bio-fertilizer.						Biotech Agro Complex , GKSSE, Ryia, and other partners, service provider	Bogra, Sirajganj
	b. Promoting a market for compost fertilizer for horticultural producers.						Bioterch Agro complex GKSSE, Ryia. Northern, Annapurna and other partners, consultant	Bogra, Sirajganj
	c. Support farmers, associations, enterprises to establish linkage with quality vermi, tricho and bio-fertilizer suppliers;						Association, Cooperative	Bogra, Khulna Sirajganj

	d. Facilitate in organizing training for farmers, SAAO, dealers and retailers on importance of environment friendly good quality compost, and bio-fertilizer, effect on yield and profitability.						Biotech Agro, GKSSE, Ryia and other partners	Bogra, Khulna Sirajganj
	e. Assist in establishment of demonstration with organic fertilizer to promote the use and application of bio-fertilizers.						Biotech Agro Complex, GKSSE, Ryia and other partners	Bogra, Khulna Sirajganj
4.3. Facilitate in establishing field pack station, good practices for proper post harvest handling of vegetables.							EFADF	Khulna
	a. Assist in designing and operating field pack station for minimizing post harvest loss and maintenance of quality.						EFADF , Shushilon and others	Khulna, Jessore
	b. Facilitate in adopting Biological control measures for crop protection.						Organix, EFADF and others	Khulna, Jessore
4.5. Promotion of safe horticultural produces in the field								
	a. Assist in organizing campaign for consumption of safe horticultural produces.						EFADF, ORGANIX.	Khulna, Jessore
	c. Support training to promote good Agri. Practices						EFDAF, ORGANIX, PRIDE, USS and service providers	Khulna, Jessore
4.6. Assist in improving of existing market information system.								
	a. Assist in establishing 2 farmers information centre for dissemination of market information and technology.						EFADF	Khulna
4.7. Support access to finance								
	a. Work closely with the micro- finance organization to						Shushilion, Proshika, Pathkrit	Meherpur Chudanga,

	develop horticulture sector specific loan product.						,EFADF,MAE, KBK	Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira
	a. Organize workshop with the participation with partner enterprises and financial institutions.						All partners	
4.8. Assist in strengthening organizational capacity of partner organizations							All partners	Meherpur Chudanga, Khulna,Jhenaidha , Faridpur, Magura Barisal,Satkhira, Bogra,niphamari, Chapinwabganj

AQUACULTURE

Bangladesh is one of the major freshwater fish producers in the world, and most of the freshwater fish consumed in the country comes from farming. Bangladesh has nearly five million hectares of fresh and brackish water ponds, lakes, rivers, creeks, canals, boro-pits, natural depressions, ox-bow lakes, estuaries, and seasonal flood plains, of which closed water bodies constitute just over half a million hectares (Bangladesh Department of Fisheries, 2010) that are farmed utilizing diverse methods. The progress of aquaculture throughout Bangladesh is not homogenous; northern regions such as Mymensingh, Comilla and Bogra have developed high-yield fish farming, while the southwest of the country mostly follows traditional methods of fish and shrimp farming. About 90% of all farmed fish is consumed domestically in fresh condition, (a portion is used for dry fish production and a small fraction is exported) whereas the vast majority of shrimp and prawn are exported. Fish and crustaceans from natural sources and farming combined provide more than 60 percent of the animal protein consumed in the country, generate more than USD $630 million in exports and USD $4.3 billion in domestic sales, and employ more than 11 million people in rural and coastal areas.

Currently, fish farming in Bangladesh is mostly for local consumption and only a small fraction of what is produced is exported. Approximately 26 thousand tons of fish are exported to ethnic markets, less than one percent of the total 2.9 million tons produced from farming and wild sources. Fish is not a high priced export commodity. In contrast, the shrimp and prawn industry focuses on exports to large markets such as the United States and the European Union. Shrimp and prawn are usually block-frozen and then exported, with little value added to the product (such as making it ready to cook). However, shrimp is a high priced commodity and the type of shrimp produced in the country though traditional methods is highly valued in the international market. While the world market is flooded with small-sized shrimp, relatively larger shrimp from Bangladesh command a higher price. This has been the main reason for the jump in the value of frozen food exports from Bangladesh, from USD $470 million in 2009-2010 to USD $630 million in 2010-2011.

Because shrimp and fish are different types of animals, and because they differ significantly in terms of farming, end markets, supply and value chain actors, and constraints and potential, PRICE has divided the aquaculture sector into two sub-sectors: fish and shrimp.

I. FISH SUBSECTOR

A. Overview and Constraints to Growth

There are multiple reasons to work in the fish subsector. The subsector benefits from a strong and ever increasing local market, a large consumer group and the prospect of high sales, employment generation, and investment. Jobless youth, housewives, and under-employed women have high potential for employment in the subsector. Fish farming engages the entire

family, and fish consumption fights malnutrition. On the environmental side, farming integration and crop-rotational methods help make better use of scarce land and water, and increase farmers' capabilities to cope with climate change.

Farming of fish employs over four million people and produces almost 1.8 million metric tons valued at USD $2.92 billion, 4.7 times that of shrimp sales. However, less than USD $100 million of that represents exports, and most exports are to ethnic markets.

Fish farmed in Bangladesh are vital in combating malnutrition. Currently, per capita fish consumption in Bangladesh stands at about 19.3 kg/year (DOF, 2011), which is an increase of 1,290 grams from the previous year. This consumption rate could easily double to meet the nutritional needs of the population, which depends heavily on fish protein. To increase the supply of fish through farming for country's growing population (both rural and urban), emphasis needs to be placed on cost-effective production of low-priced, high-yield varieties of fish. Currently, part of Bangladesh has an overlapping hydro-biological ecosystem where seasonal variations in salinity are evident. In this environment, crop-rotational fish-prawn-shrimp and field crop farming may change to a multi-cropping pattern. However, these should occur in areas where input supply is easily available, farming methods are established, and the skills of farmers are developed.

During the 2010-2011 year, annual fish yield per hectare in Bangladesh's ponds was 4.0 metric tons, with a potential to increase to seven to eight metric tons (DOF, 2011). Fish farming in Bangladesh has not developed homogenized ways; some PRICE partners were producing as much as 60 tons per hectare and others were producing as low as 1.0 to 1.5 ton per hectare annually when the partnership was developed. Now, the high producing partners have reached to 80 tons or above and low producing partners are currently producing 4-5 tons per hectare annually. Traditionally, the northern part of Bangladesh has flourished in fish farming and relatively high yielding farms are located in north and low yielding farms are situated in southern parts of the country. This year, PRICE will focus on the southern parts of the country to help those farms produce at rates on par with northern areas, especially the Mymensingh, Bogra, and Comilla regions.

The key constraints to growth in the fish subsector in the southwest and for sustainability in the north are:

- Inadequate knowledge of improved, productive, and innovative farming, which results in low yields and sub-utilization of potential physical resources.
- Absence of farming integration under diverse hydro-ecology climatic conditions for varied and symbiotic crops, which leads to sub-optimal farm yield year round.
- Indiscriminate use of inbred seeds (genetically degenerated inferior quality), which leads to low farm yields.
- Farmers lack information and knowledge about quality seeds and feeds which leads to low productivity.
- Too much reliance on traditional farming process and lack of innovation.
- Lack of initiative to farm high market value fish species throughout the country.

- Inadequate access to domestic and export markets.
- Weakly organized farming groups and poor member services which threaten sustainability of such organizations.
- Poor packaging, storage, and non-traceable dry fish marketing.
- Few value -added products lead to bulk exports and less export income.
- Inadequate access to finance and institutional credit.

B. Progress to Date

Since the PRICE project started, aquaculture has provided technical assistance through trainings, counseling, consultancies, linkages, exposure tours, demonstrations, awareness building, initiation of organizational development, and workshops to a total of 42 fish-based partners throughout the country. Although the bulk of PRICE's partners have been farming associations or farming groups within NGOs, PRICE has also worked with input seller companies like fish seeds, feeds, chemicals and probiotics. PRICE partnered with seven processing plants, and even though these plants work mostly in shrimp, they do export a significant amount of fish to ethnic markets abroad.

PRICE has worked with farming associations and organized farming groups to facilitate delivery of technical assistance to increase farm productivity, provide access to better inputs and cost effective procurement of inputs through group marketing schemes, develop marketing linkages, and to create opportunities for access to finance. To ensure provision of quality of seeds to partner farmers, PRICE assisted the fish seed traders' association to procure higher quality seeds, responsibly transport aquaculture seeds, and to provide embedded services to farmers. The project has worked to identify center of excellence of quality seed productions by conducting a survey of hatcheries in the country. PRICE has also worked to increase the capacity of marketing staff for feed agents, dealers, and input sellers, and worked with them to create demonstration farms. In feed mills, PRICE helped improve feed formulation, created linkages to better inputs, and provided training to the marketing staff to increase their capacity to provide embedded services and expand sales by growing their marketing networks.

Assistance on workforce development in the areas of bio-security, personal hygiene, and HACCP regulations (as well as SOP and SSOP) were provided to the fish processors, hatchery operators, and dry fish manufacturers. PRICE also worked to build the capacity of the laboratory staff on basic biological and chemical laboratory procedures, analytical methods, and bio-security.

During 2011, PRICE initiated work with an additional 15 fish farming associations to increase their productivity. PRICE also partnered with nine general and mono-sex tilapia hatcheries to provide capacity building of hatchery personnel on farming, brood farming management, and bio-security measures. Each hatchery also organized a group of nurseries and farmers that received PRICE training to produce traceable fish and to get feedback on the seeds of respective

hatcheries. These hatcheries also provided soft credit and technical assistance to their partner fish farmers.

At the close of FY2011, PRICE has provided technical assistance to approximately 14,500 fish farmers, input sellers, and fish seed traders. Over half of those farmers (about 8,644) received both improved farming and farming management trainings. Most farmers also received trainings on group procurement of inputs and group marketing. Improved farming trainings is a package of trainings that includes site selection, pond preparation, natural food enhancement, stocking, farm management, feed, water, soil, health management, good aquaculture practices (GAP), and judicious use of inputs such as fertilizer, lime, antibiotics, probiotic, micro-nutrients, medicine, and water.

PRICE worked with several farmers' associations to strengthen their organizational capacity, establish links with quality grade seed producing agencies, hatcheries, nurseries, and fish seed traders, processors, and suppliers. More management trainings are planned for farmers that have not yet received this. During FY2011, PRICE aquaculture team encouraged several farming groups to register as association/cooperatives, start collecting membership fees. establish local office/s, and open commercial bank accounts as a first step towards organizational strengthening.

To address inadequate access to finance, PRICE assisted organized farmers by establishing links with micro-credit and micro-finances sources. To date, a total of 1,982 micro- and small farmers have received micro-credit ranging from BDT 3,000 to BDT 25,000 with the association or group acting as the guarantor.

C. Strategic Focus

The fish subsector, and in particular fresh water fish, is vast and almost covers the entire country. PRICE plans to continue its focus in some of the priority regions, Mymensingh, Bogra, and Cox's Bazar, to achieve sustainability in previous activities. The remaining resources will be reallocated to the southwest (SW) region of the country where productivity is relatively low and there is a lack of improved farming to produce fish for domestic production. Efforts will be focused on four to five high-potential, fast growing groups of fish. These are carp, tilapia, Mekong River catfish, local stinging catfish, and climbing perch. Some these fish types could be raised cost-effectively to fulfill the animal protein demands in SW as well as in poor urban areas.

To attain better outputs and good aquaculture practices for an appreciable mass of fish farmers, PRICE will continue to work through organized farming groups and community farmers, planning to reach more than 8,000 additional fish farmers by the end of December 2012. Throughout the life of the project, PRICE will reach 94,843 farmers (fish and shrimp) of which 64,258 will be in southwestern region of the country.

For increased farm production and up-gradation of farming management, farmers need to encourage the use of quality grade inputs such as inbreed-free and healthy seeds and quality

grade feed with good feed conversion rates (FCR). PRICE will work with technical consultants who will provide customized services to farming associations. This method will allow PRICE to reach a large number of micro-, small, and medium to large scale commercial fish farmers, many of which are women.

Fish farmers, both commercial and household-based, will be grouped under a dedicated group leader for every 25 farmers and be trained with the help of short-term hired consultants. After their training, the group leader will remain in contact with the farmers to share new developments, answer questions, and provide additional relevant information. Group leaders will also act as a conduit of information between the farmers and the PRICE project to provide performance data, share successes of the farmers, and to learn relevant up-to-date information that can be passed on.

The project will pursue productivity sustainability in the northern region of the country and increased farm productivity in the SW by following sustainable and environmentally friendly integrated aquaculture practices that contribute to food security, strengthen organizations for sustainable production, and facilitate climate change adaptation through a variety of mechanisms including:

- Educating farmers on improved farming techniques with quality grade inputs.
- Awareness creation on judicious utilization of available physical farming resources for environment friendly farming methods
- Resource management of seasonally available seed through value addition to seeds by over-wintering.
- Popularization of seasonal farming to avoid probable disasters.
- Assisting the transformation of seasonal farming to perennial under changing climatic conditions.
- Adaptation of innovate aquaculture, such as floating cage farming, to adapt to rising sea levels and inundation of low lying areas.
- Providing embedded services to farmers through fish seed traders, feed marketing agents, and micro-input sellers.
- Promoting access to high-quality inputs through group procurement and linkages.
- Strengthening organizations to increase the sustainability of the associations and groups.

All interventions were designed through well organized work planning workshops and feedback from partners. PRICE will give emphasis to responsible farming and non-use of banned and questionable substances that could endanger public health and degrade the eco-system, environment, and biodiversity. This will be accomplished through training, publishing leaflets, posters, manuals, and workshops. PRICE will continue to promote eco-friendly, crop rotational, symbiotic, and integrated fish, rice, and horticultural farming to aid in food security and income generation by the target farmer groups.

Since the next financial year will be last year of the project, PRICE will create printed public resource materials based on findings and successes of the interventions. The list of project

beneficiaries will be documented and published to avoid future overlapping on identical interventions and traceability of beneficiaries for various purposes.

Fish is perishable and needs quick washing and cold treatment to prevent spoilage, contamination, and cross-contamination during post-harvest handling, transportation, and storage. Quality deterioration of aquaculture products could be significantly reduced through proper post harvest handling and cold chain management. To address this, PRICE will work to establish links for cluster harvesting, group marketing, and responsible transportation and storage for safe and hygienic fish both for wholesale and for sale in retail markets.

PRICE will continue to work with the dry fish manufacturers to help them improve their packaging and storage for domestic consumption and export and will explore possibilities of some non-traditional fish items such as fish scale, dried air bladder, and dried catfish fat. The dry fisher's association will receive organizational strengthening assistance.

PRICE has taken initiative to expand the participation of women in aquaculture and it is expected that women's involvement in aquaculture will grow from merely 3% at the inception of the project to 25% at the end of the project. PRICE's experience has shown that more females can participate in this economic activity in rural and household- based fish farming units, which results in gender empowerment, increased household incomes, and improved family nutrition and food security. PRICE will continue to develop partnerships with organizations that are able to organize women in greater numbers to participate in fish farming.

To build upon previous success of teaming with micro-finance NGOs, PRICE will continue to partner with local NGOs interested in financing household-based aquaculture through short, medium, and seasonal micro-financing.

D. Interventions

Increasing Hatcheries' access to quality broods. PRICE will work with partners operating hatcheries to link them to inbreed-free brood resources of both indigenous and exotic commercial farming species. PRICE will increase the capacity of hatcheries to raise inbreed-free resources to brood levels at in-house brood bank facilities in hatchery premises. PRICE partners will be linked to inbreed-free indigenous species sources and will assist hatcheries to procure genetic resources of exotic origins from their actual source of origin.

Popularizing high density commercial nursing. Fish seed in Bangladesh is produced seasonally and its use is restricted to the monsoon season only. PRICE will work with hatcheries and nurseries to conduct responsible nursing of fish spawn to produce quality grade fries and fingerlings for conventional farming. This will also add value to off-season fish spawn by over-wintering them for use in perennial farming. Nurseries associated with partner organizations will be linked to partner hatcheries to provide off-season spawn for over-wintering through fish seed traders.

Increasing farmers' access to inbreed free quality seeds. PRICE will assist partners to establish cross-linkages among hatcheries, commercial nurseries, and fish seed traders for easy access of inbreed free quality grade seeds to farmers, so that basic and fundamental inputs of seeds improves, which will ensure rapid growth and good feed efficiency. The project will continue to assist fish seed traders' associations to supply quality fish seed to farmers and to provide embedded services.

Increasing farmers' access to quality feed and other inputs for fish and embedded services. Partner organizations will receive assistance in group procurements of better quality grade inputs, seeds, feed, lime, fertilizers, micro-nutrients, allowed antibiotics and probiotic, medicine, and water purifiers. This assistance will help increase production while simultaneously improving the quality of the produce. The project will continue to assist input sellers and feed millers to provide feed, and other inputs to farmers with embedded services.

Promoting improved farming training and good aquaculture practices. PRICE will continue its work on training organizations and association members on improved farming techniques. Roughly 8,000 fish farmers will receive training in improved/high density and semi-intensive fish farming techniques. This will build capacity and increase yield, resulting in higher investment and employment creation. These interventions will expand the average yield from 4-5 ton/ha to 7-8 ton/ha by the end of 2012. There may be some exceptional annual yields of 40-85 ton/ha as already evidenced by some farmers in Bogra and Mymensingh. The high density production methodologies will be introduced in the southwest with a few selected species.

Introduction of new commercial species in the southwest. Some high yielding farmed species like tilapia, pangas, stinging catfish, and climbing perch have gained popularity among commercial farmers in Mymensingh, Bogra, and others parts of the country. These species are farmed using supplemental feed in high density conditions. These species are not yet popular in the southwest. High density commercial farming of these species will facilitate production of both low-priced and high-priced fish in the southwest for rural consumption as well as for the urban poor segment of population.

Promoting innovative (perennial integrated and rotational) farming for income and food security. PRICE will facilitate farming integration among members of farming associations and groups to produce multiple crops seasonally and more than one crop by successive crops or crop-rotation. As fish is produced in the water only, which is confined by embankments, the banks of the ponds will be used to produce vegetables and short-duration fruit for family consumption and income generation. PRICE will facilitate a study to determine household consumption tendencies and assess the potential for household pond-raised fish and integrated farming produce to increase family nutrition while mitigating food security.

Training on enhancement of natural productivity. Enhancement of natural productivity in farmed water bodies and affluent management is a difficult task, if not judiciously managed. Affluent rich in organic content could be mineralized during inter-cropping to enhance natural

productivity of fish farms, if farmers could develop the necessary skills. This is a process by which a health hazard could be converted, if manipulated properly, but specialized training is needed to achieve it. In addition, mechanical removal of bottom debris on the embankment of ponds could be used by horticulture crops as manure.

Promoting fish farming in floating cages in open water. To keep up with modern climate realities, innovative aquaculture techniques are required. Floating cage farming addresses rising sea levels and inundation of low-lying areas. PRICE will train those who have initiated floating cage-based farming of some fast growing fresh water species on sustainable and diverse cage farming and management. Currently, mono-sex tilapia are the most common floating cage farmed fish, but there are signs that many other species may be incorporated into cage farming giving the current conditions in Bangladesh. PRICE will promote these techniques in perennial natural depressions, large lakes, coastal rivers, and estuaries not in danger of cyclones and tidal bore.

Promoting responsible harvest and post-harvest handling. Fish is perishable and farmed fish, when harvested just after feeding, spoil faster and develop an odor of feed in the flesh, reducing price. Farmers need to be educated on responsible harvest so that they can conduct responsible post-harvest handling to deter quick spoilage and ensure high prices.

Exploration on nutrition and fish intake by fish farming families. PRICE works with thousands of household-based micro, small and medium farmers. Part of their fish crops are reportedly consumed at family levels throughout and after the commercial harvest. The extent of family consumption is not known and how the availability fish at the family level enhances family based nutrition is also not known. PRICE will conduct a quick survey at the family level to determine the nutritional profile of the farming families.

Integrating smallholder farmers into growing market of aqua farm products. Fish farmers and aquaculture groups currently have less access to banks and other institutional credit due to a variety of reasons, most often lease-based economic activities or multi-ownership of farming water bodies. PRICE will assist farmers and farming groups in assessing institutional credit and bank loans by arranging workshops, establishing links, and building capacity to develop business plans. PRICE will work with associations and groups to introduce and encourage mechanisms for collective collateral and will train group members on group marketing of fish to increase their bargaining powers. PRICE will create linkages between farmers' associations and wholesalers and supermarkets, enabling bulk selling.

Supporting fish processors for value-added product development and cold chain management. PRICE will work with the fish processors to link farmers and farming groups while explore the possibilities to export fish filets to Eastern European countries. PRICE will also work to increase the amounts of current exports to ethnic markets by farming groups, which include fish like climbing perch and stinging catfish, through linkages to partner processors. Large-sized mono-

sex tilapia which, through innovative cage farming is free from bad odor, will be introduced to the processors for potential export.

PRICE will work closely with the processors to reduce post-harvest losses by improving post-harvest handling and cold chain management. PRICE and its partner processors will jointly educate suppliers to ensure ongoing post-harvest handling vigilance. For bulk producers at the farm level, PRICE will design cold chain management solutions, such as creating awareness of the need for quality grade ice for chilling. As a result of these activities, post-harvest losses will be reduced because of more responsible post-harvest handling, packaging, storage, and transportation.

Promoting a market for hygienic dry fish. Hygienic manufacturing of dry fish will be promoted through trainings to entrepreneurs and their representatives and workforce. PRICE will work with the dry fish manufacturing association to help them procure raw materials in groups, transport them in a responsible manner, and to produce hygienic dry fish. Once this is accomplished, PRICE will help them improve the packaging of their product and its storage for domestic consumption and export. Concurrently, PRICE will work with them to explore possibilities for non-traditional fish items such as fish scale, dried air bladder, and dried catfish fat.

Exposure trips for low yielding farmers to highly productive farmers in the country and abroad. PRICE will arrange exposure trips for association based farmers with low production levels to high production farms where they can observe how the more productive, similar sized productive farms are working. PRICE will also work with different value chain actors to develop an exposure visit/study tour to either Vietnam and/or India to observe high yielding hatcheries and seed production, high yielding farms and other value chain actors. Through this trip, participants will also learn about better farming methods, feed manufacturer post-harvest handling, cold chain management, and processing activities.

Strengthening the institutional capacity of the associations/cooperatives. PRICE will work with its partners strengthen them and help them become more sustainable. This assistance will help them to provide better member services for group procurement of inputs and increased production. Associations will be able to keep and produce documentation that shows cost-benefit analysis of their work.

Cross-cutting Issues:

Training on skill development and compliance. Export oriented aquaculture products face various compliance issue time to time. Buyer's compliance must be met to export products and ethnic markets abroad must comply with the home country regulations where they are situated. The project will provide skill development to partners that engage in export activities to broaden their knowledge of compliance and to mitigate potential issues.

Printing and distribution of aquaculture extension materials. PRICE has accumulated a large number of resource materials that are broad-based and can be used by multiple organizations

interested in the development of aquaculture in Bangladesh. PRICE will make all the documents accessible to the general public. PRICE is negotiating with public universities for joint publications to make those sustainable after PRICE ends.

Result dissemination, lessons learned workshops, and PRICE beneficiary list. At the end of the project, achievements gained and lessons learned together with future suggestions will be disseminated through a series of workshops in Dhaka and in the regions so that work initiated by PRICE will not be lost. The PRICE partner and beneficiary list will be made available to help future development projects avoid duplicity and overlapping, and to use partners to increase outreach.

GANTT Chart for Fish Sector Activities 2011-2013

Activity in detail	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			6th QTR (2 mon.)		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
1.1. Hatcheries access to quality grade broods																		**Activities in SW, Follow-ups elsewhere**	NTH, NFC, PMH, RFH, MFFH, SMH, NBTH , CAPL, SBMK, AHFC, SBPL
1.1.1. Inbreed-free indigenous farmed brood species																		Same as above	Same as above
1.1.2. Inbreed-free exotic farmed brood species form source of origin																		Same as above	Same as above
1.1.3. Training on in-house brood bank management in hatcheries																		Same as above	Same as above
1.1.4. Assist hatcheries develop feed for brood fish																		Same as above	Same as above
1.1.5. Assist hatcheries for mass production of quality seeds																		Same as above	Same as above
1.1.6. Training hatchery technicians to identify hypo-saline resistant freshwater species																		Same as above	Same as above
1.2. Training on high density nursing																		**Activities in SW, Follow-ups elsewhere**	DMBBS, KMPS, NTH, NFC, PMH, RFH, MFFH, SMH, NBTH , CAPL, SBMK, AHFC, SBPL
1.2.1. Training on conventional nursing																		Same as above	Same as above
1.2.2. Training on over-wintering nursing																		Same as above	Same as above
1.2.3. Training on responsible transportation of fry and fingerlings																		Same as above	Same as above
1.3. Increasing farmers Access to inbreed free seeds																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of hatcheries and farming associations
1.3.1. Link organized farming groups to relatively better seed sources																		Same as above	Same as above
1.3.2. Link farming group to nursing groups																		Same as above	Same as above
1.3.3. Link farming group to over-wintered nursing groups																		Same as above	Same as above

Activity in detail	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			6th QTR (2 mon.)		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
1.3.4. Link farming group to seed trader group																		Same as above	Same as above
2.1. Training on inputs sellers for embedded services																		**Activities in SW, Follow-ups elsewhere**	FTL, SFL, DMBBS,
2.1.1. Training for fish seed traders																		Same as above	Same as above
2.1.2. Training feed traders																		Same as above	Same as above
2.1.3. Training for probiotic and micro-nutrients sellers																		Same as above	Same as above
2.1.4. Training for hormone& fish medicine traders																		Same as above	Same as above
3.1. Productivity training for Farmers																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of Associations/Enterprises
315.1. Farmers training on optimum stocking																		Same as above	Same as above
3.1.2. Farmers training on high density farming																		Same as above	Same as above
3.1.3. Farmers training on monoculture species																		Same as above	Same as above
3.1.4. Farmers training on crop rotational farming																		Same as above	Same as above
4.1. New commercial species in the South-west regions																		**Activities in SW, Follow-ups elsewhere**	JSK, DEESHA, MMS, GMSS, BADS, DBE, MMP, MF, SF, RE, GIMCS,
4.1.1. Training on farming of air-breathing species.																		Same as above	Same as above
4.1.2. Training on mono-sex tilapia farming																		Same as above	Same as above
4.1.4. Training on semi-intensive farming of pangas for urban poor																		Same as above	Same as above
4.1.4. Training on farming of high valued fish: Snakehead, chital etc																		Same as above	Same as above
4.1.5. Awareness creation against harmful species																		Same as above	Same as above
5.1. Promotion of innovative farming in SW																		**Activities in SW, Follow-ups elsewhere**	JSK, DEESHA, MMS, GMSS, BADS, DBE, MMP, MF, SF, RE, GIMCS
5.1.1. Introduction of integrated farming in SW																		Same as above	Same as above

Activity in detail	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			6th QTR (2 mon.)		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
5.1.2. Introduction of crop-rotational farming in SW																		Same as above	Same as above
5.1.3. Introduction of symbiotic farming in SW																		Same as above	Same as above
6.1. Training on enhancement of natural productivity																		**Activities in SW, Follow-ups elsewhere**	SSS, TMUS, RDF, JSK, USJ, DEESHA, PFPFA, NMS, BBMS
5.1.1. Training on uses of organic debris by embankment cropping																			Same as above
6.1.2. Training on mineralization of waste to enhance plankton growth																		Same as above	Same as above
6.1.3. Training on integrated farming with horticultural crops																		Same as above	Same as above
7.1. Popularization of cage aquaculture																		**Activities in SW, Follow-ups elsewhere**	BCOA,
7.1.1. Training on cage manufacture and setting																		Same as above	Same as above
7.1.2. Training on farming and feeding in cages																		Same as above	Same as above
7.1.3. Screening for cage farming species																		Same as above	Same as above
7.1.4. Trouble shooting in cage Aquaculture																		Same as above	Same as above
1.10. Training for Group Organizers (ToT)																		Same as above	Same as above
8. 1. Farming Training on harvest and post-harvest handling																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of Associations/Enterprises
8.1.1. Training on depuration /raceway treatment																		Same as above	Same as above
8.1.2Training on responsible harvest and handling																		Same as above	Same as above
8.1.3. Training on cleaning, sorting, icing and transportation																		Same as above	Same as above
9.1. Studies on aquaculture and study trips																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of Associations/Enterprises

Activity in detail	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			6th QTR (2 mon.)		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
9.1.1. Studies on family level fish intake at by PRICE beneficiaries.																		Same as above	Same as above
9.1.2. Study trips for lead farmers/ leaders to better productive areas.																		Same as above	Same as above
9.1.3. Arrange study trips for high yield farmer & VCM to Vietnam																		Same as above	Same as above
9.1.4. Exposure trip: High productive farmers & other VCM to India.																		Same as above	Same as above
9.1. Access to Finance: small farmers to credits & M. finance																		**Activities in SW, Follow-ups elsewhere**	Enterprises & Beneficiary farmers of Associations/Enterprises
9.1.1. Linking prospective entrepreneurs to bankers.																		Same as above	Same as above
9.1.2. Assisting prospective partner on business plan preparation																		Same as above	Same as above
9.1..3 Awareness creation among stakeholders on repayment of loans																		Same as above	Same as above
9.1..4. Strengthening VCF through workshops for value chain actors																		Same as above	Same as above
10.1. Support fish processors for value added product development																		**Activities in SW, Follow-ups elsewhere**	GHSPL, JSFL, JFFL, MFPL, MUSFL, OSEL, RSFL
10.1..1. Linkage workshop: producers & processors on raw materials supply																		Same as above	Same as above
10.1.2. Explore value addition products of fish for export																		Same as above	Same as above
10.1.3. Promote processed fish products in the ethnic market abroad.																		Same as above	Same as above
11.1. Promoting a market for hygienic dry fish.																		**Activities in SW, Follow-ups elsewhere**	Dry Fishers Association
11.1.1.Training: members, HACCP, safety, pack, storage, Market.																		Same as above	Same as above
11.1.2. Link. workshop: association members and wholesalers/exporters																		Same as above	Same as above
12.1. Farming Training on harvest and post-harvest handling																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of Associations/Enterprises/cooperatives
12.1.1. Studies on family level fish intake at by PRICE beneficiaries.																		Same as above	Same as above

Activity in detail	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			6th QTR (2 mon.)		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
12.1.2. Study trips for lead farmers/ leaders to better productive areas.																		Same as above	Same as above
12.1.3. Arrange study trips for high yield farmer & VCM to Vietnam																		Same as above	Same as above
12.1.4. Exposure trip: High yield farmers & other VCM to India.																		Same as above	Same as above
13.1. Strengthening: institutional capacity of the associations/ coop																		**Activities in SW, Follow-ups elsewhere**	Beneficiary farmers of Associations/Enterprises/cooperatives
13.1.1. Help assoc. develop a basic information management system																		Same as above	
13.1.2. Assist assoc. identify services required for sustainability																		Same as above	Same as above
13.1.3. Assist to Ensure member services and memberships obligation																		Same as above	Same as above
14.1. Training on skill development in compliances																		**Activities in SW, Follow-ups elsewhere**	ALL PRICE ASSOCIATED PARTNERS
15. 1 Printing & distribution of aquaculture extension materials																		**Dhaka**	ALL PRICE ASSOCIATED PARTNERS
16.1. Result Dissemination & lesson learning workshops																		**Dhaka & SW**	ALL PRICE ASSOCIATED PARTNERS

II. SHRIMP SUBSECTOR

A. Overview and Constraints to Growth

The farmed shrimp industry, located mostly in south, is based on two species; freshwater prawn known as *golda;* and brackish water black tiger shrimp known as *bagda*. Farmed *bagda* is an export-oriented industry, and shrimp processing and export is one of the country's major foreign currency earners. The shrimp subsector has great potential in the southwest of the country for rural job creation, investment, and poverty alleviation and already accounts for nearly one million jobs throughout the value chain.

Shrimp and prawn production and export from Bangladesh has faced major internal and external challenges related to its growth and competitiveness in recent years, but bounced back during the last fiscal year, showing export jumps of roughly 40% compared to the corresponding previous year. The challenges include low productivity and lapses in compliance with international food safety and labor standards. These problems, compounded by the allegation from the EU about *golda* contaminated with nitrofuran metabolites, the global recession in 2009-2010, and cyclones in the *bagda* farming area have resulted in recent reductions in imports by buying countries export by Bangladesh. In 2008 Bangladesh exported shrimp worth USD $445 million, while in 2009 the exports were only USD $343. In 2010 and 2011 the export figures exceeded those of 2008, with 2011 being the highest yet.

Bangladesh exports mainly frozen shrimp and prawn mostly targeting restaurant chains, without significant value-added additions for domestic consumption, which are high value export commodities. The main destinations for exports are markets such as Europe and the United States. The importing countries have tough compliance issues for food items, which mean that maintaining hygiene and food safety standards is a top priority for this subsector.

Bangladesh has overcome problems arising from the rejection of shrimp and prawn shipments to Europe in 2009 and 2010, due to antibiotic contaminates. In addition, labor law is another important issue for export markets – especially with the United States. Shrimp exports to the United States are at risk due to the perception of improper labor practices and human rights violations by engaging under age workers in the Bangladesh processing plants. PRICE has contributed significantly to skill development of Bangladeshi stakeholders to deter antibiotic contaminants and on educating stakeholders on Bangladesh labor law.

Shrimp farms in Bangladesh practice mostly traditional farming and are not very efficient at high per unit area production. Low density farming is fraught with the danger of high mortality. However, low density farming produces larger individual shrimp that have a competitive edge. The size of the shrimp from Bangladesh is in high demand in the export market, but the share of the world market is small, only three percent. This share is much smaller than what it should be, given the potential of the farming areas engaged in the export area. Many of the problems with low per unit area production arise from low-density farming, rudimentary technology, and inadequate access to virus-free post-larvae (PL).

Bagda is the main shrimp crop of the country and about every ten years, *bagda* farming faces mass mortality when outbreaks of the deadly white-spot virus disease occur. Since there is no curative measure once the crop is infested with the virus, preventative measures are necessary. The most effective way to combat white-spot virus disease is to initially screen PL to confirm whether or not they are virus negative. Using virus negative PL to stock farms is the first steps towards producing disease free, healthy *bagda*. However, screening for and use of cleaned PL for farming is not required and farmers generally do not want to pay extra for screened PL. In addition, there is a scarcity of screened PL of *bagda* and hatchery produced PL of *golda* for commercial farming.

As mentioned earlier, shrimp farming in the country, both *bagda* and *golda* is done following traditional methods, where farmers use questionable and non-traced inputs from input sellers and other sources. Non-traceable and questionable quality inputs, seeds, feeds, lime, and fertilizers impede the growth of *bagda* and *golda*. Supplemental feed use in shrimp farming not common and when used are poor in quality, which pollutes and deteriorates soil and water. The traceability of shrimp production from farm to fork is currently demanded by buyers, but the lack of adequate traceability remains a problem in Bangladesh due to fragmentation of farming units, makes it difficult to identify sources of banned chemicals, antibiotics, or other types of contamination.

The climatic condition of the country is hot and humid which makes perishable items spoil quickly, making proper storage and responsible post-harvest handling critical. Currently, inadequate post-harvest handling of shrimp and prawn, including lack of cold chain management, storage, questionable ice and insulation devices, poor packaging, and a poor transport system has resulted in rapid quality deterioration, contamination, and spoilage. Cross-contamination during handling, packaging, and transportation is a serious problem in harvested shrimp and prawn.

The country has just started diversification in exports by incorporating value-added products to shrimp based export items, however the main stay in export remains exporting blocks of frozen shrimp and prawn without a significant amount of value added products, such as ready to cook or ready to eat. There are opportunities in the international market for higher margin export items. Currently China, Thailand, and Vietnam are taking advantage of these opportunities and Bangladesh is well positioned to join them.

PRICE worked closely with its partners during work planning workshops in the Jessore, Khulna, and Cox's Bazar regions. Through detailed discussions, the stakeholders identified some constraints to growth in the development of the shrimp subsector. They are:

- Farmers' inadequate access to screened PL leads to high incidence of white-spot virus disease outbreaks.
- Low prices of non-screened bagda PL hampers the rapid outreach of screened PL as the process slightly increases the prices of PL.

- Farmers' lack knowledge of techniques to conduct shrimp farming across the seasons often lead to single cropping.
- Lack of sufficient *golda* PL production through hatcheries.
- Farmers' poor perception about feed quality coupled with their inadequate access to quality feed for shrimp farming leads to slow growth of shrimp, resulting in poor harvests.
- Lack of adequate knowledge and skills by farmers in adopting improved farming practices leads to low yields.
- Small farming units lack scale and access necessary to adopt improved farming practices in *golda*.
- Huge traditional farming units in *bagda* restricts well managed farming management.
- Lack of farming integration leads to underutilization of resources.
- Malpractices and unethical practices by some stakeholders threaten export from Bangladesh.
- Concern by some buyers about labor practices in the shrimp processing industry threatens GSP cancellation as well as an import ban from the United States.
- Insufficient bio-security and HACCP compliance in processing plants leads to rejection of consignments, mostly from the European Union market.
- Lack of adequate value added products (VAP) in shrimp results in low volume of exports from the sector.
- Lack of rewards for good performance.

B. Progress to Date

The project has facilitated technical assistance to approximately 24,000 shrimp farmers to increase productivity using screened PL of *bagda* and other traceable inputs under outgrowing schemes. In the shrimp subsector, PRICE mainly works through a subcontractor, WorldFish Centre (WFC) on the GHERS initiatives (Greater Harvest and Economic Return from Shrimp). This year *bagda* interventions expanded from the south-western regions to the south-eastern (Cox's Bazar) region as well.

Under the GHERS initiatives, the farmers reached are grouped under depots and trained by extension specialists that provided technical support to the farmers based upon their groupings. Over the course of one year, one extension specialist will work with 225 farmers to provide training, counseling on high-density farming, using screened PL and other traceable inputs, and will work to provide basic inputs on soft credit through value chain financing.

The project has been assisting a commercial service provider (PRANTI Laboratory) to work with bagda hatcheries in Cox's Bazar to examine brood, nauplii, and PL using a polymer chain reaction (PCR) machine and other laboratory procedures. These tests determine if PL are virus negative for the GHERS farmers. PRANTI Laboratory also promoted screened PL of *bagda*

under a commercially viable premium charge for screened PL, mitigating potential viral disease outbreaks.

PRICE is also working with seven small mixed *bagda/golda* outgrowing farming groups in southwestern Bangladesh to reach 5,000 farmers and promote integrated shrimp farming to increase yield and profit for farmers. Of those farmers, more than 70 percent have already received management trainings to help them to access better inputs through group procurements and better marketing. By the end of 2012, the total number of shrimp farmers assisted by PRICE will exceed 25,000.

From the inception of the project, PRICE has collaborated with BSFF (Bangladesh Shrimp and Fish Foundation), USFDA (US Food and Drug Administration) and JIFSAN (Joint Institute of Food Safety and Applied Nutrition) to arrange GAP (Good Aquaculture Practices) training. The GAP training focused on food safety, environmental sustainability, and social responsibility including human and labor rights. The groups are currently collaborating to establish an aquaculture and aquatic food safety center as an affiliate of the fishery product business promotion council under a public private partnership.

Allegations are frequently raised on child labor rules violations in processing plants and within the value chain of shrimp in Bangladesh. PRICE worked with the BSFF to audit and validate compliance of ten shrimp processing plants under a pilot project with the Bangladesh Labor Law 2006. They then developed and implemented compliance courses for workers, managers, owners, and workers of the suppliers.

To reinforce integration with international food safety requirements, PRICE has been working with the Government of Bangladesh to increase the capacity of the DOF's Fish Inspection and Quality Control laboratory (FIQC). In doing so, the laboratory will be able to accurately screen and test export consignments before they leave the country. PRICE arranged training programs (including a train the trainers program) to assist FIQC in complying with international food safety requirements related to microbial, chemical, antibiotic, and general testing procedures. The eight master trainers provided training for an additional 100 laboratory operators and field level FIQC inspectors.

When the export of freshwater *golda* from Bangladesh fraught with danger of ban by EU countries, PRICE together with BFRI and DOF took initiative, under the National Action Plan of the GOB, to combat nitrofuran metabolites in *golda* by conducting a two-phase experiment. The first phase was to determine the probable source of nitrofuran metabolites in farmed prawns. At the end of this phase it was determined that the metabolite contamination to live prawn in farming conditions originates in certain shrimp/prawn, poultry, and fish feeds. The second phase of the experiment attempted to clarify whether or not nitrofuran metabolites accumulated farmed prawn after ingesting and digesting contaminated feeds could be removed from live prawn by withdrawing the contaminated feeds and feeding them then with confirmed nitrofuran metabolite-free feeds. Through this experiment it was discovered that the nitrofuran metabolites

might be susceptible to elimination in live prawns relatively quickly with the new diet of nitrofuran-free feed.

C. Strategic Focus

Due to commercial farming of small sized shrimp *vanamei* throughout southwest Asia, the Caribbean and South American in recent years, the world market has been flooded with small sized shrimp. More countries are joining the list of exporters of farmed pink shrimp, but the world demand for larger shrimp remains strong, despite the economic downturn.

Bangladesh contributes roughly three percent of the supply of frozen shrimp to the world market. It has a niche in larger shrimp, giving it a competitive edge over other shrimp producing countries. Processing capacity in Bangladesh is being underutilized at about twenty four percent capacity, so the limitation for growth is at the farming level. Because of this, PRICE is prioritizing the farming segment of the value chain.

Bagda farming in Bangladesh is concentrated in the southwestern part of Bangladesh, mainly in Khulna, Satkhira, Bagerhat, and in southeastern parts Cox's Bazar. Roughly 76% of shrimp production actually comes from three districts in greater Khulna (southwest). Prawn farming also flourishes in the Jessore-Khulna belt. More than 80 percent of prawn production comes from the Jessore-Khulna areas.

The best of use of its available physical fisheries resources may be the popularization of integrated farming together with high density monoculture of shrimp. Through GHERS, PRICE is planning to reach approximately 30,000 crop-rotational shrimp and prawn farmers by the end of the project, which is equivalent to 25 percent of all shrimp farmers in the southwestern part of the country. The crop-rotational method will incorporate plankton feeding fish and embankment horticulture crops to aid income generation, increase exports, and provide items for household consumption to increase food security. This will be accomplished through extending and intensifying the outgrowing schemes implemented through GHERS.

The contract farming of *bagda* may aid increase productivity through a variety of methods, including improved productivity through upgraded farming techniques and farming management, using hatchery produced screened PL for shrimp and prawn, value addition to shrimp, prawn, plankton feeding carp, and mullet seeds through over-wintering, promoting the production of two crops per year, and linking contract farmers to traceable and quality grade inputs. The main goals of GHERS are to popularize the use of screened PL to prevent disease outbreaks. Farmers do not generally use screened PL due to its cost and lack of regulations for its use. PRICE is planning to demonstrate how the use of screened PL significantly reduces the outbreaks of viral disease by surveying farms that use screened and non-screened PL.

PRICE has demonstrated, through its experiments, the source of nitrofuran metabolites in farmed prawn, and the methods by which contaminated prawns can remove the accumulated metabolites

within a couple of weeks. To build upon these experiments, PRICE is planning to popularize these methods to farmers by arranging workshops in prawn growing areas where those prawn may be threatened with metabolites. Trainings, leaflets, posters, and manuals will help to create awareness around avoiding the use of banned antibiotics and chemicals in farming.

In this final work plan, PRICE is planning to popularize crop-rotational and eco-friendly integrated farming methods and patterns (such as shrimp/prawn-fish-rice-horticulture) to maximize diverse crop production from a unit area and improve income and family nutrition. Additionally, PRICE will assist shrimp hatcheries in producing screened PL, individual farms that are opting for more intensive farming methods, and feed mills that are willing to produce commercial feed with traceable inputs. On a more widespread level, PRICE is working with enterprise based micro-sellers organizations to increase the sales staffs' capacity with their marketing networks across the country.

In processing plants PRICE will focus educating most plants in operation on Bangladesh labor law-2006 and capacity building in the areas of HACCP, bio-security, SOP, and SSOP. Additional trainings will include management to increase productivity and effective factory management. PRICE will continue to collaborate with the GOB to strengthen its capacity to conduct pre-embarkation testing of frozen shrimp as well as to identify sources of nitrofuran and other antibiotic contaminates while also taking measures to combat it.

D. Interventions (most of the interventions will be the same as the previous year with increased outreach)

Promoting increased use of tested PL with an aim for mandatory use in the future. PRICE, through the GHERS initiative, is building the capacity of the testing lab in Cox's Bazar to help them increase the number of screened PL they can produce. PRICE will encourage the transportation of screened PL to increase its availability in different regions and to help make it a more cost effective input. PRICE will work with farmers to ensure use of screened PL, making it mandatory for the GHERS farmers. Through their example and success, other non-GHERS farmers will be more likely to used screened PL. The GHERS extension facilitators will conduct campaigns, yard meetings on contract farming, and other activities to further promote the use of screened PL. The proven demonstration on superiority of tested PL interims of survival and biomass production will encourage government to enact law for the mandatory use of tested PL in future.

Promoting perennial farming of bagda using screened bagda PL. At present *bagda* farmers in the country practice extensive methods of farming that require long durations and result in a single crop per year. Good management and use of supplemental feeding can effectively reduce the farming time to three to four months and can facilitate two to three cropping patterns of shrimp farming with much higher yields than the current production rates. Over-wintering of screened PL can supply farmers on a perennial basis so that they may produce more than one crop per year. PRICE will promote this system with its farmers.

Encourage the use of quality golda HPL for farmers practicing mixed farming. PRICE will continue its efforts towards farming integration and crop-rotational farming suited seasonally. Traceable production of PL and supply of quality grade PL to farmers can ensure two to three cropping patterns on seasons and salinity variations. The beneficiaries will be given continued assistance on better feed formulation, homemade and commercial feed manufacturing, and on training of dealers to provide embedded information services to farmers. This will help to increase awareness of farmers and feed mills on the economic value of producing and using proper feeds.

Endorse contract farming system. Contract farming is the only way that can guarantee traceable shrimp production in the country as farming units in the country are either very small or very large with low density farming. Most of the shrimp farming under PRICE is executed under GHERS and depots are a focal point for outgrowing schemes as service providers for contract farmers. PRICE will work with feed mills, screened PL sources, and other input suppliers to assist in value chain financing. In addition, PRICE will assist contractors in designing an efficient outgrowing system and support them by providing training on how to manage the system, creating a manual for the system, and training contract farmers on their roles and responsibilities within an outgrowing system. Approximately 23,000 shrimp farmers will be trained who in turn will work with 17-20 depots throughout the remainder of the project.

Promoting good aquaculture practices. Because GAP is an important element of GHERS, PRICE will train organized farming groups in greater Khulna on high-density and semi-intensive farming methodologies to increase outputs. PRICE will also support the establishment of embedded extension services from depot owners to shrimp and prawn integrated farmers, including use of screened PL and other high quality inputs. PRICE will provide support to depots to recruit and train depot based extension facilitators who will in turn train farmers groups on better farm management practices.

Assisting a market for premium quality feed for shrimp farmers. Shrimp farms do not providing high yields partly because they do not use supplementary feeds of good quality. To keep costs low, many feed mills produce low cost feed that contains junk. PRICE will assist feed millers to produce quality grade feeds that will get a high price by linking them with international input suppliers and strengthening their capacity to produce premium feed. Both GHERS and non-GHERS farmers will be trained on the importance of using high grade feed in shrimp farming. To support contract farmers in the outgrowing system, PRICE will arrange linkage workshops for feed mills, farmers' associations, and depots.

Improved farming and farm management in Cox's Bazar region. Till 2011, PRICE has covered thousands of shrimp farmers in the southwestern part of the country where roughly 75 percent of all shrimp farms are located. However, 25 percent of shrimp farms are located in Cox's Bazar. Screened PL are produced and shifted to Khulna by air via Jessore, but these are not popularized in Cox's Bazar region yet. PRICE will organize farmer's groups in Cox's Bazar beyond the scope of GHERS and train them on improved high-density and semi-intensive methods of farming during this and future project years.

Assisting in training the stakeholders, depots, and staff on traceability. The project will support as before, training for farmers on integrated shrimp/prawn farming with fish and vegetables in enclosures and embankments. Members of farming associations and groups in clusters will learn about producing multiple crops seasonally and more than one crop by successive crops or crop rotation. Through integrated farming, PRICE and its partner organizations will address food security issues of resource poor farming families. PRICE will also facilitate a study to learn about household consumption and opportunities for integrated farming to increase family nutrition and food security.

Promoting compliance of the labor law for the shrimp processing plants. A report published last year on the alleged labor abuses in the shrimp industry created problems and raised concerns in the United States export market. To overcome this and to offset the potential negative impact while also promoting fair labor practices, PRICE will continue its work on raising awareness among local industry stakeholders, including processors and their suppliers, contracts, agents, and employees, on the Labor Law. Training materials have already been produced and are now in the follow-up stage. PRICE will evaluate the effectiveness of this program and determine the way forward for its future implementation.

Promoting hygiene and standard bio-security in the shrimp supply chain. PRICE is assisting and will continue to assist processing plants to improve their bio-security measures through awareness training in areas such as personal hygiene, responsible handling, and contamination and cross-contamination during handling and transportation of raw materials. Workforce development in the processing industry through trainings is planned for 2011. In addition, senior management staff will be trained on responsible factory management, worker's welfare, and worker's obligations.

Promoting development of value added products for export markets. Bangladesh traditionally exports frozen blocks of shrimp and prawn which do not get a high price in the international market. International markets demand value added products that are user friendly and ready to cook/eat products. To keep up with the quality demanded by international buyers, PRICE will educate processing plants on value added products for export.

GANTT Chart for Shrimp Sector Activities 2011-2013

Activity in details	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			Jan-Feb		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
2.1. Popularization of tested/screened PL																		Activities G. Khulna ,Follow ups Cox's Bazar	PCR lab, Beneficiaries of GHERS
2.1.1. Strengthening the capacity of PCR Lab.																		Same as above	Same as above
2.1.2. Follow up training for staffs PCR laboratory																		Same as above	Same as above
2.2. Scaling up the use of screened PL																		Activities G. Khulna, Follow ups Cox's Bazar	PCR lab, Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
1.2.1. Popularize use screened HPL yard meeting, contract farming																		Same as above	Same as above
1.2.2. Facilitate linkage development between Hatcheries and PCR labs																		Same as above	Same as above
1.2.3. Study: Disease outbreaks in farms using with/out screened PL																		Same as above	Same as above
2.3. Promote round the year faring by OW of S PL																		Activities Greater Khulna ,Follow ups Cox's Bazar	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
2.3.1 Farmers training: over- wintering (OWPL) & benefits.																		Same as above	Same as above
2.3.2. Popularizing OWPL through workshops, leaflets posters etc.																		Same as above	Same as above
2.3. Promoting the use of quality Golda HPL for farmers:																		Greater Khulna	PCR lab, Beneficiaries of GHERS, DBE, RE, VFA
2.3.1. Linking farmers with golda hatcheries, producing quality HPL																			Same as above
2.4. Access to market for quality feed for the shrimp farmers																		Greater Khulna	Feed manufacturers
2.4.1. Strengthen the capacity of feed mills for producing feeds																		Same as above	Same as above
2.4.2. Farmers training on feed quality and proper use .																		Same as above	Same as above
2.4.3. Workshop: Feed mills, F. assoc., out growers on feed quality																		Same as above	Same as above

Activity in details	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			Jan-Feb		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
2.5. Productivity Trainings for farmers																		Greater Khulna	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
2. 5.1. Support farmers training: improved farming techniques																		Same as above	Same as above
2.5.2. Support farmers training: Responsible farm management																		Same as above	Same as above
2.5.3. Training: intensive /semi intensive shrimp farming																		Same as above	Same as above
2.5.4. Assistance to DOF and other institutions on GAP																		Greater Khulna	Same as above
2.6. Scaling up improve farming																		Same as above	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
2.6.1. Exposure trips: Farmers to semi intensive farms in BD																		Same as above	Same as above
2.6.2..Exposure trips: Farmers/VCC to intensive shrimp farm abroad																		Same as above	Same as above
2.7. Promote contract farming system:																		Greater Khulna	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
2.7.1. Strengthening out growing mechanism																		Same as above	Same as above
2.7.2. Help formulation of manual on outgrowing system																		Same as above	Same as above
2.7.3. Support training on outgrowing managing the system;																		Same as above	Same as above
2.8.. Follow up training to execute outgrowing & VC financing																		Greater Khulna	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF
2.8.1. Capacity buildup out growers on outgrowing																		Same as above	Same as above
2.8.2. Assist group formation of farmers for outgrowing scheme																		Same as above	Same as above
2.8.3. Follow up: training on outgrowing & partners responsibly																		Same as above	Same as above
2.8.4. Follow up: Depots & farmers on VCF & prevention of side selling																		Same as above	Same as above
2.9. Promote traceability																		Greater Khulna	Beneficiaries of GHERS, DBE, RE, VFA, GFL, SMF, JSFL, JFFL, MFPL, MUSFL, OSEL, RSFL
2.9.1. Assist in training the Entrep. depots and staff on traceability																		Same as above	Same as above

Activity in details	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			Jan-Feb		Locations	Probable Partners
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12		Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13		
2.9.2. Support to create awareness on using traceable inputs																		Same as above	Same as above
2.10. **Promote crop rotational golda and bagda farming on seasonal basis**																		Greater Khulna	Beneficiaries of GHERS, DBE, RE, VFA,
2.10.1. Training: Integrated golda/bagda/fish & vegetables																		Same as above	Same as above
2.10.2. Follow up training on the benefits of crop-rotational farming																		Same as above	Same as above
2.10.3. Follow up: Demo integrated golda/ bagda, fish & veg. farming																		Same as above	Same as above
2.11. Promote compliance of Labor Law for processing plants.																		Same as above	JSFL, JFFL, MFPL, MUSFL, OSEL, RSFL
2.11.1. Follow up: Training BD labor law, workers & managers of plants																		Same as above	Same as above
2.12. Promote hygiene & bio-security in shrimp supply chain																		Greater Khulna	GHERS, DBE, GFL, VFA, RAZU, MONDOL, SATATA, GFL, SMF
2. 12.1. Training: HACCP & others, depots, plant staff & managers.																		Same as above	Same as above
2.12. Promote development of value added products for export																		Greater Khulna	JSFL, JFFL, MFPL, MUSFL, OSEL, RSFL
2.12.1. Exposure visits: Processors to Gulf /Brussels/ Boston food fair																		Same as above	Same as above
2.12.2. Follow up training: development of value added product																		Same as above	Same as above
2.13. Training on skill development in compliances																		Greater Khulna	ALL PRICE ASSOCIATED PARTNERS
2.14 1 Printing & distribution of aquaculture extension materials																		Dhaka	ALL PRICE ASSOCIATED PARTNERS
2.15. Result Dissemination & lesson learning workshops																		Greater Khulna and Dhaka	ALL PRICE ASSOCIATED PARTNERS

LEATHER PRODUCTS

A. Overview and Constraints to Growth

Bangladesh has successfully overcome the potential threat to its economy from the recent global recession. Due to the efforts of the private sector, certain advantages Bangladesh has enjoyed as a Least Developed Country (LDC), the gradual increase in the prices of Chinese products, and minimal government policies, Bangladesh's economy remained resilient and was fueled for further expansion and new investments.

Bangladesh's overall exports grew significantly in the last fiscal year. Among its major export items, knitwear products, woven garments, frozen foods, agricultural products, rubber, **leather and leather products**, cotton and cotton products, jute and jute goods, home textiles, and vessels/ships experienced substantial growth during this period.

In the Bangladeshi fiscal year July 2010-June 2011, overseas sales of leather products (fourth largest export) earned over USD 550 million, approximately 40% more than the previous year (USD 402 million). The sector achieved growth in its three subsectors: tannery, leather goods, and footwear.

In FY 2010-11, the revenue from sales for leather, footwear and leather goods was increased by 32%, 36%, and 91% respectively compared to that of the previous fiscal year. It shows that the demand for the higher value added products like footwear and leather goods is increasing faster compared that of leather.

With the expansion of the export market, demand in the local market is also increasing, particularly for footwear and other leather goods. Many local organizations have been working to leverage these opportunities. Last year, large local leather companies such as Bay, Apex, Jennys, Fortuna, and Bata, increased their retail sales. In addition, fashion houses such as Aarong, K Kraft, Yellow, Menz, Cats Eye, and Otobi, have begun including or increasing the number of leather footwear and goods in their sales, highlighting the growth of this sector.

Although a few thousand people joined the leather sector workforce this year, the demand for skilled workers is still much higher than the supply. As a result of the limited supply of skilled workers, an unhealthy practice of "stealing manpower" has developed within the leather sector industry—when a new leather business begins operating, because they need skilled people, they offer much higher wages to experienced workers and supervisors from other leather businesses or factories. This is not a sustainable solution; a concrete road map is needed to address this critical problem.

Despite the tremendous demand for skilled workers and supervisors, there was no such institution dedicated to producing skilled workers until the Center of Excellence for Leather Skills (COEL) was established in June 2011. COEL is in its initial phase of development and its capacity as a Service Provider (SP) should be strengthened so that there is a continuous supply of

skilled/semi-skilled workers and supervisors in the leather sector. Once COEL starts supplying quality and quantity workforce on regular basis, sector people will start paying for the skilled workers from there. This will in turn ensure COEL's future sustainability. In addition there is no SP dedicated to other critical services such as product development and the testing of physical and chemical properties of raw and finished materials. Though Bangladesh Leather Service Center, BLSC is providing some of these services, the test results are often inconsistent and therefore not very reliable. If these two SPs work together perhaps much better results can be achieved; while COEL can take care of the workforce development issues BLSC can focus on testing activities.

Large enterprises increasingly depend on SMEs as outsourcing business is on the rise. However, while SMEs are gaining more exposure to the market, their expected development is still well under the mark. Inefficiency in production, poor business linkages and limited access to market, finance and information, are a few of the challenges SMEs face.

The leather sector in Bangladesh still faces major challenges from the continued use of improper flaying and preservation techniques and the sacrificing of cattle. For example, during Eid-Ul-Azha/Qurbani, only about 40% of leather that is normally procured is able to be collected since so many cattle are used for sacrifices. The leather sector started to realize that something must be done to reduce this loss and starting last year, they have conducted an awareness campaign, which should be continued.

B. Progress to Date

Based on the priorities set by leather industry experts, skill development interventions have been the major focus of PRICE. PRICE has been working with different partners to address the lack of skilled workers in the leather sector. From beginning with the development of sewing operators, PRICE has been leveraging resources from members of LFMEAB to conduct on-the-job training programs to develop a new cadre of skilled workers. To date, PRICE and its partners have trained more than 6,000 new workers and more than 3,300 trainees have accepted formal jobs. PRICE also developed five training modules, in collaboration with partners, in the areas of sewing, manufacturing of footwear and leather goods (cutting & sewing), handmade leather goods and footwear, and the process of quality control in footwear manufacturing.

One of PRICE's biggest accomplishments was supporting the creation of COEL, as mentioned above. COEL is a one point service center established by private sector stakeholders in collaboration with PRICE and ILO. PRICE facilitated the signing of a MoU between COEL and Footwear Design and Development Institute of India (FDDI) for COEL to support FDDI in the future. Through PRICE-COEL cooperation, a skills development program for 1,000 workers and 50 supervisors is currently being implemented. Other accomplishments in working with SMEs include:

- To address some of the challenges that SMEs are facing, PRICE has been has been helping approximately 50 SMEs strengthen their market linkages, gain better access to

finance, enhance the skills of their supervisors, grading up the processes to reduce production inefficiencies, and increasing their exposure to better business practices. For example, PRICE helped form an informal group of leather technologists and entrepreneurs (LTSE, Leather Technologists Small Entrepreneurs), which allows them to more easily leverage each other's resources.

- PRICE also supported SMEs by linked a few SMEs, particularly from LTSE, to Aarong, a leading enterprise with a model payment system. Three SMEs have been working with Aarong for more than a year, and this number will increase.

- PRICE recently organized a buyer-seller meeting between 23 SMEs and LFMEAB members to expand subcontracting opportunities. Participating SMEs indicated that this meeting helped them expand their businesses through agreements made after the meeting with larger manufacturers.

- In collaboration with PRICE, Aarong assisted 20 of its subcontractors to enhance the skills of owners and workers in the areas of cutting, production planning, costing and efficiency, quality assurance, and general management. So far 40 participants have attended this program and are implementing the knowledge they gained.

- Jointly with the SME Foundation (SMEF) and International Trade Center, ITC Program, PRICE helped 25 SMEs gain better access to finance. Seven SMEs have already received loans totaling USD 130,000 from Janata and BASIC Bank to employ new workers, buy new machines, and rent new production space. Another PRICE-assisted enterprise received approval for a loan worth USD 110,000 from BASIC Bank. PRICE has also helped create relationships between approximately 25 Aarong small producers and SMEF and Bank EBL. By establishing these relationships, in contrast to higher interest rates charged by regular commercial banks, small producers will only be charged 9% in interest.

- PRICE facilitated a pilot program on process up gradation with seven SMEs in the areas of job simplification, reducing inefficiencies, and quality improvement. A seminar has been organized for small producers from different areas to disseminate the lessons learned and to share experiences. A video documentary has already been developed to capture good practices implemented through pilot. A few participating SMEs have already implemented some changes in the area of simplifying jobs, cost savings, and using appropriate tools, and are witnessing the benefits.

- One important role of PRICE's work with SMEs was facilitating increased market exposure through the Dhaka International Trade Fair (DITF) in 2011. Ten SMEs participated and generated sales of USD 57,787 on the spot. Even more importantly, however, was the network they were able to build with new corporate businesses that they are now working with.

- PRICE supported five SME entrepreneurs to attend the lead auditor course for ISO 9001:2008. This training aimed to help them assess gaps in their respective enterprises to meet the requirements of a quality management system and to develop a quality management system to become ISO-certified, making them the first SMEs in the leather sector to be certified under ISO 9001:2008.

With regard to service providers, PRICE in collaboration with the Business Promotion Council (BPC) has supported the Bangladesh Leather Service Center (BLSC) to strengthen its capacity as a leather sector service provider. PRICE brought in an FDDI expert to train nine staff from BLSC and Bangladesh College of Leather & Engineering Technology (BCLET) in how to conduct UV machine tests to detect the presence hazardous chemicals in leather. PRICE also created a pool of 15~16 individual service providers in the area of training and development.

To improve the quality of basic raw materials, PRICE has facilitated flaying awareness campaigns the last three years. Through these campaigns, flayers are trained on proper flaying and basic preservation techniques, and information is disseminated to people who sacrifice cattle during Qurbani, through the media, road shows, and imams in Dhaka and Chittagong. One of the biggest achievements is that ownership of the campaign has been taken over by the sector association as of last year. In addition, two other associations Bangladesh Tanners Association (BTC) and Bangladesh Finished Leather, Leather Goods, and Footwear Exporters Association (BFLLFEA) have taken the lead role from PRICE in these campaign efforts.

PRICE also contributed in building the awareness of the industry owners and new investors to focus more on value-added products for the betterment of the economy. PRICE's acceptability is widespread and as a result EPB invited the PRICE team to make a presentation to the audience consisting of industry people and policy makers in a national seminar.

C. Strategic Focus

Based on discussions with industry stakeholders (SMEs, associations, large businesses, policy makers, and SPs) and experiences from previous activities, PRICE decided to continue its focus on the value-added product subsectors (i.e. footwear and leather goods) with a smaller focus on the development of basic raw leather. Dhaka remains the main region of activities.

Rather than broadening its activities, PRICE will deepen its already-existing activities during the project's final year of implementation. In addition, one or two special initiatives will be implemented to maintain the legacy of PRICE work.

Workforce development
To counter one of the primary constraints confronting the leather footwear and goods subsector, PRICE will continue to develop the skills of new workers in association with LFMEAB. PRICE will focus on building the capacity of COEL so that it can take the lead from PRICE at the end of the project. PRICE will execute these activities in partnership with industry associations, development partners, service providers, and educational institutions.

SME development
The contribution of SMEs to the Bangladeshi economy is essential in terms of employment generation, providing various inputs to other industries, and supporting larger businesses as subcontractors. Therefore strengthening their capacity is critically important. PRICE will continue to support SMEs –to enhance the skills of their workforce, create linkages with markets, and to gain better access to finance. PRICE will facilitate these in partnership with industry associations and its members, development partners, and service providers.

Service Provider (SP) development
PRICE will also support COEL in building its institutional capacity and developing new business linkages so that it can open up other windows of services particularly in the areas of research and product development. In addition, PRICE will explore ways to support collaboration of COEL and BLSC so that they can leverage each other's resources to in supporting the sector more efficiently and effectively. Ultimately, PRICE hopes to see COEL develop into a service hub to provide services such as technical & business information, product development, R & D etc for leather sector SMEs, large firms, and other stakeholders.

Basic raw materials quality improvement
The quality of footwear and goods is directly proportional to the quality of raw materials (i.e., leather). As previously described, improper flaying and preservation techniques and overall lack of awareness of how this affects the quality of leather, impacts the quality of products across the value chain. To overcome this lack of awareness and to promote the quality of leather, PRICE will continue to support associations and other partners such as BPC in conducting awareness campaigns.

Publications to give continuity to PRICE's work
PRICE will work closely with various partners to publish manuals, reports, documentaries, and videos as tools to sustain its positive achievements, lessons learned, and experiences. These publications will be distributed among leather sector stakeholders and institutions so that they can serve as references in future.

D. Interventions

Workforce Development
Developing/enhancing the skills of the workforce
Supporting the sector in developing semi/skilled workers through COEL: PRICE has already signed an agreement with COEL to train 1,000 new workers and will continue supporting the initiative to maximize the use of its existing facilities. This training program lasts 12 months and covers all components of production such as cutting, prefabricating, sewing, assembling, and finishing. The training curriculum is pending approval from the Bangladesh Technical Education Board (BTEB) and is divided into two parts – lessons focused on theory, followed by practical classes at COEL. Trainees are then placed in factories for on-the-job training. COEL has already

signed MOUs with fours interested factories from LFMEAB where these workers will be placed (PICARD, Apex Unit-2, Blue Ocean, and Landmark).

Facilitating skill development of floor supervisors through COEL: Floor supervisors are responsible for organizing the workers and ensuring their productivityGiven their importance, PRICE has already started a pilot to developing the skills of floor supervisors. This 6 month long program aims to train 60 supervisors at COEL, and after 3 months will place them at various factories that members of LFMEAB. Participants will be trained in both technical and management areas such as production management, production planning, inventory management, and workers management to utilize their capacity in best possible way.

Partnering with LFMEAB member organizations to train new workers: PRICE will continue its support, though it will be gradually phased out as the project approaches closeout, to LFMEAB and its members to develop the skills of new workers through on-the-job training, particularly for the leather footwear sub-sector. PRICE has already received three requests from PICARD, Bay, and FB Footwear to extend the training program for developing the skills of another batch of 2,300 new workers.

Assisting LTSE members in expanding business through training new workers: PRICE has been supporting the development of an informal group of 13 Leather Technologists Small Entrepreneurs (LTSE) since 2009. Four members of LTSE will hire 100 workers and PRICE will help them develop their skills in the following areas: cutting, prefabricating and sewing, and assembling. These trained workers will receive full-time jobs in these four enterprises.

SME Development

Assistance to SMEs

Assisting SMEs to get bank loans: PRICE will continue facilitating links between SMEs and banks/financial institutions so that they can do better business and expand. PRICE will help approximately 25 small producers/Aarong subcontractors to obtain bank loans with special terms and conditions. PRICE will work in collaboration with SMEF, Eastern Bank Limited (EBL), and Aarong. PRICE will assist these small producers in obtaining bank loans. It is expected that another 15 to 20 small enterprises will receive bank loans through this facilitation. PRICE will also explore the possibility for other groups of small producers to work with SMEF.

Facilitating linkage building initiatives between SMEs, lead enterprises, and corporate businesses: PRICE will continue linking approximately 50 SMEs with leading enterprises by arranging linkage workshops and buyer-seller meetings on regular basis. These programs will allow SMEs to showcase their products, and attract new buyers and strengthen their relationships with old buyers. PRICE will also help SMEs prepare and develop their product catalogue/samples for these kinds of workshops and meetings.

Assisting SMEs in expanding linkages and sales through participation at trade fairs: PRICE will continue its support for SMEs to participate in the DITF. The DITF is a month long fair that helps participating SMEs to promote their products, make significant sales, and create new

connections with potential buyers. The fair is organized in collaboration with the Business Promotion Council (BPC) and Export Promotion Bureau (EPB). PRICE and its partners will be responsible for selecting SMEs to participate in the fair—it will open participation to the 10 enterprises that participated last year and several new SMEs, for an expected total of 25-30 enterprises at each of the next two fairs (January 2012 and January 2013). PRICE will help them develop products and catalogues, as well as to prepare their samples and arrange business meetings.

Facilitating skill enhancement program for the Aarong subcontractors: PRICE will continue its cooperation with Aarong to extend its support to small suppliers in enhancing skills of their owners, supervisors and workers. PRICE facilitated the initial "Techno Motivational" training program for the owners of the suppliers last year. Recognizing the benefits, Aarong requested this training be replicated more comprehensively. This time areas have been identified to go for an in-depth skill enhancement program covering topics including basic raw materials management, accessories and sundry items management, and prefabricating and sewing. It is estimated that approximately 150 people will attend the training program this year.

Arranging exposure visits for SMEs: PRICE will organize several exposure trips for SMEs to large enterprises so that they can observe and learn better production processes and management practices. PRICE will leverage its connections and relationships with lead firms such as PICARD, Bata, Landmark, and Apex to arrange these visits. Participants from approximately 50 SMEs are expected to participate in this initiative.

Helping SMEs in gaining access to better health services: PRICE has already connected the workers and supervisors of LFMEAB member enterprises to the USAID-funded Smiling Sun Franchise Program (SSFP) in order to obtain better health services for themselves and some of their family members, and will continue to do so this coming year. Better healthcare for workers will keep them healthy and motivate them to contribute more to the development of the sector.

Assisting LTSE in building their own brand: PRICE will support LTSE's efforts to establish their own brand by engaging local experts in branding, marketing, merchandizing. These experts will help LTSE members understand the basics of branding.

Disseminating information on improved and cost effective production: PRICE conducted a pilot on process up gradation last year with seven SMEs to demonstrate effective ways of reducing inefficiency at the production floor level. A documentary has already been developed highlighting major achievements, and has been shared with a small group of SMEs. This year, PRICE will share this learning with other stakeholders by organizing knowledge sharing workshops. It is expected that about 300 workers from 30 enterprises will participate this year, and will be able to improve their manufacturing efficiency with limited resources based on what they learn through these workshops.

Service Provider Development
Strengthening service providers to leather sector

Strengthening COEL: PRICE will continue to support the development of workers and supervisors at COEL, and in addition, will begin other activities to enhance the skills of machine maintenance operators. PRICE will also work with COEL to promote its services in the market by arranging visits of stakeholders, including SMEs and policy makers, to COEL premises and seminars. Efforts will also be made to bring FDDI experts to prepare a long-term road map for the development of COEL. PRICE will link COEL and BLSC so that they can work together in the future to leverage each other's resources. PRICE will team up with ILO, Swiss Contact, GOB, industry associations, etc. to strengthen COEL's capacity. It is expected that approximately 3,000 workers will be trained through apprenticeship programs every year when COEL is fully operating.

Strengthening Leather and Footwear Manufacturing Association of Bangladesh, (LFMEAB): LFMEAB is key player in the sector. The members of this association contribute more than 90% export revenues of the sector. PRICE will work with the association to increase its capacity to serve its members more efficiently. For example, PRICE will engage experts to support LFMEAB in developing its own knowledge center, which can be used as source of information regarding the market, new technology, production, machine-tools, and other related development, etc.

Improvement in Quality of Basic Raw Materials
Improving the quality of hides and skins
Raising awareness through flaying campaigns. Two associations, the Bangladesh Tanners Association (BTA) and Bangladesh Finished Leather, Leather Goods and Footwear Exporters Association (BFLLFEA) have taken up the ownership of the flaying awareness campaign. PRICE will collaborate with BPC to support these two associations in conducting this campaign. Awareness building posters/leaflets will be distributed across the country. PRICE will also work with influential leaders, such as local imams, to disseminate information regarding proper flaying and preservation techniques.

PRICE Leather Sector Potential Partners:
- Center of Excellence for Leather Skills (COEL)
- Leather Goods & Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB) and its members
- Bangladesh Tanners Association (BTA) and its members
- Bangladesh Finished Leather, Leather Goods and Footwear Exporters Association, (BFLLFEA)
- Leather Sector Business Promotion Council (LSBPC)
- Bangladesh College of Leather & Engineering Technology (BCLET)
- Export Promotion Bureau (EPB)
- Bangladesh Leather Service Center (BLSC)

- SME Foundations (SMEF)
- Asia Foundation
- ILO
- Commercial Banks
- Aarong

GANTT Chart for Leather Products Sector Activities 2011-2013

Activities in detail	Q Ist	Q2nd	Q3rd	Q4th	Q 5th	Q 6th	Strategic partners	Locations
Workforce development								
• Facilitate COEL initiative to develop 1,000 semi/skilled workers							COEL, LFMEAB members	Gazipur
• Work with COEL to develop 50 skilled floor supervisors							COEL, LFMEAB members	Gazipur
• Collaborate with FB Footwear to train1,000 new workers							LFMEAB, FB Footwear	Gazipur
• Continue to support Apex Adelchi initiative of training 400 workers							LFMEAB, Apex	Gazipur
• Continue to work with PICARD to train 450 new workers							LFMEAB, PICARD	Ashulia
• Assist Bay initiative of developing skills of 500 new workers							LFMEAB, Bay	Gazipur

• Continue to support Bengal Shoes initiative of training 500 workers							LFMEAB, Bengal	Noakhali
• Facilitate training of 100 workers for new factory of LTSE group							LTSE members	Hazaribagh
• Collaborate with partners in doing 02 publications on training modules							LFMEAB, COEL, BPC	Dhaka
SME development								
• Assist (documenting, basic accounting practice) SMEs in getting bank loans in collaboration with SME Foundation							SME F, EBL, Aarong	Dhaka
• Arrange SMEs factory visits for banks to facilitate assessments							Aarong, SMEF	Dhaka
• Help SMEs build linkage with lead enterprises/business houses by organizing 3 workshops/buyer-seller meets							LFMEAB, Business Houses	Dhaka
• Follow up with participating SMEs on business development							SMEs, LFMEAB	Dhaka
• Support (catalogue devel., business meetings) SMEs in expanding business through participation at DITF							BPC, EPB	Dhaka
• Follow up with participating SME on progress after DITF							SP, SMEs	Dhaka

• Facilitate skill enhancement training in sewing and prefabricating for Aarong's small subcontractors							Aarong	Dhaka
• Assist Aarong in designing a long-term development plan for its small suppliers							Aarong	Dhaka
• Assist SMEs in learning better business practices by arranging 3 visits to large industries							LFMEAB members	Gazipur
• Help SME workforce obtain better health services (counseling, investigation) in collaboration with SSFP							SSFP	Gazipur, Dhaka
• Engage branding/merchandizing expert to support LTSE group in establishing its own brand							LTSE, SP	Dhaka
• Arrange 2 knowledge sharing workshops to disseminate information on improved and cost effective production							SME F, BLSC	Dhaka
Supporting the development of service providers (SPs)								
• Provide technical assistance (TOT, promotional) to COEL to strengthen its capacity							COEL	Gazipur
• Facilitate linkage building meeting between COEL and BLSC for joint collaboration in testing and other activities							COEL, BLSC, BCLET	Gazipur, Hazaribagh
• Arrange 2 visits between COEL and BLSC representatives to further strengthen the connection							COEL, BLSC	Gazipur,

								Hazaribagh
• Support COEL to bring international experts from FDDI to design the long-term plan for Service Center activities							COEL, FDDI	Gazipur
• Assist LFMEAB in developing the knowledge center							LFMEAB	Dhaka
Improving the quality of basic raw materials - leather								
• Assist BTA in organizing flaying awareness campaigns in collaboration with LSBPC							BTA, LSBPC	Dhaka
• Help LSBPC/associations conduct an evaluation of the effectiveness of outreach/campaigns							BTA, BFLLFEA, LSBPC	Dhaka
Wrap up								
• Wrap up project activities and ensure proper documentation is saved in files							LFMEAB, BPC, COEL, ILO, BLSC, Aarong	Dhaka

GENERAL AND COMMUNICATIONS ACTIVITIES

A. General Project Events

Besides sector specific events, PRICE may take part in several cross cutting events with broader and more general perspective:

- America Week is usually a three day annual event designed to showcase U.S.-financed activities in support of the government and people of Bangladesh. The specific date and venue for this event will be announced later.

- Gender Fair is a USAID-sponsored event designed to showcase the activities, outcomes and impacts of USG-funded projects focused on attaining gender equity in Bangladesh. If invited, PRICE will participate in this important event to demonstrate its gender-specific achievements in the horticulture, aquaculture and leather products sectors.

- Closeout Event. In coordination with USAID, Chemonics is planning to hold a closeout event in Dhaka in January 2013 to celebrate the work of the project and our partners and the impact that work has made.

B. Communication Activities

Effective communications are an essential part of good project management. Effective communications in PRICE mean the project staff shares a common vision and sense of purpose, stakeholders buy-in to the project's objectives and are active collaborators, the USAID Mission feels informed and satisfied with progress, and knowledge generated is shared to ensure lessons learned benefit the wider community. PRICE target audiences include USAID, private sector partners, public sector partners, donors and donor funded projects, and the general public.

There are many potential communications tools available to share, but it is important to prioritize those that can achieve effective impact without unduly straining project resources.

COMMUNICATION TOOLS

a) Success Stories

PRICE has a rich pool of partners who have achieved some measure of success as a result of collaboration with the project. It is important to share these success stories with the Mission, with in-country stakeholders, as well as through the USAID/Washington **Telling Our Story** web site (www.usaid.gov/stories). Success stories therefore, are a primary tool for sharing project impact and will be submitted on a quarterly basis, with a minimum of 10 per year.

From October 2011-February 2013, a minimum of 10 success stories will be published in this regard.

b) Weekly Updates

PRICE will provide weekly updates of its activities on the last working day of every week to the USAID Economic Growth Office. These will be short (1-2 pages) descriptions of noteworthy events and technical breakthroughs resulting from project interventions.

c) Annual Events and Activities

As noted preciously in this Work Plan, the project hosts and participates in a number of events, both project-wide and sector specific, from trainings to public outreach campaigns. For the 2012 fiscal year these include participation in the Dhaka International Trade Fair, access to finance workshops, proper flaying and leather conservation campaign, buyer-seller meets, and food safety workshops and awareness creation campaigns,.

d) Progress Reporting

PRICE produces three Quarterly Reports and one Annual Report per year. The reports are detailed summaries of activities and accomplishments during the reporting period in each of the sectors we work in. Additionally, PRICE submits semi-annual performance figures and narratives to the USAID Mission.

From October 2011-February 2013 PRICE will produce four quarterly reports and two annual reports. It will also produce a final report no later than 45 days after the end of the contract.

e) Quarterly Newsletter

PRICE produces a quarterly newsletter in order to reach a broad audience that's inclusive of PRICE partners and beneficiaries. The newsletter serves to cover all sector highlights and a feature focus on at least one partner PRICE works with. This feature focus will cover PRICE's intervention and impact, the importance of the partner organization's role in their industry, and the human interest.

PRICE will produce four quarterly newsletters during the period of this work plan, the last one corresponding to July-Sept 2012.

f) Project Website

The project website constantly updates to provide the latest highlights of the project, main accomplishments, sector news, and upcoming activities.

Until the project closes in 2013, the website www.price-bd.com will be updated with all latest updates of the sectors on regular basis. In addition, all publications will also be uploaded on the Publications section of the website as well.

g) Photographs

New project photographs will be provided regularly. PRICE will also update catalogs with new photos, or print new photos of PRICE's events, milestones, and achievements when required. Besides, photos can be published as a part of success stories as well.

h) Video

PRICE will produce new video productions on Project activities. The video documentary on PRICE can also be updated, if required.

i) Print Publications

PRICE will publish number of training manuals for all three sectors. Besides, project brief, sector brief, brochures, catalogues, on demand leaflet, poster, flip chart, folder or any other similar print publications will be done when required.

j) Special Promotion of the Beneficiaries' Stories through Mass Media

During the timeline of this work plan PRICE will take the initiative to promote a number of its beneficiaries' success stories through the mass media (both electronic and print).

GANTT Chart for General and Communication Activities October 2011-2013

Events/Tasks	1st QTR			2nd QTR			3rd QTR			4th QTR			5th QTR			END	
	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13
America Week																	
Gender Fair																	
Writing Annual Report																	
Writing Quarterly Reports																	
Writing Quarterly Newsletter																	
Semi-Annual Performance Reports																	
Preparing Success Stories																	
Making Videos																	
Website Operation																	
Weekly Reports																	
Print Publications																	

PERFORMANCE MONITORING PLAN

The M&E system is the basis for quarterly and annual reports to USAID. The PRICE team collects and analyzes performance information regularly; PRICE not only collects performance and impact data; it adds value to the raw data by performing appropriate analysis and providing context for data interpretation, thereby transforming raw data into useful information. Results from the analyses help determine whether adjustments to the project implementation plan are required. Finally, this information is conveyed to relevant internal and external parties through communications (i.e. knowledge sharing) and achieves impact as knowledge is acted upon. An understanding and agreement among all stakeholders of the project is developed to establish an effective performance management plan. All of them are the users of the system.

a. Features of the System

The M&E system is designed to involve all technical team members and project counterparts. This approach has several benefits.

Efficiency. Because technical team members and counterparts have first-hand knowledge of their activities and resulting impacts, they are best suited to efficiently collect and verify basic M&E data in their respective technical areas.

Ownership. By being involved in project M&E efforts, technical team members can ensure that the information generated is relevant and consistent with the interests of the project while our counterparts will see the demonstrated success of reforms.

Feedback. Having collected and analyzed M&E information, technical team members and counterparts are aware of project progress and will be able to use M&E information to guide project implementation.

The project M&E is responsible for organizing data collection. They ensure that project team members have the necessary tools to collect data and that they collect it consistently and at the appropriate frequency. They verify data quality and analyze and report trends. Annually, they review the appropriateness of the PMP and make necessary additions or adjustments to the existing indicators. The COP/DCOP supervises the overall M&E system. The technical area specialists are responsible for managing the process of primary data collection and entry in their respective technical areas. They then use the information to make management decisions about implementation activities. These technical specialists communicate progress to PRICE counterparts informally during the course of technical assistance and formally in quarterly reports to help them make decisions about necessary and priority interventions.

PRICE collects basic M&E data from the various administrative and technical records of the project, specially-designed surveys, and focus groups. PRICE also consults records, statistics, surveys, and databases maintained by the Government of Bangladesh (GOB), USAID, other donors, and NGOs as additional sources of data. There must be a balance between M&E data

collection and technical work. Our M&E system is designed to allow the efficient collection of data by project staff or counterparts.

b. The Indicators

The basic premise of the project is that true poverty reduction is about ensuring decent, sustainable jobs for vulnerable groups, with such jobs arising from increase in sales and investment across value chains in response to market demand. Indeed, the PRICE contract stipulates that sales, job, and investment increases are the essential project performance targets. As such, the focus of PRICE performance indicators is on sales, jobs, and investment—particularly for the benefit of women, young adults, and SMEs—to achieve equitable growth. These are the performance indicators for the overall strategic objective. All performance indicators have specific targets for the life of the project.

PRICE also uses tracking indicators that allow the project to track other aspects of its work and to support requirements for overall USAID reporting. For example, tracking indicators include disaggregation of performance indicators by gender, age, sector, region, exports, and SMEs. These indicators also track the number of SMEs receiving PRICE assistance and financing, training metrics, and other measures.

PRICE primarily collects data on performance and tracking indicators relevant to activities directly implemented by the project in collaboration with counterparts. This principle of "manageable interest" helps ensure that the results reported by PRICE's M&E system are within the project's ability to influence, particularly at the KRA level. Through these performance and tracking indicators, PRICE is able to accomplish the following:

- Capture and communicate major project impacts
- Track implementation progress against targets
- Supply information concerning major PRICE activities
- Identify problems constraining performance and resolution
- Contribute to USAID's own performance management and reporting needs

Performance of the project and of the three sectors (Aquaculture, Leather and Horticulture) has been measured using eight defined indicators so far. Two types of indicators have been used to monitor PRICE's contribution to (1) assessment of the impact of PRICE's interventions and (2) key indicators of the global U.S. Foreign Assistance Framework. The first category is called custom indicators and the second is called common indicators. *Custom* indicators assess impact or outcome of the project interventions. *Common* indicators are used to report on PRICE's contribution to the global results of priority program areas of the U.S. Foreign Assistance Framework. All these indicators are measured quarterly or annually throughout implementation in order to evaluate progress towards targets agreed with USAID.

While the indicators included below are intended to be reported on over the life of the project, it is likely that adjustments will be necessary over time. Annually, PRICE reviews the PMP in coordination with USAID and other counterparts, and modify indicators as necessary.

Critical Assumptions

In designing the PRICE M&E system, PRICE focused on indicators within the manageable interest of the activity. This approach allows the project to measure impacts that can, to a large extent, be attributed to the project. The project's ability to demonstrate improvement in these measures is based on the following assumptions:

- Absence of sociopolitical instability
- No major agro-climatic shocks during the project period. These include major climatic shock such drought, floods and other weather hazards.
- Generally stable fiscal and monetary policy
- Willingness of project counterparts and beneficiaries to carefully consider and implement project recommendations
- Access to available statistics and cooperation in conducting surveys

Custom Indicators

PRICE has used five custom indicators and three common indicators. The custom indicators are:

i. Indicator 1: Total value of sales increased:
   Justification: Economic activities are largely measured by the creation of sales.
   It is the aggregation of the increase in total value of gross sales of assisted firms that can be attributed to PRICE activities. It is calculated in United States dollars and disaggregated by domestic and export sales.
ii. Indicator 2: Total number of full-time jobs created:
   Justification: True poverty reduction means having a decent job with jobs arising from increases in sales and investment across the value chains in response to market demand. Full-time equivalent jobs will be defined as those equal to 260 work-days per year for non- agricultural production and 150 days for agricultural production (given the seasonality associated with agriculture work). Only new jobs will count, calculated by taking the total number of work days and dividing by 260 or 150, as appropriate. A new job will be attributed to the year in which the job originated.
iii. Indicator 3: Total value of investment increased:
   Justification: Economic activities are largely measured by increased investment.
   It is the aggregation of the increase in the total value of investment of assisted firms that can be attributed to PRICE activities. Investment will include loan and private equity. It is calculated in United States dollars and disaggregated by domestic and export sales.
iv. Indicator 4: Number of persons participating in USAID workforce development programs:

Justification & Management Utility: This indicator measures the number of individuals who enrolled in USG-funded workforce development programs. It is assumed that increased access to quality programs will result in a more skilled, adaptable workforce. It will give the number of persons participating in USG-funded workforce development programs including, technical and vocational programs and workforce readiness programs.

v. Indicator 5: Number of staff (workers and managers) trained on key issues of Bangladesh Labor Law 2006*:
It will give the number of persons (workers and managers) participating in USG-funded training programs on key issues of Bangladesh Labor Law 2006.
*It has replaced an older one upon consultation with USAID.

Common Indicators

The common indicators are as follows:

i. Indicator 1: Number of firms receiving USG assistance to improve management practices:
Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by adopting improved management practices.
This indicator measures the number of firms that receive USG assistance to improve their management practices (financial management, strategic planning, marketing, etc.).

ii. Indicator 2: Number of MSMEs receiving USG-supported assistance to access bank loans or private equity:
Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by accessing capital and increasing investment in productive assets.
Number of MSMEs who are receiving assistance from USG supported sources to obtain bank loans or private properties.

iii. Indicator 3: Number of firms receiving USG assistance to invest in improved technologies:
Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by investing in new technologies.
It is the number of MSMEs who are receiving USG assistance.

Indicator reference sheets have been prepared for each indicator in order to provide more detail on indicator definition, units of measure, justification, data collection, and where possible, proposed targets.

c. Use of Case Studies

In some cases, case studies are used to provide deeper understanding of progress or to complement data collected by M&E. However, this should not be confused with the qualitative indicators. This is a very subjective approach and presents a plausible case that progress is being made by using illustrative examples. This is not used as substitute to the other precise measures.

Case studies are being prepared by the Communication personnel of the project, under direct supervision of COP. Sector Team Leaders and others can come up with the idea of any seemingly interesting cases being observed within the boundary of Project activities and the resulting impacts. Four types of case studies are prepared: case study, success story, first person story and, photo story. Usually 12 case studies are prepared each year which are submitted to USAID with quarterly and annual reports and then uploaded in the PRICE website.

d. Source of Data

Secondary Source of Data
PRICE M&E uses both primary and secondary sources of information to measure the indicators. Secondary sources can be a range of organizations including the government of Bangladesh (e.g. ministries), EPB (Export Promotion Bureau), DoF (Department of Fisheries), business associations, international organizations such as the World Bank, United Nations, universities, commercial firms and implementing partners like BSFF, BFFEA etc. Data is collected in regular intervals or based on need and a database is maintained for that. This is used for analyzing industry trend, project and sector performance etc.

Primary Source of Data
Primary sources of data are the partners or the beneficiaries themselves. For the three custom indicators (increase in sales, creation of jobs and increase in investment), the source of information is the partners or beneficiaries themselves. PRICE collects data from them directly. PRICE has contract-bound targets in these three indicators. For custom indicator 4 & 5 and common indicator 1 & 3, data is taken from the quarterly training reports produced by the project Training Specialist, and adjusted for the indicators' requirement. Such adjustments include ignoring double-counting when one MSME has received training twice in the same category of assistance, i.e. improved management practices. For common indicator 2 (assistance to access bank loans or private equity), data is collected by regular monitoring of the partner. Sample survey method is not used for this indicator because the extrapolation of survey results might contain high sampling error.

e. Baselines

Baseline is the value of an indicator before the commencement of activities, used for comparison when measuring progress toward a result. Baseline periods are taken as one year right before the impacts are expected on the partners. For the three custom indicators (increase in sales, creation of jobs and increase in investment), PRICE technical team collects baseline information during the process of making MoUs or growth plans with the partners. However, the quality of data collected at that time may not be the optimal because the technical team has only initial idea about the partner at that point. So the data collected during the MoU process needs to be adjusted sometimes. For the producer groups or associations or cooperatives with hundreds of farmers, baseline data is collected during the first training sessions conducted for the farmers. The hired

consultants as well as the technical team members present in the training sessions collect the data from the partners in an organized way.

f. Data Collection Tools

Data Elements

Many of the project's proposed indicators are aggregate indicators, made up of various data elements. M&E works with each technical team and counterpart to design database spreadsheets, forms, and surveys to capture and manage these data elements.

Tools

Formats for data collection have been designed by the PRICE M&E taking suggestions from the technical team. From time to time, these have been modified to fit the project requirement. PRICE uses M&E-designed formats to collect data on the first three custom indicators (increase in sales, creation of jobs and increase in investment) based on the different types, sources and methods of data collection. Detailed guidelines are attached with each format. All filled out data forms are signed by the interviewees and the interviewers.

There are other indicators which are related to training or assistance provided by PRICE. Quarterly Training Reports generated by the PRICE Training personnel is the source of information in this case.

g. Methods of Data Collection

For the three custom indicators (increase in sales, creation of jobs and increase in investment), performance of the partners is collected quarterly from the partners after the baseline period ends. The quarters are calendar quarters. Baseline and quarterly performance data are collected in two ways: partner interview, and, sample survey.

The first method (partner interview) is suitable for the individual SMEs PRICE is working with. As the name suggests, the source of information for this method is the partner or client with whom the project is working with. The approach is to proceed in a way of discussion with the partner enterprise and lead the discussion according to the need for information on performance. The partner might recall the information from memory or might check relevant business records for providing the information. Format for recording the gathered information were designed by the M&E. The interviews are conducted by taking assistance from the PRICE technical team who have contact with partner enterprises and thus can easily collect data from them ensuring the quality of data.

The second method for data collection, sample survey, has been used because in some cases performance data on sales, jobs and investment was not readily available from the partners. Those partners do not have any organized way of keeping records on parameters like sales, jobs

or investment. Thus to collect data from those partners such as fish farmers' associations who have large number of members (from 60 to 900), sample survey method has been used. The source of information in this case are the beneficiaries of the interventions, i.e. the members of the associations etc. These surveys can be of two types: a) with statistically viable sample size, b) with a minimum sample size of 30 or larger (to approach to normal distribution).

For type a survey, statistically viable sample size is calculated beforehand considering the character of population to be surveyed. Professional survey teams work for data collection after taking detailed briefing on the project and process of data collection from the PRICE technical and M&E teams. Formats for data collection are provided by PRICE M&E. Sample points are selected at random. However, the cost and time required for conducting this type of survey for each partner with combined body of micro enterprises were considered huge to be conducted quarterly. Thus it has been decided that from now on PRICE will conduct this type of full-fledged surveys only annually, at the end of US fiscal year, September.

For type b survey, a minimum sample size of 30 or larger is taken. Statistical viability behind such decision is that when the sample size is greater than 30, the distribution approaches normal distribution. Also the homogeneity in the population (similar type of land, weather, availability of inputs, market linkage, sharing of knowledge etc.) is considered here. For the quarterly reports, these types of small surveys are conducted from now on. However, these quarterly survey results are verified during the later annual survey.

Data Collection by Third-Party

If necessary, PRICE may subcontract to a local research entity to conduct wide-scale surveys for this performance monitoring plan. Because of the huge size of surveys required at the end of each year, PRICE hires third party professional survey teams. These third party survey teams ensure the integrity of data to some extent as they are not involved in the project. M&E selects the surveyors from a pool of candidates, given the required qualification of a surveyor.

Data Entry

For the data collected on enterprise performance in each quarter on the first three indicators, the respective Sector team performs initial data entry in the soft copy of the Enterprise data format (in Excel). This is later checked by M&E and confirmed for final submission. M&E then enters the data into the M&E database.

For the sample surveys conducted, appropriate format for data entry is required. Format for data entry is prepared by M&E. Easy to use MS Excel format is being used. For the small quarterly surveys of sample size 30, data entry is usually done by the respective Sector Team (or in some cases, the M&E Specialist) who have collected data. For the bigger surveys conducted by hired survey teams, data entry is done by the hired professional data entry operator. These third party survey teams provide data in soft copy as well as the hard copies of filled out formats.

h. Quality Control

Data Quality Analysis

M&E Team conducts visits to some sources of data to verify the collected data. These are random verifications and conducted without prior notice. Data verification is also done over telephone with the partner or beneficiary. M&E team talk to the partner or beneficiary and in this way, check back with the data already at hand. If any discrepancy is observed, it is consulted with the technical team before correction. At least 10% data verification is done as advised by USAID. If required, M&E team takes help from the technical teams for verification. After verification is completed, M&E signs on the data formats.

After that, the PRICE technical team provides initial quality control for the various raw data elements. Sector team examines the data to identify common errors including logical inconsistencies, out-of-range values, significant departures from trends, or other errors so that they can be immediately addressed.

The project M&E is responsible for data quality control after data entry. Around 10 percent of the tabulated data is compared with the raw data forms to ensure accuracy of data entry. M&E then perform basic data analysis and tabulation to identify potential erroneous data. When errors are identified early, M&E make appropriate corrections by coordinating and consulting with counterparts as appropriate.

As some indicators' information is collected from the training reports, the data quality of training report is also important. To ensure that quality, the Training Specialist conducts visits to the ongoing training sessions, consults with the partners and beneficiaries, checks the quality of training administration etc. and provides on-spot recommendations. S/he also gives the feedback to respective Sector team.

Data Quality Criteria

Five related standards are used to examine data quality in more depth1.

Criteria for Good Data Quality
1. Validity
2. Precision
3. Reliability
4. Timeliness
5. Integrity

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[1] Definitions are derived from USAID Programming Policy, ADS Chapter 203 Assessing and Learning, p. 20.

(1) Validity. An indicator should clearly and adequately represent the intended result.
• Attribution. Does the indicator measure the contribution of the project?
• Bias and/or Sampling Errors. Are there any biases or sampling errors that affect the data?

(2) Precision. Data should be sufficiently precise to present a fair picture of performance and enable management decision-making at the appropriate levels. Also, there should be a sufficient degree of confidence in the data's accuracy.

(3) Reliability. Data should reflect stable and consistent data collection processes and analysis methods over time, so that changes in data are not due to changes in the data collection method. In other words, if the data collection procedure were repeated, the same result should occur.

(4) Timeliness. Data should be timely enough to influence management decision-making. There are two key aspects of timeliness. First, data must be available frequently enough to influence decision-making. Second, data should be current enough when available.

(5) Integrity. Data that are collected, analyzed, and reported should have established mechanisms in place to reduce manipulation. There are generally two types of issues that affect data integrity. The first is inaccurate transcription. For example, a number might be incorrectly entered into a database system or recorded in a performance report. Data integrity is at greatest risk of being compromised during collection and analysis. The second, and more complex issue, is whether there is any incentive on the part of the data source to manipulate the data. For example, if a project obtains data from stakeholders who depend on funding from the project, the stakeholder may have an incentive to skew data.

Data Quality Analysis (DQA) by USAID

USAID conducts annual DQA visits to PRICE project areas and meets partners, stakeholders, consultants. The team discusses with the partners, beneficiaries and also check on some required documents on the spot. USAID also meets PRICE personnel for this and discusses the whole data collection, quality control and reporting process in detail. Based on that, USAID prepares its annual DQA report for the project.

Potential for Double Counting

PRICE works to minimize potential double counting through close coordination between sectors and technical teams. The project M&E reviews indicators with each team and identify areas where overlapping between sectors may occur. Once identified, the teams work together to determine how the data will be monitored and reported.

Double counting may also occur between PRICE and other USAID projects operating under SO 12. The M&E will identify these situations and work with partner projects to determine if the

results may be better reported through one or the other project. However in some situations, it may be appropriate for both projects to monitor the same data. In these cases, the project may still monitor and report on the data but will report the magnitude of potential overlaps. With this information, USAID is able to adjust for double counting when consolidating indicators from various partners.

i. Data Analysis

After ensuring data quality, the data is processed and analyzed by the PRICE M&E. MS Excel program has been used for the processing and analysis of data so far. For the three custom indicators (increase in sales, creation of jobs and increase in investment), separate processing techniques are used for data collected from enterprises directly (by using Enterprise Data Format) and the data collected from the combined body of beneficiaries, i.e. associations or cooperatives (by using sample survey method and format). Data from sample surveys is extrapolated for getting the figure for the whole populations (taking cultivable land area as the basis). PRICE is establishing a software for data entry and analysis of the collected data.

However, the process of measurement of performance is same for both: comparing performance period results with the baseline period data. The performance period data is compared with the same period in baseline and the resulting change is taken as performance. For example, while calculating quarterly increase in sales (custom indicator 1) of a partner, the gross sales of the partner in that particular quarter is compared with the baseline sales of the partner in the same quarter in the baseline year. That means:

Increase in Sales in the quarter = Value of Sales in the quarter – Value of Baseline Sales in the same quarter

For the second indicator, '**Total number of full-time jobs created',** the creation of jobs are considered across the value chain/s, wherever applicable. For the jobs created directly by the partners (only one node in a value chain), data is collected from the partners. Performance calculation from this data is as stated above: performance period data is compared with the same period in baseline and the resulting change is taken as performance.

For estimating the additional jobs created downstream or upstream or on-farm as a result of partner activities, PRICE has drafted a Job Model (with the help of a short term consultant supervised by DCOP) by September 2010. The Job Model estimates Job Factors for different type of partners (enterprise, group of farmers) in several parts: downstream, upstream and on-farm.

The *downstream Job Factor* gives the factor by which additional labor days are used by a partner for each additional unit of production in a period. The total quantity of increased production of a partner in a period is multiplied by the respective job factor and the resulting full time equivalent

job is calculated. For example, if partner A has increased its production by 500 MT in a period and partner A's downstream job factor is 5 (labor days per MT of production), the resulting full time equivalent job created downstream is: (500X5)/150=16.67.

With the accumulated data at hand till September 2010, *the downstream job factor* has been used to calculate additional jobs created by the enterprises and farmer groups till September 2010 and reported in the annual report of FY 2010. For Oct-Dec 2010, Jan-Mar 2011 and Apr-Jun 2011 quarter also, downstream job ratio has been used in the same way.

The Job Model also helps to estimate the *on-farm job factors* created by the farmer groups because in Bangladesh scenario, a major part of the labor used in agriculture is family labors for which farmers don't keep records. The on-farm job factor in the Job Model calculates the total on-farm labor requirement factors of different partners which may include hired and/or family labor. For the accumulated data at hand till September 2010, on-farm job factor has been used to calculate additional jobs created by the farmer groups and reported in the annual report of FY 2010.

However, this first draft of the Job Model is being strengthened more to incorporate larger sample.

In each sector, all the partners' performances are summed up for getting the aggregate performance on the 3 indicators for the sector. Then the three sectors' performances are summed up to get the project performance.

While analyzing the data, M&E focuses on the segregation required by the definition of an indicator, i.e. by sector, age, region, export-import etc. After that, the quantitative achievements are linked back to the qualitative improvements by the partners. Qualitative results are collected through regular M&E activities as well as sector activity reports. M&E takes the consent of technical team before establishing such relationship in the analyses.

Attribution:
Obviously PRICE alone is not attributable for the total improvement observed by the partners. However, considering the difficulty in isolating attribution for agro sector where there are a multitude of variables that are impossible to control or easily predict (such as weather and commodity prices), this report simply takes PRICE as one of the attributable factors behind the improvement. Any possible overestimation will be offset by the multiplier effect of the project which PRICE does not measure for performance.

j. Data Management Software

The existing PRICE M&E Database is designed to follow the development of appropriate recording and reporting formats and data collection tools that are consistent with the indicators and information need systems and M&E plans. Project reporting requirements have determined the type of data management, processing, analyses and reporting. Though the present

system uses MS Excel application for data processing and reporting, still it takes considerable time and this situation is supposed to worsen with the higher scale of the project. Thus an automated M&E Data Management System or software that captures outputs and outcome indicators using a common user-friendly software package is in its final phase of development. This will add flexibility, efficiency to and enhance reliability of the PRICE M&E system.

Relational database structure has been used to develop the Data Management System for PRICE. This structure will allow automatic navigation in the database and support query facilities. The design includes module creation, ID creation, data analyses, upload and download options etc. Around 15 users will access the system and able to see the reports. Access to the System will be secured by password. 4 of these users will have access for data entry (but not uploading) to the system modules. M&E Manager will have administrative access to the system.

PRICE already signed an agreement with Grameen Solutions Ltd., a renowned software company in Bangladesh, to establish the system. They are developing the software using Apache Web Server, MySQL-5 as database and PHP-5 as the web scripting language. AJAX and Java Script frameworks are also being used. The system is expected to be launched in PRICE server in the beginning of August 2011. Then after one month of testing and bug fixing and uploading of previous data, the system will go live.

INDICATOR REFERENCE SHEETS

Performance Indicator Reference Sheet-1

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: Non RMG sectors strengthened and strategic growth enhanced.

Indicator: *Custom Indicator 1: Total value of sales increased.*

DESCRIPTION

Precise Definition(s): The aggregation of the increase in the total value of gross sales of assisted firms in the three value chains that can be attributed to PRICE activities.

Unit of Measure: United States dollars converted from local currency, if necessary, at time of collection.

Disaggregated by: Domestic sales, export sales, and sector

Justification & Management Utility: Jobs are created by economic activity, which is largely measured by sales and investment.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will collect the sales revenue data directly from the partner firms, organizations, and partner associations using pre-designed data forms. The commitment and process of collecting initial baseline data and ongoing sales information and other achievements will be outlined in detailed MOUs with partners.

Data Source(s): Records of partner firms or associations

Frequency and Timing of Data Acquisition: Quarterly. 30 days following the close of the quarter.

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: A baseline will be established with each partner enterprise, association, trader group at the time of the MOU signing with the partner. If required, this baseline will be adjusted later until the impact is expected to occur.

Known Data Limitations and Significance (if any): Partner organizations may not have reliable record keeping systems.

Actions Taken or Planned to Address Data Limitations: PRICE may assist partner organizations with record keeping though project staff expertise or hired consultant, if needed.

Date of Future Data Quality Assessments: PRICE will annually review data quality issues to ensure data is of sufficient quality for monitoring and evaluation purposes.

Procedures for Future Data Quality Assessments: PRICE will assess data quality by comparing to similar sized value chain members and by conducting regular site visits.

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target/projections	Actual	Notes
2009	**$12,681,246**	**$12,681,246**	
2010	**$40,000,000**	**$39,343,393**	

2011	**$61,550,700**	**83,096,051 (est)**	
2012	**$76,622,500**		Revised Projections
2013(to Feb)	**$19,019,000**		Revised Projections

Performance Indicator Reference Sheet-2

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: Non RMG sectors strengthened and strategic growth enhanced.

Indicator: *Custom Indicator 2: Total number of full-time equivalent jobs created.*

DESCRIPTION

Precise Definition(s): Full-time equivalent jobs will be defined as those equal to 260 work days per year for non-agricultural production and 150 days for agricultural production (given the seasonality associated with agriculture work). Only new jobs will count, calculated by taking the total number of work days and dividing by 260 or 150, as appropriate. A new job will be attributed to the year in which the job originated.

Unit of Measure: Number

Disaggregated by: Sector, region, gender and age

Justification & Management Utility: The creation of jobs directly contributes to expanded economic opportunities and poverty reduction.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will collect the jobs creation data directly from the PRICE assisted partner firms, organizations, and associations using pre-designed data forms. The commitment and process of collecting initial baseline data and ongoing jobs information and other achievements will be outlined in detailed MOUs with partners.

Data Source(s): Records of partner firms or associations

Frequency and Timing of Data Acquisition: Quarterly. 30 days following the close of the quarter.

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: A baseline will be established with each partner enterprise, association, trader group, etc. at the time of the signing of an MOU with the partner. If required, this baseline will be adjusted later until the impact is expected to occur.

Known Data Limitations and Significance (if any): Partner organizations may not have reliable record keeping systems.

Actions Taken or Planned to Address Data Limitations: PRICE may assist partner organizations with record keeping through project staff expertise or hired consultant, if needed.

Date of Future Data Quality Assessments: PRICE will annually review data quality issues to ensure data is of sufficient quality for monitoring and evaluation purposes.

Procedures for Future Data Quality Assessments: PRICE will assess data quality by comparing to similar sized value chain members and by conducting regular site visits.

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets**:** The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the period until the contract ends. At the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009 no target or achievement is considered at that period.

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes
2009	**1,658**	**1,658**	
2010	**10,000**	**9,585**	

2011	**12,500**	**13,780 (est)**	
2012	**13,780**		Projected
2013(to Feb)	**4,913**		Projected

Performance Indicator Reference Sheet-3

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: Non RMG sectors strengthened and strategic growth enhanced.

Key Result Area: N/A

Indicator: *Custom Indicator 3: Total value of investment increased.*

DESCRIPTION

Precise Definition(s): The aggregation of the increase in the total value of investments of assisted firms in the three value chains that can be attributed to PRICE activities. Investment will include loans and private equity.

Unit of Measure: United States dollars converted from local currency, if necessary, at time of collection.

Disaggregated by: Sector

Justification & Management Utility: Jobs are created by economic activity, which is largely measured by sales and investment.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will collect investment data directly from the partner firms, organizations, and partner associations using pre-designed data forms. The commitment and process of collecting initial baseline data and ongoing information will be outlined in detailed MOUs with partners.

Data Source(s): Records of partner firms or associations

Frequency and Timing of Data Acquisition: Quarterly. 30 days following the close of the quarter.

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: A baseline will be established with each partner enterprise, association, trader group, etc. at the time of the signing of an MOU with the partner. If required, this baseline will be adjusted later until the impact is expected to occur.

Known Data Limitations and Significance (if any): Partner organizations may not have reliable record keeping systems.

Actions Taken or Planned to Address Data Limitations: PRICE may assist partner organizations with record keeping through project staff expertise or hired consultant, if needed.

Date of Future Data Quality Assessments: PRICE will annually review data quality issues to ensure data is of sufficient quality for monitoring and evaluation purposes.

Procedures for Future Data Quality Assessments: PRICE will assess data quality by comparing to similar sized value chain members and by conducting regular site visits.

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY09, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY09. From Feb 08 to Sep 09, the project was at its take-off stage, so no target or achievement is considered at that period.

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes
2009	**$520,129**	**$520,129**	

2010	**$1,000,000**	**1,870,585**	
2011	**$1,300,000**	**$4,120,020 (est)**	
2012	**$3,303,400**		Projected
2013(to Feb)	**$778,096**		Projected

Performance Indicator Reference Sheet-4

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: Workforce skill improved and labor rights protected.

Key Result Area: Skills of youth and women upgraded.

Indicator: *Custom Indicator 4: Number of persons participating in USAID workforce development programs*

DESCRIPTION

Precise Definition(s): Number of persons participating in USG-funded workforce development programs, including technical and vocational programs and workforce readiness programs.

Unit of Measure: Number

Disaggregated by: Sector, Gender, and Age

Justification & Management Utility: This indicator measures the number of individuals who enrolled in USG-funded workforce development programs. It is assumed that increased access to quality programs will result in a more skilled, adaptable workforce.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will track and report data from internal project documentation on the number of persons participating in PRICE workforce development programs.

Data Source(s): Project documentation from field offices, including training registration rolls, workshop participant rolls, etc.

Frequency and Timing of Data Acquisition: Quarterly

Estimated Cost of Data Acquisition: Minimal, as collection will be part of routine project work.

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: N/A

Known Data Limitations and Significance (if any): N/A

Actions Taken or Planned to Address Data Limitations: N/A

Date of Future Data Quality Assessments: N/A

Procedures for Future Data Quality Assessments: N/A

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the PRICE quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes
2009	**1,616**	**1,616**	

2010	**3,700**	**3,137**	
2011	**7,000**	**7,884 (est)**	
2012	**5,620**		Projected
2013(to Feb)	**320**		Projected

Performance Indicator Reference Sheet-5

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: Workforce skill improved and labor rights protected.

Key Result Area: Labor rights code of conduct adopted.

Indicator: *Custom Indicator 5: Number of staff (workers and managers) trained on key issues of Bangladesh Labor Law 2006 (New indicator: Replaced the old one)*

DESCRIPTION

Precise Definition(s): Number of staff (workers and managers) trained on key issues of Bangladesh Labor Law 2006 supported by PRICE and industry stakeholders.

Unit of Measure: Number

Disaggregated by: Sector, gender and age

Justification & Management Utility: Compliance with local labor laws is a vital requirement in order to maintain or grow the current export market. It is assumed that increased access of staffs to quality programs on Bangladesh Labor Law 2006 will result in a more skilled workforce and compliant labor environment.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will track and report data from internal project documentation on the number of persons participating in PRICE workforce development programs.

Data Source(s): Project documentation from field offices, including training registration rolls, workshop participant rolls, etc.

Frequency and Timing of Data Acquisition: Quarterly

Estimated Cost of Data Acquisition: Minimal, as collection will be part of routine project work.

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: N/A

Known Data Limitations and Significance (if any): N/A

Actions Taken or Planned to Address Data Limitations: N/A

Date of Future Data Quality Assessments: N/A

Procedures for Future Data Quality Assessments: N/A

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the PRICE quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes

2009	**0**	**0**	
2010	**340**	**364**	
2011	**350**	0	Focus revised
2012	**0**		TBD
2013(to Feb)	**0**		TBD

Performance Indicator Reference Sheet-6

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: SME competitiveness enhanced and growth accelerated.

Key Result Area: Increased access to improved production technologies.

Indicator: *Common Indicator 1: Number of firms receiving USG assistance to improve their management practices*

DESCRIPTION

Precise Definition(s): This indicator measures the number of firms that receive USG assistance to improve their management practices (financial management, strategic planning, marketing, etc).

Unit of Measure: Number

Disaggregated by: Sector, region and gender of owner/manager, if possible

Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by adopting improved management practices.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will track and report from internal project documentation the firms or enterprises that receive USG assistance, through PRICE, to improve their management practices.

Data Source(s): Project documentation from field offices, including trip notes from client field visits, training and workshop participants registration rolls, partner documentation, etc.

Frequency and Timing of Data Acquisition: Quarterly.

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: N/A

Known Data Limitations and Significance (if any): N/A

Actions Taken or Planned to Address Data Limitations: N/A

Date of Future Data Quality Assessments: N/A

Procedures for Future Data Quality Assessments: N/A

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the PRICE quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes

2009	**2,489**	**2,489**	
2010	**2,000**	**4,613**	
2011	**14,700**	**21,728 (est)**	
2012	**10,315**		Projected
2013(to Feb)	**195**		Projected

Performance Indicator Reference Sheet-7

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: SME competitiveness enhanced and growth accelerated.

Key Result Area: Access to commercial loans improved.

Indicator: *Common Indicator 2: Number of SMEs receiving USG-supported assistance to access bank loans or private equity*

DESCRIPTION

Precise Definition(s): Number of small and medium enterprises, including farms, which receive assistance from USG through PRICE to obtain bank loans or private equity.

Unit of Measure: Number

Disaggregated by: Sector, region and gender of owner/manager, if possible

Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by accessing capital and increasing investment in productive assets.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will track and report from internal project documentation the number of SMEs receiving USG supported assistance to access bank loans or private equity.

Data Source(s): Project documentation from field offices, including trip notes from client field visits, training and workshop participants registration rolls, partner documentation, etc.

Frequency and Timing of Data Acquisition: Quarterly.

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: N/A

Known Data Limitations and Significance (if any): N/A

Actions Taken or Planned to Address Data Limitations: N/A

Date of Future Data Quality Assessments: N/A

Procedures for Future Data Quality Assessments: N/A

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the PRICE quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY 2009, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY 2009. From Feb 2008 to September 2009, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes
2009	**129**	**129**	

2010	**300**	**2,239**	
2011	**2,300**	**4954 (est)**	
2012	**1,000**		Projected
2013(to Feb)	**150**		Projected

Performance Indicator Reference Sheet-8

Strategic Objective: Expanded economic opportunities created through equitable economic growth.

Intermediate Result: SME competitiveness enhanced and growth accelerated.

Key Result Area: Access to improved production technologies improved.

Indicator: *Common Indicator 3: Number of firms receiving USG assistance to invest in improved technologies*

DESCRIPTION

Precise Definition(s): This indicator measures the number of firms, proprietors or farms that receive USG assistance through PRICE to invest in improved technologies, including equipment, processes, IT, etc.

Unit of Measure: Number

Disaggregated by: Sector, region and gender of owner/manager, if possible

Justification & Management Utility: Firms improve their productivity, and in turn their competitiveness, by investing in new technologies.

PLAN FOR DATA ACQUISITION BY THE PROJECT

Data Collection Method: PRICE will track and report from internal project documentation the number of SMEs receiving USG supported assistance to invest in improved technologies.

Data Source(s): Project documentation from field offices, including trip notes from client field visits, training and workshop participants registration rolls, partner documentation, etc.

Frequency and Timing of Data Acquisition: Quarterly

Estimated Cost of Data Acquisition: Minimal

DATA QUALITY ISSUES

Date of Initial Data Quality Assessment: N/A

Known Data Limitations and Significance (if any): N/A

Actions Taken or Planned to Address Data Limitations: N/A

Date of Future Data Quality Assessments: N/A

Procedures for Future Data Quality Assessments: N/A

PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING

Data Analysis: Data will be compared to baselines and targets quarterly by the PRICE M&E Manager.

Presentation of Data: Data will be presented using relevant tables, charts or graphs and will be included in the quarterly and annual reports.

Review of Data: Staff will review data quarterly for inclusion in the quarterly and annual progress reports.

Reporting of Data: Quarterly and annual progress reports and relevant success stories.

OTHER NOTES

Notes on Baselines/Targets: **The targets below are for each US fiscal year and are not accumulative. Each year below represents a US fiscal year (Oct-Sept), although the last entry of 2013 represents 4.5 months, covering the rest 4.5 months until contract ends. As at the end of FY09, the left-out targets (after achievement so far) have been re-allocated over the project life, the target and actual are taken as equal for FY09. From Feb 08 to Sep 09, the project was at its take-off stage, so no target or achievement is considered at that period.**

PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes
2009	**6,216**	**6,216**	
2010	**4,000**	**23,056**	
2011	**26,300**	**33,779**	

2012	**14,565**	Projected
2013(to Feb)	**220**	Projected

Instructions for Completing the Performance Indicator Reference Sheet
Strategic Objective: Enter the title of the SO.
Intermediate Result: Enter the title of the relevant IR, if any.
Key Result Area: Enter the title of the Key Result Area (KRA)
Indicator: Enter the full title and number of the indicator.
DESCRIPTION
Precise Definition(s): Define the indicator more precisely. Define specific words or elements within the indicator.
Unit of Measure: Enter the unit of measure (e.g., *number of…*, *percent of…*, *U.S. dollars*, etc.).
Disaggregated by: List planned data disaggregation (male/female, youth/adult, urban/rural, region, etc.)
Justification & Management Utility: Briefly describe *why* this particular indicator was selected and how it will be useful for managing performance of the project.
PLAN FOR DATA ACQUISITION BY THE PROJECT
Data Collection Method: Describe the *tools* and *methods* through with the data will be collected.
Data Source(s): Identify who is responsible for providing the data (e.g., M&E contractor, specific team member, etc.).
Frequency and Timing of Data Acquisition: Describe *how often* data will be received and *when*.
Estimated Cost of Data Acquisition: Estimate the cost (in dollars and/or level of effort) of collecting the data.
Responsible Individual at the Project: Name the team member who will be *directly responsible* for acquiring the data.
DATA QUALITY ISSUES
Date of Initial Data Quality Assessment: Enter the date of initial data quality assessment and the responsible party.
Known Data Limitations and Significance (if any): Describe any data limitations discovered during the initial data quality assessment. Discuss the significance of any data weakness that may affect conclusions about the extent to which performance goals have been achieved.
Actions Taken or Planned to Address Data Limitations: Describe how you have or will take corrective action, if possible, to address data quality issues.
Date of Future Data Quality Assessments: Enter the planned date for subsequent data quality assessments.
Procedures for Future Data Quality Assessments: Describe *how* the data will be assessed in the future (e.g., spot checks of partner data, financial audit, site visits, software edit check, etc.).
PLAN FOR DATA ANALYSIS, REVIEW, & REPORTING
Data Analysis: Describe *how* the raw data will be analyzed, *who* will do it, and *when*.
Presentation of Data: Describe how tables, charts, graphs, or other devices will be used to present data, either internally within the project team, or externally to USAID or home office.
Review of Data: Describe *when* and *how* project management will review the data and analysis (e.g., mid-term evaluation, quarterly reports, etc.)
Reporting of Data: List any internal or external reports that will feature data for this indicator (e.g., quarterly reports)
OTHER NOTES
Notes on Baselines/Targets: **Explain how the baselines and targets were set and identify any assumptions made. If baselines and targets have *not* been set, identify *when* and *how* this will be done.**
Other Notes: **Use this space as needed.**
PERFORMANCE INDICATOR VALUES

Year	Target	Actual	Notes

2009	**Enter target value**	**Enter actual value**	**Enter any explanation here**
2010			

THIS SHEET LAST UPDATED ON: mm/dd/yy

To avoid version control problems, enter the date of most recent revision to the reference sheet.

INDICATOR-WISE PROJECTIONS FOR OCT 2011-DEC 2012

Projected performance for the work plan period

Indicator	Unit	Oct 2011-Dec 2012					
		Total projection	Quarterly Projection				
			Q1	Q2	Q3	Q4	Q5
Total Value of Sales Increased	USD	95,641,490	17,165,307	19,520,651	20,056,086	19,880,478	19,018,968
Domestic		49,894,456	8,445,765	10,163,533	10,495,304	10,444,024	10,345,829
Export		45,747,035	8,719,542	9,357,118	9,560,782	9,436,454	8,673,139
Aquaculture		37,426,508	7,000,000	8,000,000	7,500,000	7,500,000	7,426,508
Horticulture		20,050,000	2,750,000	3,750,000	4,550,000	4,500,000	4,500,000
Leather/Leather products		38,164,982	7,415,307	7,770,651	8,006,086	7,880,478	7,092,460
Number of Full-time equivalent Jobs Created	Number	18,693	5,055	3,225	2,650	2,850	4,913
Aquaculture		11,013	2,200	2,500	2,000	2,200	2,113

Horticulture		6,500	2,500	400	350	450	2,800
Leather/Leather products		1,180	355	325	300	200	0
Male		15,889	4,297	2,741	2,253	2,423	4,176
Female		2,804	758	484	398	428	737
Total Value of Investment Increased	USD	4,081,515	765,500	964,908	785,988	787,023	778,096
Aquaculture		3,500,196	700,000	700,000	700,000	700,000	700,196
Horticulture		381,319	65,500	64,908	85,988	87,023	77,900
Leather/Leather products		200,000	0	200,000	0	0	0
Number of persons participated in WF-dev prog	Number	5,941	1,580	1,640	1,451	950	320
Aquaculture		341	80	140	101	0	20
Horticulture		1,300	300	400	250	50	300
Leather/Leather products		4,300	1,200	1,100	1,100	900	0
Male		3,268	869	902	798	523	176
Female		2,673	711	738	653	428	144
No. of workers and managers trained on Bangladesh labor laws 2006	Number	Indicator to be removed					
Aquaculture							
Horticulture							

Leather/Leather products							
Male							
Female							
Number of Firms and farmers receiving USG assistance to improve management Practices	Number	10,510	2,060	4,515	3,420	320	195
Aquaculture		9,070	1,730	4,040	3,300	0	0
Horticulture		1,325	300	450	100	300	175
Leather/Leather products		115	30	25	20	20	20
Male		8,408	1,648	3,612	2,736	256	156
Female		2,102	412	903	684	64	39
Number of Firms and farmers receiving USG assistance to access formal loan or micro-credit	Number	1,150	258	250	250	250	142
Aquaculture		1,142	250	250	250	250	142
Horticulture		0	0	0	0	0	0
Leather/Leather products		8	8	0	0	0	0
Male		575	129	125	125	125	71
Female		575	129	125	125	125	71

Number of firms and farmers receiving USG assistance to invest in improved technologies	Number	14,785	4,860	6,265	2,870	570	220
Aquaculture		9,070	2,230	4,040	2,800	0	0
Horticulture		5,600	2,600	2,200	50	550	200
Leather/Leather products		115	30	25	20	20	20
Male		11,828	3,888	5,012	2,296	456	176
Female		2,957	972	1,253	574	114	44

PRICE Project FTF Indicators in Southwest Bangladesh to December 2012*

Indicator	Baseline (Actual October 2010)	FY 2011 (Estimated Cumulative)	FY 2012 (Target Cumulative)	FY 2013 (Target Cumulative to Dec 2012)
Outcome Indicators				
Number of hectares under improved technologies or management practices	13,504	29,225	3,600	34,000
Number of jobs created	3,834	15,400	21,700	23,400
Value of new private sector investment in the agriculture sector of food chain leveraged	$970,845	$3,113,500	$3,388,000	$3,440,000
Number of farmers and others who have applied new technologies or management practices**	14,270	32,700	39,600	39,700
Output and Process Indicators				
Number of private enterprises, women's groups, trade and business associations supported	31	45	60	60
Number of individuals trained in productivity or food security training	19,029	43,700	52,800	53,000
Number of value chain actors that have improved their products or services	275	290	400	410

*includes horticulture and aquaculture sectors

**assumes 75% of farmers trained apply new technologies or management practices

CLOSEOUT PLANNING

This draft demobilization plan and closeout timeline is based upon a February 2013 closeout, in accordance with the project contract.

I. General Considerations and Timing

Chemonics has significant experience conducting project closeouts and we will draw upon that experience for the closeout of the PRICE Project. The expected closeout date for the contract is February 14, 2013, however as this is the final work plan for the project, the draft closeout plan and timeline are included herein. It is expected that this timeline and draft plan will be adjusted in the upcoming year. The PRICE Project will work with USAID to further develop and refine the closeout plan and timeline as the project progresses.

Based on past experience, Chemonics recognizes that early planning and action are key to successfully closing out projects. Therefore, our draft closeout plan begins in June 2012. The chart below summarizes major aspects of project closeout and their corresponding dates:

Task	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13
Demobilization plan to USAID										
Property Disposition Plan to USAID										
Close out event, Dhaka										
Majority of activities are finalized and MOUs are completed										
Dhaka office closes										
Final report due to USAID										
Pre closeout audit										
Inform staff of end dates										
Home office close out STTA										
Field accounting close out STTA										
Financial close out										
Close field offices										

II. Pre Closeout Administrative Audit

Approximately six to eight months before the end date of the project a home office member of the project management team will travel to Bangladesh to conduct a pre-closeout audit. The purpose of this home office STTA is to review contractual obligations, ensure execution of all deliverables, and update project trackers and financial records. The STTA will work closely with

the project staff to refine the timeline for closeout, develop a comprehensive plan for conducting all closeout related tasks. Where needed specific training or guidance will be provided to project staff in regards to closeout tasks. A detailed closeout tracker will be developed that project staff and home office staff will use to monitor progress on closeout tasks until the end of the project.

III. Disposition of Property and Equipment

The project will collaborate closely with the Contracting Officer's Technical Representative (COTR) to determine how to best dispose of property and equipment purchased with project funds. The project inventory tracker is updated continually after the purchase of any property or equipment. Chemonics plans to submit a detailed property disposition plan for review by USAID no later than September 2012. The property disposition plan, consisting of office and residence furnishings, computer equipment, and generators, etc., will identify what project equipment is in good condition and could be transferred to other organizations for use or to other operating USAID projects. For non-expendable property our team will take into account the following factors:

1. USAID preference
2. The request of other USAID contractors or partners
3. The partners with whom the project has worked
4. The impact to be achieved by disposing of a given item of property to a given local partner and/or a USAID funded project.

Upon receipt of USAID's approval to transfer equipment to the recommended recipients, the project office will prepare handover receipts and an inventory inspection form for each recipient organization.

IV. Personnel

Expatriate Staff

By August 2012, the home office PMU will send an individualized memo to the Chief of Party to discuss any pending allowances, benefits, coverage, repatriation procedures, and HHE shipment arrangements. The COP is budgeted until February 10, 2013.

Local Staff

It is our intention to assist local staff as much as possible with their transition from employment on the PRICE Project to future employment opportunities. Every effort will be made to assist the staff in finding new opportunities through networking with NGOs, donors, and USAID-funded projects in Bangladesh. Chemonics will provide attestation of employment for all staff.

Home Office Support for Closeout

The home office PMU is committed to ensuring a smooth closeout. The PMU will work closely with the COP and local staff as closeout preparations begin in 2012. Chemonics project management staff will travel to Dhaka approximately six to eight months prior to the end of the project for the pre-closeout administrative audit, as detailed in Section II. A second STTA trip is planned for January/February 2013 to assist with direct closeout activities. This STTA will work

with the office staff to terminate residence and project office leases, prepare the office space for handover, close bank accounts and local accounting records, prepare files for shipment, and other specific closeout tasks. In January 2013 a home office field accountant will travel to Dhaka to conduct a finance closeout audit. Detailed scopes of work for all assignments will be sent to USAID for approval before the assignments begin.

Closeout Staffing Plan

The chart below reflects the plan for the phasing out of PRICE staff. These assumptions are in line with activities in this work plan.

Name		Position Title	Nov-12	Dec-12	Jan-13	Feb-13
Jules Lampell	Management	Chief of Party				
TBD		Director of Value Chain Development				
A.B.M. Nurul Islam		SCF Manager				
Shafinaj Rahman		Manager, M&E				
Md. Nasirul Islam		M&E Specialist				
Bushra Rahman		Communication Specialist				
Dr. Md. Abul Hossain	Program	Aquaculture Sector TL				
Dr. A.B. Siddiqui		Horticulture Sector TL				
S.M. Hasan Iqbal		Leather Sector TL				
ATM Akter Hossain Khan		Aquaculture Sector Advisor				
Kazi Azadur Rahman		Aquaculture Sector Advisor				
Md. Abdul Baten Bhuiyan		Aquaculture Sector Advisor				
M. Nurul Islam		Sector Dev Advisor-Aquaculture				
Md. Abdul Mannan		Aquaculture Sector Advisor				
Md. Abdul Mannan Sarker		Horticulture Sector Advisor				
Tanvir Islam		Aquaculture Specialist				
Md. Sazzad Hossain		Horticulture Sector Dev Specialist				
Md. Mizanur Rahman		Horticulture Specialist				
Md. Amirul Islam		Sector Dev Advisor-Leather				
Mahmuda Akter Khan		Training & Equity Specialist				
Md. Raihan Sadaat	Admin & Finance	Finance Manager				
Md. Yasin Shadat		Accountant				
Md. Mozammal Huq		Data Specialist				
Shamima Afroz		Office Manager				

V. Administrative

The PRICE Project office will notify vendors of the project termination and final invoice date by January 2, 2013. Service from local vendors will end on or about February 9, 2013 for the Dhaka office – or earlier, where appropriate. The home office will review the contract and modifications to ensure compliance through February 2013. The home and field office will plan for the following:

1. Arrangement for payment of outstanding expenses (utilities, vendors, office lease, deposits, etc.).
2. Shipment of technical and financial files to Washington, DC.
3. Termination of leases and/or service contracts.
4. Termination of project subcontracts.
5. Review of files and approvals.

After nearly five years of project operations, a key component of project closeout will be the organization of project administrative and technical files so that records may be accessed easily for both future projects and government audits. Files will be sorted, organized, and packed to be combined with Chemonics Home Office records. The PMU will submit a deliverables tracker to the COTR in October 2012 to obtain concurrence on which technical reports should be submitted to USAID's Development Experience Clearinghouse (that have not yet been submitted).

VI. Accounting and Banking

The home and project office will continue to monitor accounting files and bank accounts through February 2013 in order to ensure sufficient funding through closure. Most accounting closeout tasks will be completed by February 6, 2013.

VII. Closeout Communications

In accordance with our contract requirements, Chemonics is prepared to submit to USAID a final report that summarizes actual achievements against planned performance targets, descriptions of major achievements and supporting data, and an analysis of the impact as a result of interventions. The PMU, COP, and technical team will discuss a schedule for producing the final report approximately eight months before the end of the project and will work with USAID to submit an outline for comment.

In coordination with USAID, Chemonics is planning to hold a closeout event in Dhaka in January 2013 to celebrate the work of the project and our partners and the impact that work has made.

BUDGET

Budget Line Item	Projected Expense
Salaries	$488,629
Fringe	$285,408
Overhead	$443,823
Travel and Transportation	$97,306
Allowances	$141,315
ODCs	$168,375
Equipment, Vehicles, and Freight	$8,875
Subcontractors (Dexis)	$43,950
SAF	
- Horticulture	$256,262
-Aquaculture	$594,335
- Leather Sector	$232,011
G&A	$99,485
Fee	$143,617
Total	**$3,003,390**

EXIT STRATEGY

PRICE is in the process of developing the capacity (both administrative and technical) of partners/institutions and service providers in order to ensure a seamless transition and successful completion and closing of various interventions in the horticulture, aquaculture, and leather sub-sectors.

Horticulture

Horticultural partners of PRICE include companies like Konica Seed Company, Padma Seed Company, Lalteer, GKSSE, Ryia Fertilizers, Associations like Kansat Mango Farmers Associations, Seed potato Farmers associations and Agro Enterprise created recently through PRICE initiatives like PRIDE agro enterprise, EFADF agro enterprise etc.

Since all of these companies, associations and enterprises have a business incentive to ensure successful production of horticulture products, it is expected that they will continue the activities even when project has ended. Specifically, seed and input companies are expected to continue reaching out to farmers through their dealer networks that PRICE established and to continue to have regular business transactions with farmers and possibly other actors in the value chain. To continue promoting the use of technology, PRICE has created linkages between research organizations like BARI, universities, or public institutions such as RDA Bogra and associations and enterprises for technical support. Through these linkages, companies and associations can receive technical support when they require new technologies or face technical problems. As a result, technical information will continue to be disseminated and the development and use of new technologies will be promoted.

PRICE has bolstered the potato seed sectors specifically through strengthening tissue culture laboratories and developing a critical mass of manpower for lab and field associated with potato seed production. While PRICE linked labs were linked with seed producers, it also formally linked all partners with the RDA biotechnology laboratory. As a result of these linkages, these entities will continue to collaborate along with the Seed Certification Agency of the Government and seed partners will no longer face difficulties with obtaining seed certification.

Microfinance institutions and banks were linked with the individual farmers through associations, who will serve as guarantors. These efforts will ensure that farmers continue to have access to credit which in turn will help them obtain technology or inputs.

Seed companies and compost making enterprises will continue to provide services to farmers given their own business incentive, and farmers will continue to use the services to obtain high quality inputs. Farmers will have options to choose from a number of PRICE supported enterprises in their network. Additionally, contract farming NGO linked enterprises will benefit in several ways, first through getting benefits from the input supplying companies and secondly as providers of microfinance, and finally by organizing marketing of the produces either directly or indirectly.

Organizational capacity building has strengthened many organizations in terms of good accounting systems, better management, internet connections, and a large database of farmers and information of individual technical service providers. Farmers benefitted from being linked with soil resources institutes for getting their soil tested at nominal price. Now, they have information of the best seed varieties and sources. Many DAE field based extension service providers and research scientists are now well connected with farmers since many of them worked as resource persons in several kind of training.

Furthermore, mobile phones have made these networks even more powerful as most of the farmers have can call researchers and field-based extension service providers when they face challenges. Farmers also stay connected to Dhaka's wholesalers and other larger markets in order to receive real-time price information and can bargain more effectively in their favor. Farmers now calculate their cost of production and profit which has been embedded in the community.

Aquaculture

PRICE aquaculture so far worked closely with roughly 76 partners and trained or will complete training for roughly 80,000 farmers and other value chain actors by December 2011. At the end of the project total number of value chain actors receiving technical assistances may exceed 100,000. Initially, emphasis was given to four thrust regions in the country, namely, Mymensingh, Bogra, Cox's Bazar, and Jessore-Khulna. During the concluding year, all efforts will be focused on the south west region of the country. It is expected that almost 50% of value chain actors receiving project assistances at the end of the project will be from SW part of the country. PRICE aquaculture sector is expected to contribute roughly 65-70% of the whole PRICE deliverables in terms of increased sales, jobs and investments.

PRICE aquaculture has documented the entire list of beneficiaries in the value chain and will also document the latest entries through the end of project. This will be used as a reference for future users in hard and electronic formats. The list of PRICE beneficiaries will ultimately prevent duplication of efforts and will ensure the best use of scarce resources.

It is expected that the value chain actors will not forget the information, knowledge and skill they acquired through the hands-on training as they will continue to use it, and build upon it, throughout their careers. However, PRICE recognizes that strong organizational support is required to increase outreach. PRICE aquaculture has mainly worked with organized groups and few enterprises, and the capacity building of these enterprises is critical for sustainability. PRICE activities with organized groups like BFFEA, WFC, BSFF will be maintained through their routine activities as these organizations are very strong. The farming associations, traders association, input providers, feed mills, farming groups within the partner NGOs, and community fishers turned fish farming groups will be sustained through organizational strengthening from within and assistance from PRICE and through invited consultants through the USAID-funded "Farmers to Farmer" program.

For dissemination of farming knowledge on a larger scale, the project initiated in-country study trips and built strong linkages among PRICE associated associations and groups that will be

maintained by the interested groups after the project ends. Capacity of the input sellers and traders associations have been developed so that they will be able to provide embedded services to value chain actors. During the joint activities between the project and the partners, certain activities and interventions of organizational strengthening were completed. The project encouraged not only member services for the value chain actors but also awareness of membership obligations for the sustainability of organized farming groups and value chain actors.

Leather

One of the major interventions that PRICE implemented in collaboration with the private sector players was the skill development program which needs to be sustained for continuous sector growth, particularly for exports. When PRICE and the association LFMEAB initiated this program, there was no dedicated institution to lead and implement it at that time. However, through the activities and dialogue initiated by PRICE and LFMEAB, the industry understood the importance of a sustainable supply of skilled workers. Prompting a strong industry response, COEL was created in collaboration with ILO. Since then, PRICE has shifted its support from individual enterprises of LFMEAB to COEL to transition the leadership of workforce development program to COEL. To ensure sustainability, PRICE has been building COEL's capacity as a one point service center for the sector. One of the biggest factors that drive COEL's sustainability is its support from the private sector which is indicated by the revenue it has already earned through fees obtain by providing the skilled workers to various enterprises. In addition, PRICE is also assisting COEL in building business linkages with other domestic buyers in order to help COEL trainees sell their products. PRICE is also working in bridging the gap between BLSC, BCLET and COEL so that they can leverage each others' resources to better cater to the sector.

PRICE's efforts in developing SMEs have primarily focused on access to finance, market linkages, and technical up gradation. PRICE has been supporting SME Foundation (SMEF) in catering better services in the area of access to finance for the SMEs where some significant results have already been achieved. PRICE has been educating SMEF and their partner bankers about the technology, production process, supply chain etc. by organizing factory visits and direct interaction with entrepreneurs. Now PRICE is in the process of connecting and handing over the data base of all the SMEs in the sector to SMEF for the future references. SMEF is the right organization to manage the finances for SMEs, and has also earned the trust of SMEs due to its extensive collaboration with PRICE.

As building market linkage is a continuous task, PRICE has been working towards building a new, cooperative culture within the sector in order for SMEs to have increased access to market and potential buyers. To accomplish this goal, PRICE has been working with LFMEAB and LSBPC to bridge current gaps in the linkages between the two. PRICE has organized several linkage programs such as Buyer Seller meet, fair participations etc. to help them learn about the potential of SMEs. PRICE's success in linking several small producers to leading enterprises as sub-contractors also helped them understand the different aspects of the subsector. PRICE has

been working with LFMEAB and SMEs and playing the role as the bridge between them. PRICE has been in dialogue with LFMEAB to take the lead in assisting SMEs to grow for mutual benefits. Realizing the fact of relative importance of SMEs in the sector, LFMEAB agreed to work with PRICE to take future projects in extending active support to SME industries for their capacity building in terms of enterprise development, job creation, poverty reduction, help building organizational platforms and ultimately LFMEAB to speak for the SMEs with the government. In addition, LFMEAB has agreed to allow selected SMEs in becoming their associate members which is a clear signal for future collaboration.

PRICE is also involved in building the capacity of Aarong who has a number of SMEs in its supplier list. PRICE is helping the Aarong leather management in learning the best practices, creating a SOP (Standard Operating Procedure) which will be used as the master document of leather products manufacturing and also assisting them to convert their leather center as the production cum training facility for all its suppliers now and to come in future.

For the past three years, PRICE has also been raising awareness on the importance of proper flaying and preservation of skins/hides. As a result of PRICE's continuous effort, BTA and BFLLFEA agreed to lead this initiative last year. This year, these two associations did not even require financial assistance from PRICE, but rather requested for PRICE to strengthen their capacity in order to deliver more effectively and broadly. PRICE is also developing the capacity of LSBPC so that these three parties will continue this effort to make it sustainable.

Website

PRICE is actively looking at options to maintain the website upon the project's closure, including transferring it to an appropriate local entity. Sector leaders are discussing with partners and relevant organizations, such as universities, to determine if information on the website could be housed within their respective websites or if such an organization will consider maintaining the site in its final state. PRICE recognizes the importance and value of the information, documents, and other materials on the website and is pursuing ideas to ensure that it will not be lost when the project ends.

PRICE Work Areas